JMAP
REGENTS BY PERFORMANCE INDICATOR: TOPIC

NY Geometry Regents Exam Questions
from Fall 2008 to January 2014 Sorted by PI: Topic

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Geometry Regents Exam Questions by Performance Indicator: Topic

LINEAR EQUATIONS

G.G.62: PARALLEL AND PERPENDICULAR LINES

1 What is the slope of a line perpendicular to the line whose equation is $5x + 3y = 8$?

1 $\frac{5}{3}$
2 $\frac{3}{5}$
3 $-\frac{3}{5}$
4 $-\frac{5}{3}$

2 What is the slope of a line perpendicular to the line whose equation is $y = -\frac{2}{3}x - 5$?

1 $-\frac{3}{2}$
2 $-\frac{2}{3}$
3 $\frac{2}{3}$
4 $\frac{3}{2}$

3 What is the slope of a line that is perpendicular to the line whose equation is $3x + 4y = 12$?

1 $\frac{3}{4}$
2 $-\frac{3}{4}$
3 $\frac{4}{3}$
4 $-\frac{4}{3}$

4 What is the slope of a line perpendicular to the line whose equation is $y = 3x + 4$?

1 $\frac{1}{3}$
2 $-\frac{1}{3}$
3 3
4 -3

5 What is the slope of a line perpendicular to the line whose equation is $2y = -6x + 8$?

1 -3
2 $\frac{1}{6}$
3 $\frac{1}{3}$
4 -6

6 Find the slope of a line perpendicular to the line whose equation is $2y - 6x = 4$.

7 What is the slope of a line that is perpendicular to the line whose equation is $3x + 5y = 4$?

1 $-\frac{3}{5}$
2 $\frac{3}{5}$
3 $-\frac{5}{3}$
4 $\frac{5}{3}$

8 What is the slope of a line that is perpendicular to the line represented by the equation $x + 2y = 3$?

1 -2
2 2
3 $-\frac{1}{2}$
4 $\frac{1}{2}$

9 What is the slope of a line perpendicular to the line whose equation is $20x - 2y = 6$?
1 -10
2 $-\frac{1}{10}$
3 10
4 $\frac{1}{10}$

10 The slope of line ℓ is $-\frac{1}{3}$. What is an equation of a line that is perpendicular to line ℓ?
1 $y + 2 = \frac{1}{3}x$
2 $-2x + 6 = 6y$
3 $9x - 3y = 27$
4 $3x + y = 0$

11 What is the slope of the line perpendicular to the line represented by the equation $2x + 4y = 12$?
1 -2
2 2
3 $-\frac{1}{2}$
4 $\frac{1}{2}$

G.G.63: PARALLEL AND PERPENDICULAR LINES

12 The lines $3y + 1 = 6x + 4$ and $2y + 1 = x - 9$ are
1 parallel
2 perpendicular
3 the same line
4 neither parallel nor perpendicular

13 Which equation represents a line perpendicular to the line whose equation is $2x + 3y = 12$?
1 $6y = -4x + 12$
2 $2y = 3x + 6$
3 $2y = -3x + 6$
4 $3y = -2x + 12$

14 What is the equation of a line that is parallel to the line whose equation is $y = x + 2$?
1 $x + y = 5$
2 $2x + y = -2$
3 $y - x = -1$
4 $y - 2x = 3$

15 Which equation represents a line parallel to the line whose equation is $2y - 5x = 10$?
1 $5y - 2x = 25$
2 $5y + 2x = 10$
3 $4y - 10x = 12$
4 $2y + 10x = 8$

16 Two lines are represented by the equations $-\frac{1}{2}y = 6x + 10$ and $y = mx$. For which value of m will the lines be parallel?
1 -12
2 -3
3 3
4 12

17 The lines represented by the equations $y + \frac{1}{2}x = 4$ and $3x + 6y = 12$ are
1 the same line
2 parallel
3 perpendicular
4 neither parallel nor perpendicular

18 The two lines represented by the equations below are graphed on a coordinate plane.

$$x + 6y = 12$$

$$3(x - 2) = -y - 4$$

Which statement best describes the two lines?
1 The lines are parallel.
2 The lines are the same line.
3 The lines are perpendicular.
4 The lines intersect at an angle other than 90°.

19 The equation of line k is $y = \frac{1}{3}x - 2$. The equation of line m is $-2x + 6y = 18$. Lines k and m are
1 parallel
2 perpendicular
3 the same line
4 neither parallel nor perpendicular

20 Determine whether the two lines represented by the equations $y = 2x + 3$ and $2y + x = 6$ are parallel, perpendicular, or neither. Justify your response.

21 Two lines are represented by the equations $x + 2y = 4$ and $4y - 2x = 12$. Determine whether these lines are parallel, perpendicular, or neither. Justify your answer.

22 Which equation represents a line that is parallel to the line whose equation is $3x - 2y = 7$?
1 $y = -\frac{3}{2}x + 5$
2 $y = -\frac{2}{3}x + 4$
3 $y = \frac{3}{2}x - 5$
4 $y = \frac{2}{3}x - 4$

23 Points $A(5,3)$ and $B(7,6)$ lie on $\overleftrightarrow{AB}$. Points $C(6,4)$ and $D(9,0)$ lie on $\overleftrightarrow{CD}$. Which statement is true?
1 $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$
2 $\overleftrightarrow{AB} \perp \overleftrightarrow{CD}$
3 $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are the same line.
4 $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ intersect, but are not perpendicular.

24 A student wrote the following equations:

$$3y + 6 = 2x$$

$$2y - 3x = 6$$

The lines represented by these equations are
1 parallel
2 the same line
3 perpendicular
4 intersecting, but *not* perpendicular

25 State whether the lines represented by the equations $y = \frac{1}{2}x - 1$ and $y + 4 = -\frac{1}{2}(x - 2)$ are parallel, perpendicular, or neither. Explain your answer.

G.G.64: PARALLEL AND PERPENDICULAR LINES

26 What is an equation of the line that passes through the point $(-2,5)$ and is perpendicular to the line whose equation is $y = \frac{1}{2}x + 5$?
1 $y = 2x + 1$
2 $y = -2x + 1$
3 $y = 2x + 9$
4 $y = -2x - 9$

27 What is an equation of the line that contains the point $(3,-1)$ and is perpendicular to the line whose equation is $y = -3x + 2$?
1 $y = -3x + 8$
2 $y = -3x$
3 $y = \frac{1}{3}x$
4 $y = \frac{1}{3}x - 2$

28 Find an equation of the line passing through the point $(6,5)$ and perpendicular to the line whose equation is $2y + 3x = 6$.

29 What is an equation of the line that is perpendicular to the line whose equation is $y = \frac{3}{5}x - 2$ and that passes through the point $(3, -6)$?

1 $y = \frac{5}{3}x - 11$

2 $y = -\frac{5}{3}x + 11$

3 $y = -\frac{5}{3}x - 1$

4 $y = \frac{5}{3}x + 1$

30 What is the equation of the line that passes through the point $(-9, 6)$ and is perpendicular to the line $y = 3x - 5$?

1 $y = 3x + 21$

2 $y = -\frac{1}{3}x - 3$

3 $y = 3x + 33$

4 $y = -\frac{1}{3}x + 3$

31 Which equation represents the line that is perpendicular to $2y = x + 2$ and passes through the point $(4, 3)$?

1 $y = \frac{1}{2}x - 5$

2 $y = \frac{1}{2}x + 1$

3 $y = -2x + 11$

4 $y = -2x - 5$

32 The equation of a line is $y = \frac{2}{3}x + 5$. What is an equation of the line that is perpendicular to the given line and that passes through the point $(4, 2)$?

1 $y = \frac{2}{3}x - \frac{2}{3}$

2 $y = \frac{3}{2}x - 4$

3 $y = -\frac{3}{2}x + 7$

4 $y = -\frac{3}{2}x + 8$

G.G.65: PARALLEL AND PERPENDICULAR LINES

33 What is the equation of a line that passes through the point $(-3, -11)$ and is parallel to the line whose equation is $2x - y = 4$?

1 $y = 2x + 5$

2 $y = 2x - 5$

3 $y = \frac{1}{2}x + \frac{25}{2}$

4 $y = -\frac{1}{2}x - \frac{25}{2}$

34 Find an equation of the line passing through the point $(5, 4)$ and parallel to the line whose equation is $2x + y = 3$.

35 Write an equation of the line that passes through the point $(6, -5)$ and is parallel to the line whose equation is $2x - 3y = 11$.

36 What is an equation of the line that passes through the point $(7,3)$ and is parallel to the line $4x+2y=10$?

1 $y=\frac{1}{2}x-\frac{1}{2}$
2 $y=-\frac{1}{2}x+\frac{13}{2}$
3 $y=2x-11$
4 $y=-2x+17$

37 What is an equation of the line that passes through the point $(-2,3)$ and is parallel to the line whose equation is $y=\frac{3}{2}x-4$?

1 $y=\frac{-2}{3}x$
2 $y=\frac{-2}{3}x+\frac{5}{3}$
3 $y=\frac{3}{2}x$
4 $y=\frac{3}{2}x+6$

38 Which line is parallel to the line whose equation is $4x+3y=7$ and also passes through the point $(-5,2)$?

1 $4x+3y=-26$
2 $4x+3y=-14$
3 $3x+4y=-7$
4 $3x+4y=14$

39 Which equation represents the line parallel to the line whose equation is $4x+2y=14$ and passing through the point $(2,2)$?

1 $y=-2x$
2 $y=-2x+6$
3 $y=\frac{1}{2}x$
4 $y=\frac{1}{2}x+1$

40 What is the equation of a line passing through $(2,-1)$ and parallel to the line represented by the equation $y=2x+1$?

1 $y=-\frac{1}{2}x$
2 $y=-\frac{1}{2}x+1$
3 $y=2x-5$
4 $y=2x-1$

41 An equation of the line that passes through $(2,-1)$ and is parallel to the line $2y+3x=8$ is

1 $y=\frac{3}{2}x-4$
2 $y=\frac{3}{2}x+4$
3 $y=-\frac{3}{2}x-2$
4 $y=-\frac{3}{2}x+2$

42 Which equation represents a line that is parallel to the line whose equation is $y=\frac{3}{2}x-3$ and passes through the point $(1,2)$?

1 $y=\frac{3}{2}x+\frac{1}{2}$
2 $y=\frac{2}{3}x+\frac{4}{3}$
3 $y=\frac{3}{2}x-2$
4 $y=-\frac{2}{3}x+\frac{8}{3}$

43 What is the equation of a line passing through the point $(6, 1)$ and parallel to the line whose equation is $3x = 2y + 4$?

1 $y = -\frac{2}{3}x + 5$

2 $y = -\frac{2}{3}x - 3$

3 $y = \frac{3}{2}x - 8$

4 $y = \frac{3}{2}x - 5$

44 Line ℓ passes through the point $(5, 3)$ and is parallel to line k whose equation is $5x + y = 6$. An equation of line ℓ is

1 $y = \frac{1}{5}x + 2$

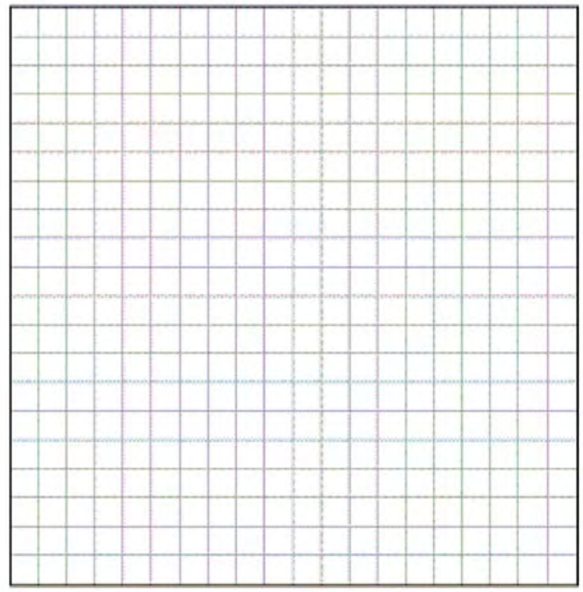
2 $y = -5x + 28$

3 $y = \frac{1}{5}x - 2$

4 $y = -5x - 28$

G.G.68: PERPENDICULAR BISECTOR

45 Write an equation of the perpendicular bisector of the line segment whose endpoints are $(-1, 1)$ and $(7, -5)$. [The use of the grid below is optional]



46 Which equation represents the perpendicular bisector of $\overline{AB}$ whose endpoints are $A(8, 2)$ and $B(0, 6)$?

1 $y = 2x - 4$

2 $y = -\frac{1}{2}x + 2$

3 $y = -\frac{1}{2}x + 6$

4 $y = 2x - 12$

47 The coordinates of the endpoints of $\overline{AB}$ are $A(0, 0)$ and $B(0, 6)$. The equation of the perpendicular bisector of $\overline{AB}$ is

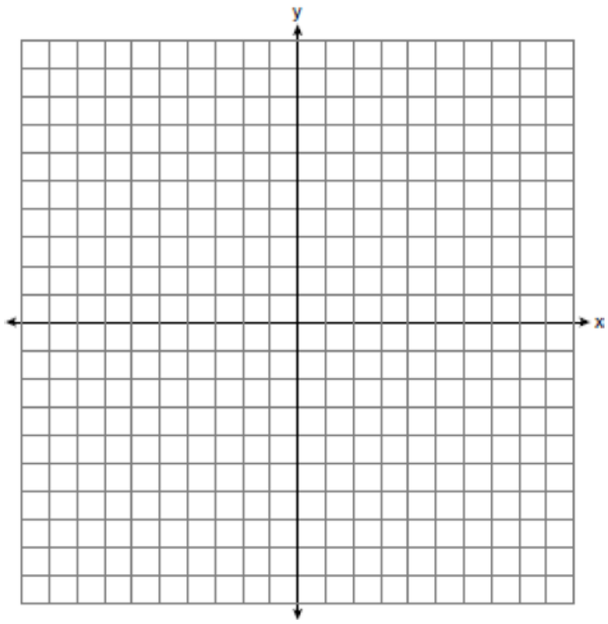
1 $x = 0$

2 $x = 3$

3 $y = 0$

4 $y = 3$

48 Write an equation of the line that is the perpendicular bisector of the line segment having endpoints $(3,-1)$ and $(3,5)$. [The use of the grid below is optional]



49 Triangle ABC has vertices $A(0,0)$, $B(6,8)$, and $C(8,4)$. Which equation represents the perpendicular bisector of $\overline{BC}$?
1 $y = 2x - 6$
2 $y = -2x + 4$
3 $y = \frac{1}{2}x + \frac{5}{2}$
4 $y = -\frac{1}{2}x + \frac{19}{2}$

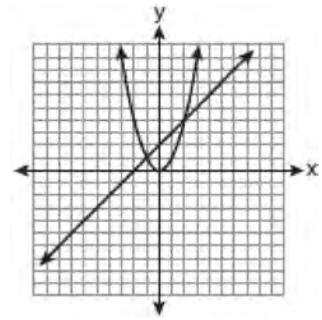
SYSTEMS

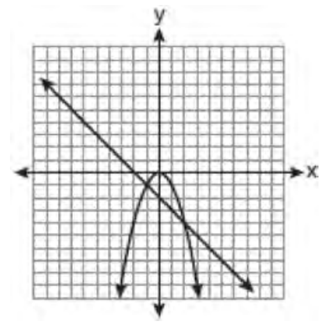
G.G.70: QUADRATIC-LINEAR SYSTEMS

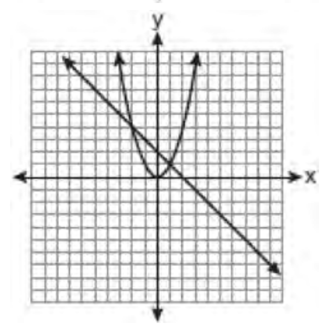
50 Which graph could be used to find the solution to the following system of equations?

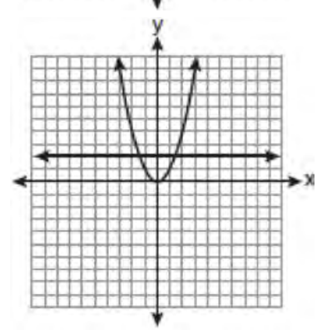
$$y = -x + 2$$

$$y = x^2$$

1 

2 

3 

4 

51 Given the system of equations: $y = x^2 - 4x$

$$x = 4$$

The number of points of intersection is
1 1
2 2
3 3
4 0

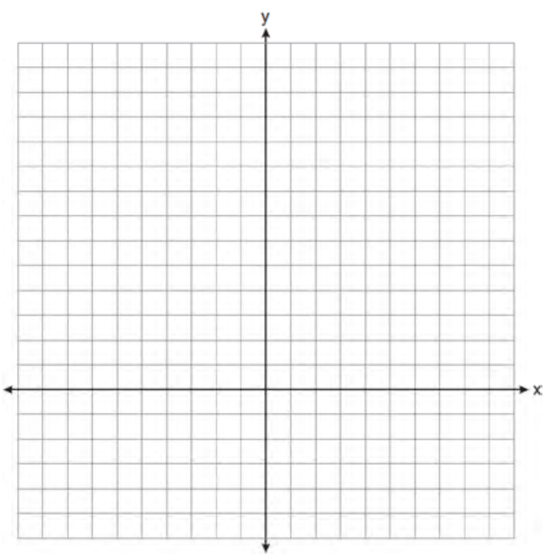
52 Given the equations: $y = x^2 - 6x + 10$

$$y + x = 4$$

What is the solution to the given system of equations?
1 $(2,3)$
2 $(3,2)$
3 $(2,2)$ and $(1,3)$
4 $(2,2)$ and $(3,1)$

53 On the set of axes below, solve the following system of equations graphically for all values of *x* and *y*.

$$y = (x-2)^2 + 4$$
$$4x + 2y = 14$$



54 Given: $y = \frac{1}{4}x - 3$

$$y = x^2 + 8x + 12$$

In which quadrant will the graphs of the given equations intersect?
1 I
2 II
3 III
4 IV

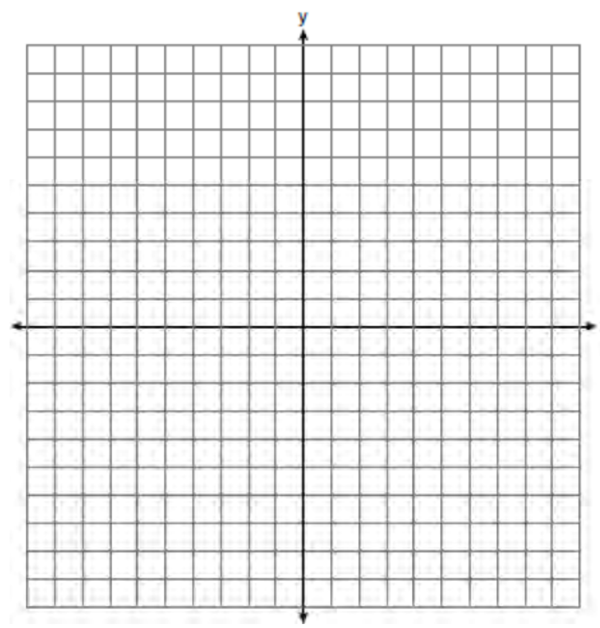
55 What is the solution of the following system of equations?

$$y = (x+3)^2 - 4$$
$$y = 2x + 5$$

1 $(0,-4)$
2 $(-4,0)$
3 $(-4,-3)$ and $(0,5)$
4 $(-3,-4)$ and $(5,0)$

56 Solve the following system of equations graphically.

$$2x^2 - 4x = y + 1$$
$$x + y = 1$$



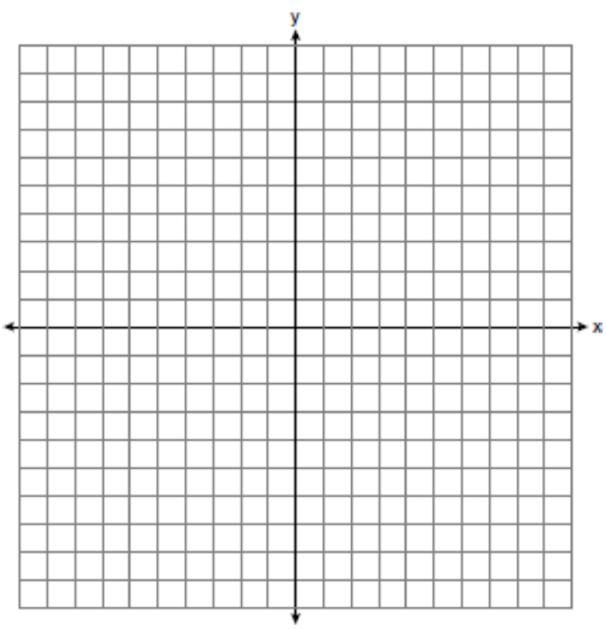
57 When solved graphically, what is the solution to the following system of equations?

$$y = x^2 - 4x + 6$$
$$y = x + 2$$

1 $(1,4)$
2 $(4,6)$
3 $(1,3)$ and $(4,6)$
4 $(3,1)$ and $(6,4)$

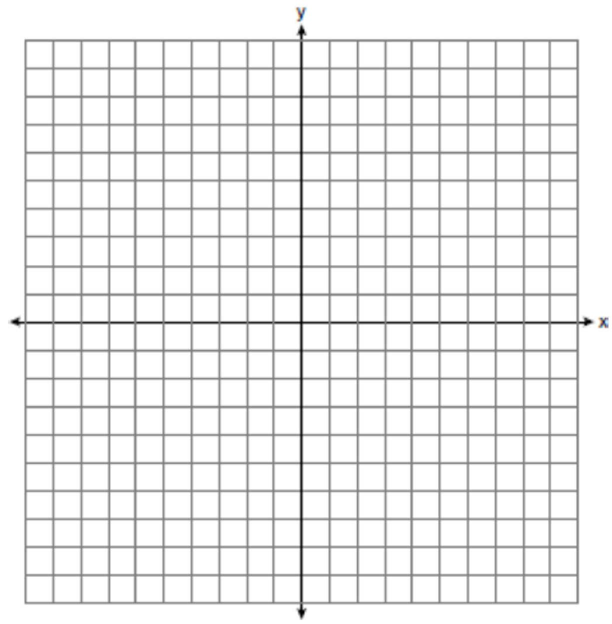
58 On the set of axes below, solve the system of equations graphically and state the coordinates of all points in the solution.

$$y = (x-2)^2 - 3$$
$$2y + 16 = 4x$$



59 On the set of axes below, solve the following system of equations graphically and state the coordinates of *all* points in the solution.

$$(x+3)^2 + (y-2)^2 = 25$$
$$2y + 4 = -x$$

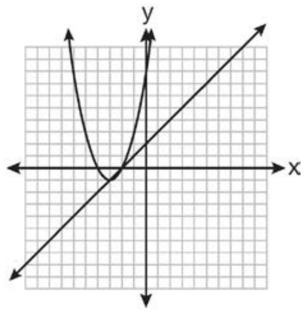


60 The equations $x^2 + y^2 = 25$ and $y = 5$ are graphed on a set of axes. What is the solution of this system?

1 $(0,0)$
2 $(5,0)$
3 $(0,5)$
4 $(5,5)$

61 Which graph could be used to find the solution to the following system of equations?

$$y = (x+3)^2 - 1$$
$$x + y = 2$$

1


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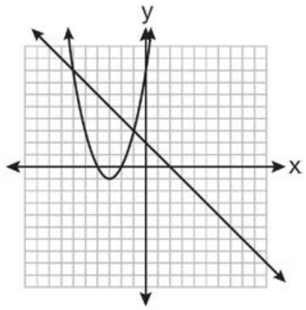

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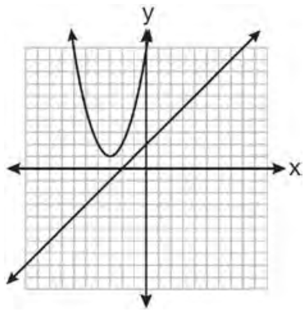
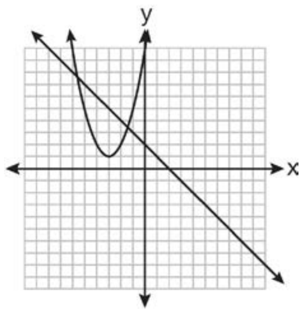


4


62 When the system of equations $y + 2 = (x-4)^2$ and $2x + y - 6 = 0$ is solved graphically, the solution is
1 $(-4,-2)$ and $(-2,2)$
2 $(4,-2)$ and $(2,2)$
3 $(-4,2)$ and $(-6,6)$
4 $(4,2)$ and $(6,6)$

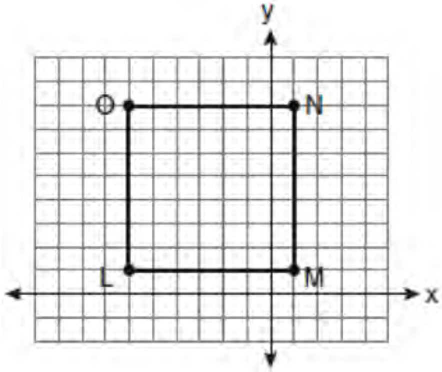
63 The solution of the system of equations $y = x^2 - 2$ and $y = x$ is
1 $(1,1)$ and $(-2,-2)$
2 $(2,2)$ and $(-1,-1)$
3 $(1,1)$ and $(2,2)$
4 $(-2,-2)$ and $(-1,-1)$

TOOLS OF GEOMETRY

G.G.66: MIDPOINT

64 Line segment AB has endpoints $A(2,-3)$ and $B(-4,6)$. What are the coordinates of the midpoint of $\overline{AB}$?
1 $(-2,3)$
2 $\left(-1,1\frac{1}{2}\right)$
3 $(-1,3)$
4 $\left(3,4\frac{1}{2}\right)$

65 Square *LMNO* is shown in the diagram below.



What are the coordinates of the midpoint of diagonal $\overline{LN}$?

1 $\left(4\frac{1}{2},-2\frac{1}{2}\right)$

2 $\left(-3\frac{1}{2},3\frac{1}{2}\right)$

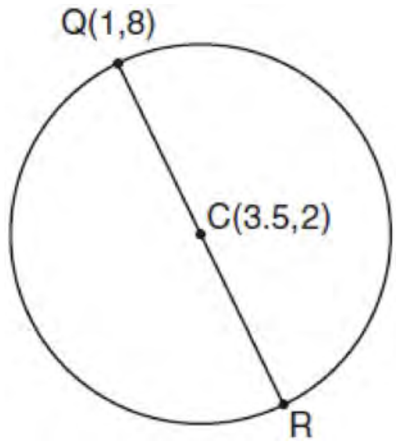
3 $\left(-2\frac{1}{2},3\frac{1}{2}\right)$

4 $\left(-2\frac{1}{2},4\frac{1}{2}\right)$

66 The endpoints of $\overline{CD}$ are $C(-2,-4)$ and $D(6,2)$. What are the coordinates of the midpoint of $\overline{CD}$?

1 $(2,3)$
2 $(2,-1)$
3 $(4,-2)$
4 $(4,3)$

67 In the diagram below of circle C, $\overline{QR}$ is a diameter, and $Q(1,8)$ and $C(3.5,2)$ are points on a coordinate plane. Find and state the coordinates of point R.



68 If a line segment has endpoints $A(3x+5,3y)$ and $B(x-1,-y)$, what are the coordinates of the midpoint of $\overline{AB}$?

1 $(x+3,2y)$
2 $(2x+2,y)$
3 $(2x+3,y)$
4 $(4x+4,2y)$

69 A line segment has endpoints $A(7,-1)$ and $B(-3,3)$. What are the coordinates of the midpoint of $\overline{AB}$?

1 $(1,2)$
2 $(2,1)$
3 $(-5,2)$
4 $(5,-2)$

70 In circle O, diameter $\overline{RS}$ has endpoints $R(3a,2b-1)$ and $S(a-6,4b+5)$. Find the coordinates of point O, in terms of a and b. Express your answer in simplest form.

71 Segment AB is the diameter of circle M. The coordinates of A are $(-4,3)$. The coordinates of M are $(1,5)$. What are the coordinates of B?
1 $(6,7)$
2 $(5,8)$
3 $(-3,8)$
4 $(-5,2)$

72 Point M is the midpoint of $\overline{AB}$. If the coordinates of A are $(-3,6)$ and the coordinates of M are $(-5,2)$, what are the coordinates of B?
1 $(1,2)$
2 $(7,10)$
3 $(-4,4)$
4 $(-7,-2)$

73 Line segment AB is a diameter of circle O whose center has coordinates $(6,8)$. What are the coordinates of point B if the coordinates of point A are $(4,2)$?
1 $(1,3)$
2 $(5,5)$
3 $(8,14)$
4 $(10,10)$

74 What are the coordinates of the center of a circle if the endpoints of its diameter are $A(8,-4)$ and $B(-3,2)$?
1 $(2.5,1)$
2 $(2.5,-1)$
3 $(5.5,-3)$
4 $(5.5,3)$

75 The midpoint of $\overline{AB}$ is $M(4,2)$. If the coordinates of A are $(6,-4)$, what are the coordinates of B?
1 $(1,-3)$
2 $(2,8)$
3 $(5,-1)$
4 $(14,0)$

G.G.67: DISTANCE

76 The endpoints of $\overline{PQ}$ are $P(-3,1)$ and $Q(4,25)$. Find the length of $\overline{PQ}$.

77 If the endpoints of $\overline{AB}$ are $A(-4,5)$ and $B(2,-5)$, what is the length of $\overline{AB}$?
1 $2\sqrt{34}$
2 2
3 $\sqrt{61}$
4 8

78 What is the distance between the points $(-3,2)$ and $(1,0)$?
1 $2\sqrt{2}$
2 $2\sqrt{3}$
3 $5\sqrt{2}$
4 $2\sqrt{5}$

79 What is the length, to the *nearest tenth*, of the line segment joining the points $(-4,2)$ and $(146,52)$?
1 141.4
2 150.5
3 151.9
4 158.1

80 What is the length of the line segment with endpoints $(-6,4)$ and $(2,-5)$?
1 $\sqrt{13}$
2 $\sqrt{17}$
3 $\sqrt{72}$
4 $\sqrt{145}$

81 In circle O, a diameter has endpoints $(-5,4)$ and $(3,-6)$. What is the length of the diameter?

1 $\sqrt{2}$
2 $2\sqrt{2}$
3 $\sqrt{10}$
4 $2\sqrt{41}$

82 What is the length of the line segment whose endpoints are $A(-1,9)$ and $B(7,4)$?

1 $\sqrt{61}$
2 $\sqrt{89}$
3 $\sqrt{205}$
4 $\sqrt{233}$

83 What is the length of the line segment whose endpoints are $(1,-4)$ and $(9,2)$?

1 5
2 $2\sqrt{17}$
3 10
4 $2\sqrt{26}$

84 A line segment has endpoints $(4,7)$ and $(1,11)$. What is the length of the segment?

1 5
2 7
3 16
4 25

85 What is the length of $\overline{AB}$ with endpoints $A(-1,0)$ and $B(4,-3)$?

1 $\sqrt{6}$
2 $\sqrt{18}$
3 $\sqrt{34}$
4 $\sqrt{50}$

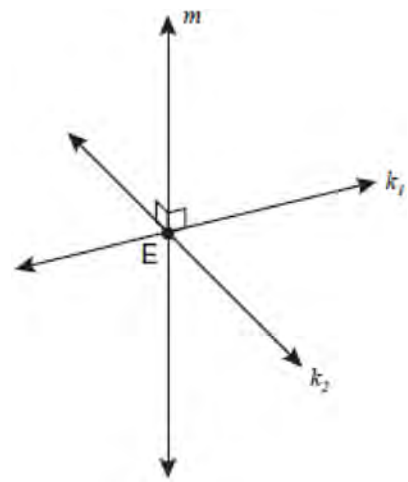
86 The coordinates of the endpoints of $\overline{FG}$ are $(-4,3)$ and $(2,5)$. Find the length of $\overline{FG}$ in simplest radical form.

87 Find, in simplest radical form, the length of the line segment with endpoints whose coordinates are $(-1,4)$ and $(3,-2)$.

88 The endpoints of $\overline{AB}$ are $A(3,-4)$ and $B(7,2)$. Determine and state the length of $\overline{AB}$ in simplest radical form.

G.G.1: PLANES

89 Lines k_1 and k_2 intersect at point E. Line m is perpendicular to lines k_1 and k_2 at point E.



Which statement is always true?

1 Lines k_1 and k_2 are perpendicular.
2 Line m is parallel to the plane determined by lines k_1 and k_2.
3 Line m is perpendicular to the plane determined by lines k_1 and k_2.
4 Line m is coplanar with lines k_1 and k_2.

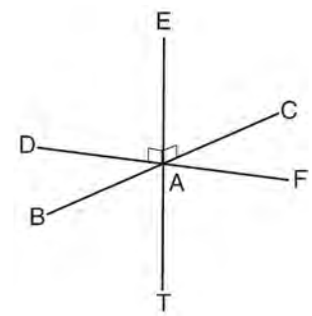
90 Lines *j* and *k* intersect at point *P*. Line *m* is drawn so that it is perpendicular to lines *j* and *k* at point *P*. Which statement is correct?
1 Lines *j* and *k* are in perpendicular planes.
2 Line *m* is in the same plane as lines *j* and *k*.
3 Line *m* is parallel to the plane containing lines *j* and *k*.
4 Line *m* is perpendicular to the plane containing lines *j* and *k*.

91 In plane $\mathcal{P}$, lines *m* and *n* intersect at point *A*. If line *k* is perpendicular to line *m* and line *n* at point *A*, then line *k* is
1 contained in plane $\mathcal{P}$
2 parallel to plane $\mathcal{P}$
3 perpendicular to plane $\mathcal{P}$
4 skew to plane $\mathcal{P}$

92 Lines *m* and *n* intersect at point *A*. Line *k* is perpendicular to both lines *m* and *n* at point *A*. Which statement *must* be true?
1 Lines *m*, *n*, and *k* are in the same plane.
2 Lines *m* and *n* are in two different planes.
3 Lines *m* and *n* are perpendicular to each other.
4 Line *k* is perpendicular to the plane containing lines *m* and *n*.

93 Lines *a* and *b* intersect at point *P*. Line *c* passes through *P* and is perpendicular to the plane containing lines *a* and *b*. Which statement must be true?
1 Lines *a*, *b*, and *c* are coplanar.
2 Line *a* is perpendicular to line *b*.
3 Line *c* is perpendicular to both line *a* and line *b*.
4 Line *c* is perpendicular to line *a* or line *b*, but not both.

94 As shown in the diagram below, $\overline{FD}$ and $\overline{CB}$ intersect at point *A* and $\overline{ET}$ is perpendicular to both $\overline{FD}$ and $\overline{CB}$ at *A*.



Which statement is *not* true?
1 $\overline{ET}$ is perpendicular to plane *BAD*.
2 $\overline{ET}$ is perpendicular to plane *FAB*.
3 $\overline{ET}$ is perpendicular to plane *CAD*.
4 $\overline{ET}$ is perpendicular to plane *BAT*.

G.G.2: PLANES

95 Point *P* is on line *m*. What is the total number of planes that are perpendicular to line *m* and pass through point *P*?
1 1
2 2
3 0
4 infinite

96 Point *P* lies on line *m*. Point *P* is also included in distinct planes $\mathcal{Q}$, $\mathcal{R}$, $\mathcal{S}$, and $\mathcal{T}$. At most, how many of these planes could be perpendicular to line *m*?
1 1
2 2
3 3
4 4

97 Point A is on line m. How many distinct planes will be perpendicular to line m and pass through point A?
1 one
2 two
3 zero
4 infinite

G.G.3: PLANES

98 Through a given point, P, on a plane, how many lines can be drawn that are perpendicular to that plane?
1 1
2 2
3 more than 2
4 none

99 Point A is not contained in plane $\mathcal{B}$. How many lines can be drawn through point A that will be perpendicular to plane $\mathcal{B}$?
1 one
2 two
3 zero
4 infinite

100 Point A lies in plane $\mathcal{B}$. How many lines can be drawn perpendicular to plane $\mathcal{B}$ through point A?
1 one
2 two
3 zero
4 infinite

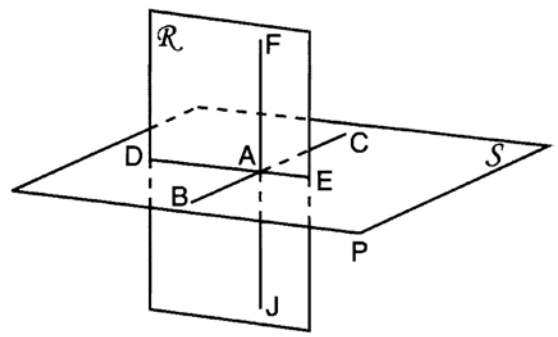
G.G.4: PLANES

101 If two different lines are perpendicular to the same plane, they are
1 collinear
2 coplanar
3 congruent
4 consecutive

G.G.5: PLANES

102 If $\overleftrightarrow{AB}$ is contained in plane $\mathcal{P}$, and $\overleftrightarrow{AB}$ is perpendicular to plane $\mathcal{R}$, which statement is true?
1 $\overleftrightarrow{AB}$ is parallel to plane $\mathcal{R}$.
2 Plane $\mathcal{P}$ is parallel to plane $\mathcal{R}$.
3 $\overleftrightarrow{AB}$ is perpendicular to plane $\mathcal{P}$.
4 Plane $\mathcal{P}$ is perpendicular to plane $\mathcal{R}$.

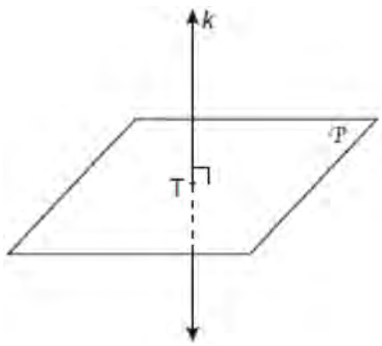
103 As shown in the diagram below, $\overline{FJ}$ is contained in plane $\mathcal{R}$, $\overline{BC}$ and $\overline{DE}$ are contained in plane $\mathcal{S}$, and $\overline{FJ}$, $\overline{BC}$, and $\overline{DE}$ intersect at A.



Which fact is sufficient to show that planes $\mathcal{R}$ and $\mathcal{S}$ are perpendicular?
1 $\overline{FA} \perp \overline{DE}$
2 $\overline{AD} \perp \overline{AF}$
3 $\overline{BC} \perp \overline{FJ}$
4 $\overline{DE} \perp \overline{BC}$

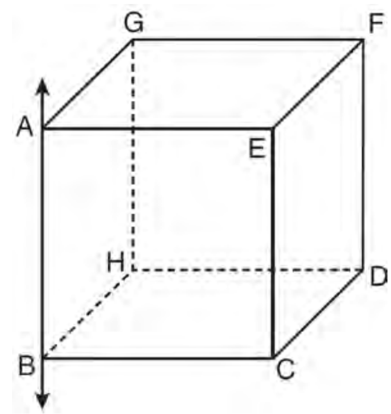
G.G.7: PLANES

104 In the diagram below, line k is perpendicular to plane $\mathcal{P}$ at point T.



Which statement is true?
1 Any point in plane $\mathcal{P}$ also will be on line k.
2 Only one line in plane $\mathcal{P}$ will intersect line k.
3 All planes that intersect plane $\mathcal{P}$ will pass through T.
4 Any plane containing line k is perpendicular to plane $\mathcal{P}$.

105 In the diagram below, $\overleftrightarrow{AB}$ is perpendicular to plane $AEFG$.



Which plane must be perpendicular to plane $AEFG$?
1 $ABCE$
2 $BCDH$
3 $CDFE$
4 $HDFG$

G.G.8: PLANES

106 In three-dimensional space, two planes are parallel and a third plane intersects both of the parallel planes. The intersection of the planes is a
1 plane
2 point
3 pair of parallel lines
4 pair of intersecting lines

107 Plane $\mathcal{A}$ is parallel to plane $\mathcal{B}$. Plane $\mathcal{C}$ intersects plane $\mathcal{A}$ in line m and intersects plane $\mathcal{B}$ in line n. Lines m and n are
1 intersecting
2 parallel
3 perpendicular
4 skew

G.G.9: PLANES

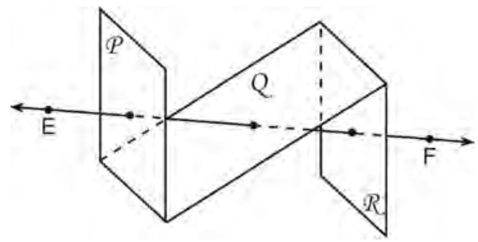
108 Line k is drawn so that it is perpendicular to two distinct planes, P and R. What must be true about planes P and R?
1 Planes P and R are skew.
2 Planes P and R are parallel.
3 Planes P and R are perpendicular.
4 Plane P intersects plane R but is not perpendicular to plane R.

109 A support beam between the floor and ceiling of a house forms a 90º angle with the floor. The builder wants to make sure that the floor and ceiling are parallel. Which angle should the support beam form with the ceiling?
1 45º
2 60º
3 90º
4 180º

110 Plane $\mathcal{R}$ is perpendicular to line k and plane $\mathcal{D}$ is perpendicular to line k. Which statement is correct?
1 Plane $\mathcal{R}$ is perpendicular to plane $\mathcal{D}$.
2 Plane $\mathcal{R}$ is parallel to plane $\mathcal{D}$.
3 Plane $\mathcal{R}$ intersects plane $\mathcal{D}$.
4 Plane $\mathcal{R}$ bisects plane $\mathcal{D}$.

111 If two distinct planes, $\mathcal{A}$ and $\mathcal{B}$, are perpendicular to line c, then which statement is true?
1 Planes $\mathcal{A}$ and $\mathcal{B}$ are parallel to each other.
2 Planes $\mathcal{A}$ and $\mathcal{B}$ are perpendicular to each other.
3 The intersection of planes $\mathcal{A}$ and $\mathcal{B}$ is a line parallel to line c.
4 The intersection of planes $\mathcal{A}$ and $\mathcal{B}$ is a line perpendicular to line c.

112 As shown in the diagram below, $\overleftrightarrow{EF}$ intersects planes $\mathcal{P}$, $\mathcal{Q}$, and $\mathcal{R}$.



If $\overleftrightarrow{EF}$ is perpendicular to planes $\mathcal{P}$ and $\mathcal{R}$, which statement must be true?
1 Plane $\mathcal{P}$ is perpendicular to plane $\mathcal{Q}$.
2 Plane $\mathcal{R}$ is perpendicular to plane $\mathcal{P}$.
3 Plane $\mathcal{P}$ is parallel to plane $\mathcal{Q}$.
4 Plane $\mathcal{R}$ is parallel to plane $\mathcal{P}$.

113 Plane $\mathcal{A}$ and plane $\mathcal{B}$ are two distinct planes that are both perpendicular to line ℓ. Which statement about planes $\mathcal{A}$ and $\mathcal{B}$ is true?
1 Planes $\mathcal{A}$ and $\mathcal{B}$ have a common edge, which forms a line.
2 Planes $\mathcal{A}$ and $\mathcal{B}$ are perpendicular to each other.
3 Planes $\mathcal{A}$ and $\mathcal{B}$ intersect each other at exactly one point.
4 Planes $\mathcal{A}$ and $\mathcal{B}$ are parallel to each other.

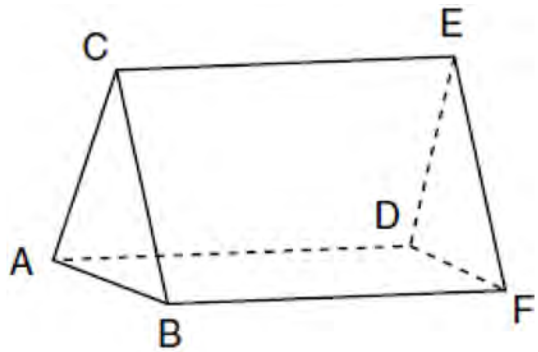
114 If line ℓ is perpendicular to distinct planes $\mathcal{P}$ and $\mathcal{Q}$, then planes $\mathcal{P}$ and $\mathcal{Q}$
1 are parallel
2 contain line ℓ
3 are perpendicular
4 intersect, but are *not* perpendicular

115 If distinct planes $\mathcal{R}$ and $\mathcal{S}$ are both perpendicular to line ℓ, which statement must always be true?

1 Plane $\mathcal{R}$ is parallel to plane $\mathcal{S}$.
2 Plane $\mathcal{R}$ is perpendicular to plane $\mathcal{S}$.
3 Planes $\mathcal{R}$ and $\mathcal{S}$ and line ℓ are all parallel.
4 The intersection of planes $\mathcal{R}$ and $\mathcal{S}$ is perpendicular to line ℓ.

G.G.10: SOLIDS

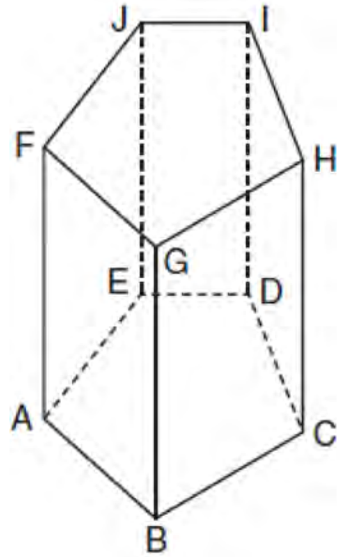
116 The figure in the diagram below is a triangular prism.



Which statement must be true?

1 $\overline{DE} \cong \overline{AB}$
2 $\overline{AD} \cong \overline{BC}$
3 $\overline{AD} \parallel \overline{CE}$
4 $\overline{DE} \parallel \overline{BC}$

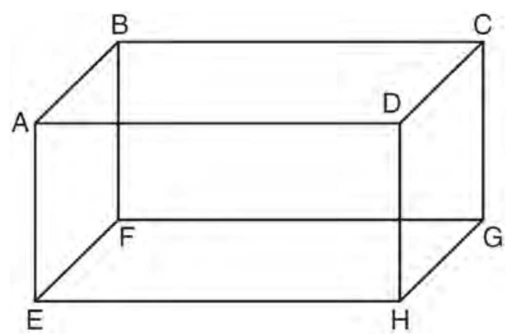
117 The diagram below shows a right pentagonal prism.



Which statement is always true?

1 $\overline{BC} \parallel \overline{ED}$
2 $\overline{FG} \parallel \overline{CD}$
3 $\overline{FJ} \parallel \overline{IH}$
4 $\overline{GB} \parallel \overline{HC}$

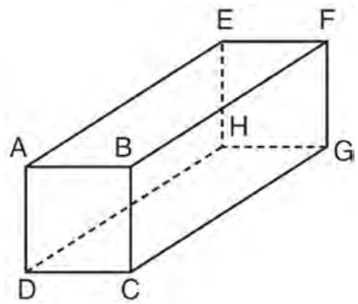
118 The diagram below shows a rectangular prism.



Which pair of edges are segments of lines that are coplanar?

1 $\overline{AB}$ and $\overline{DH}$
2 $\overline{AE}$ and $\overline{DC}$
3 $\overline{BC}$ and $\overline{EH}$
4 $\overline{CG}$ and $\overline{EF}$

119 The diagram below represents a rectangular solid.



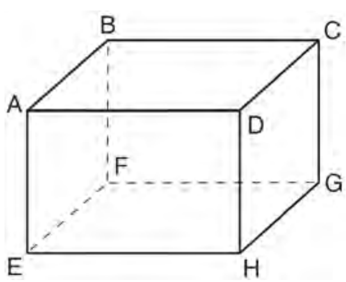
Which statement must be true?

1 $\overline{EH}$ and $\overline{BC}$ are coplanar
2 $\overline{FG}$ and $\overline{AB}$ are coplanar
3 $\overline{EH}$ and $\overline{AD}$ are skew
4 $\overline{FG}$ and $\overline{CG}$ are skew

120 The bases of a right triangular prism are $\triangle ABC$ and $\triangle DEF$. Angles A and D are right angles, $AB = 6$, $AC = 8$, and $AD = 12$. What is the length of edge $\overline{BE}$?

1 10
2 12
3 14
4 16

121 A rectangular right prism is shown in the diagram below.



Which pair of edges are *not* coplanar?

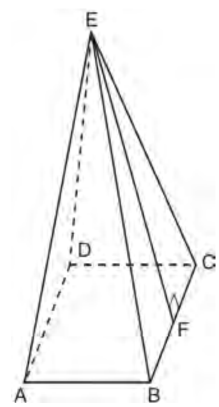
1 $\overline{BF}$ and $\overline{CG}$
2 $\overline{BF}$ and $\overline{DH}$
3 $\overline{EF}$ and $\overline{CD}$
4 $\overline{EF}$ and $\overline{BC}$

G.G.13: SOLIDS

122 The lateral faces of a regular pyramid are composed of

1 squares
2 rectangles
3 congruent right triangles
4 congruent isosceles triangles

123 As shown in the diagram below, a right pyramid has a square base, $ABCD$, and $\overline{EF}$ is the slant height.

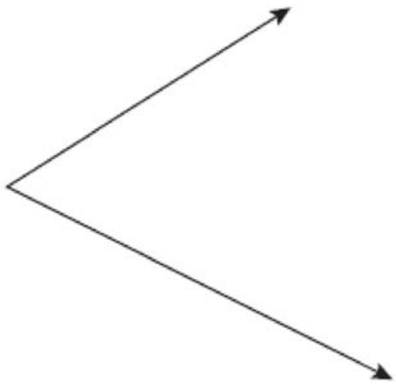


Which statement is *not* true?

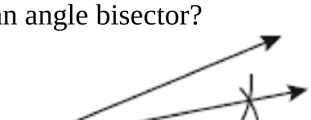
1 $\overline{EA} \cong \overline{EC}$
2 $\overline{EB} \cong \overline{EF}$
3 $\triangle AEB \cong \triangle BEC$
4 $\triangle CED$ is isosceles

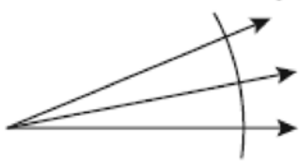
G.G.17: CONSTRUCTIONS

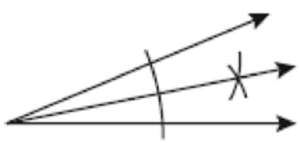
124 Using a compass and straightedge, construct the bisector of the angle shown below. [*Leave all construction marks*.]

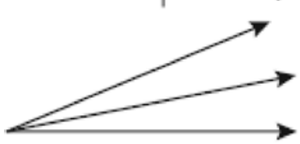


125 Which illustration shows the correct construction of an angle bisector?

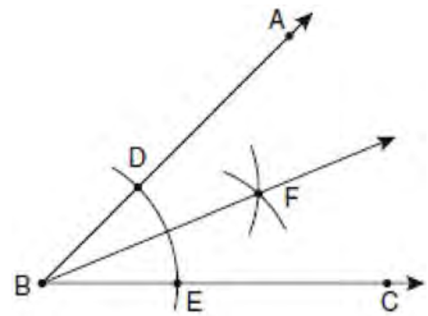
1 

2 

3 

4 

126 The diagram below shows the construction of the bisector of $\angle ABC$.



Which statement is *not* true?

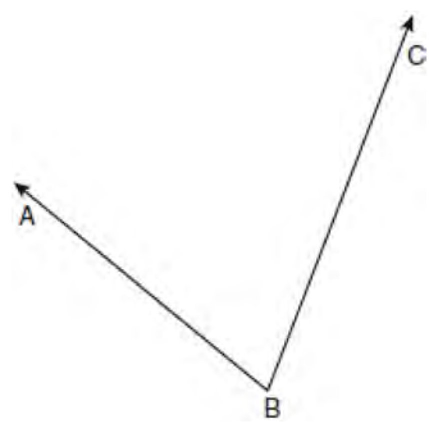
1 $m\angle EBF = \frac{1}{2} m\angle ABC$

2 $m\angle DBF = \frac{1}{2} m\angle ABC$

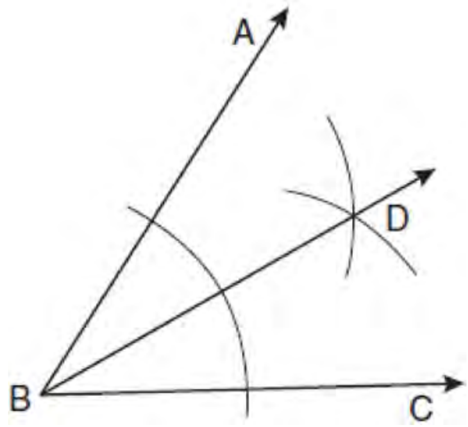
3 $m\angle EBF = m\angle ABC$

4 $m\angle DBF = m\angle EBF$

127 Using a compass and straightedge, construct the angle bisector of $\angle ABC$ shown below. [Leave all construction marks.]

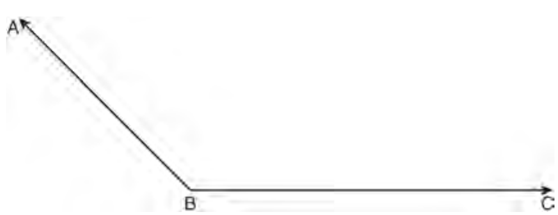


128 Based on the construction below, which statement must be true?

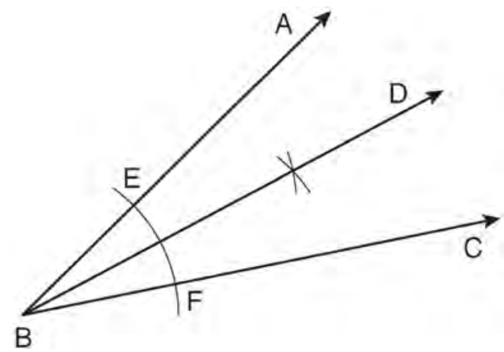


1 $m\angle ABD = \frac{1}{2} m\angle CBD$
2 $m\angle ABD = m\angle CBD$
3 $m\angle ABD = m\angle ABC$
4 $m\angle CBD = \frac{1}{2} m\angle ABD$

129 On the diagram below, use a compass and straightedge to construct the bisector of $\angle ABC$. [Leave all construction marks.]

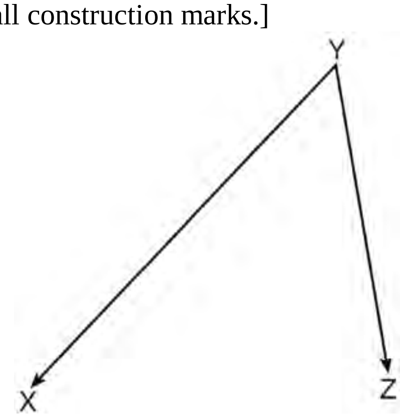


130 A straightedge and compass were used to create the construction below. Arc *EF* was drawn from point *B*, and arcs with equal radii were drawn from *E* and *F*.

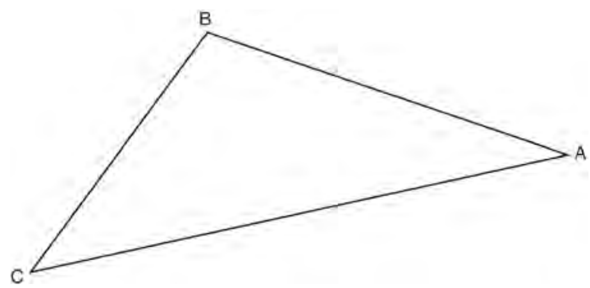


Which statement is *false*?
1 $m\angle ABD = m\angle DBC$
2 $\frac{1}{2}(m\angle ABC) = m\angle ABD$
3 $2(m\angle DBC) = m\angle ABC$
4 $2(m\angle ABC) = m\angle CBD$

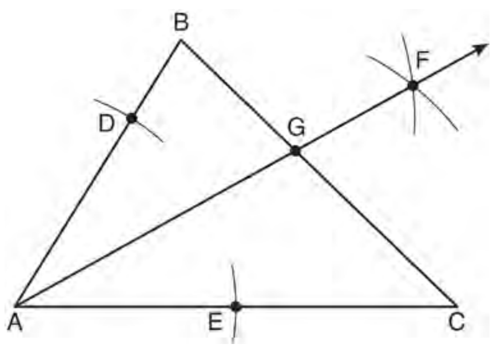
131 On the diagram below, use a compass and straightedge to construct the bisector of $\angle XYZ$. [Leave all construction marks.]



132 Using a compass and straightedge, construct the bisector of $\angle CBA$. [Leave all construction marks.]



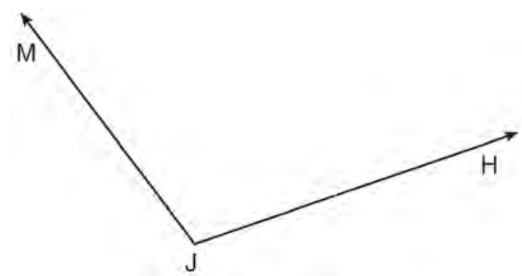
133 As shown in the diagram below of $\triangle ABC$, a compass is used to find points D and E, equidistant from point A. Next, the compass is used to find point F, equidistant from points D and E. Finally, a straightedge is used to draw $\overrightarrow{AF}$. Then, point G, the intersection of $\overrightarrow{AF}$ and side $\overline{BC}$ of $\triangle ABC$, is labeled.



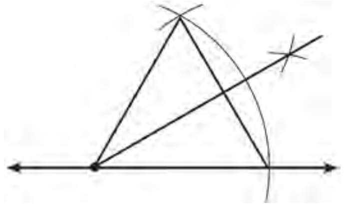
Which statement must be true?

1 $\overrightarrow{AF}$ bisects side $\overline{BC}$
2 $\overrightarrow{AF}$ bisects $\angle BAC$
3 $\overrightarrow{AF} \perp \overline{BC}$
4 $\triangle ABG \sim \triangle ACG$

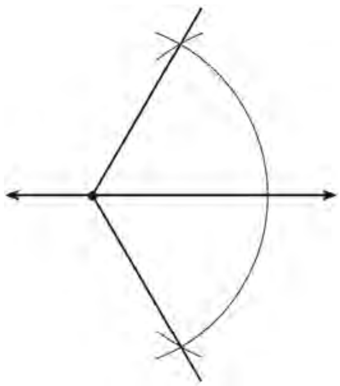
134 Using a compass and straightedge, construct the bisector of $\angle MJH$. [Leave all construction marks.]



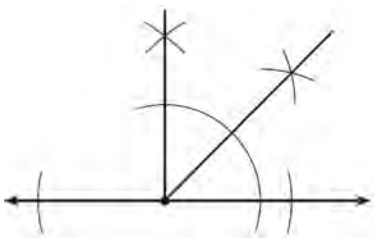
135 Which diagram shows the construction of a 45° angle?



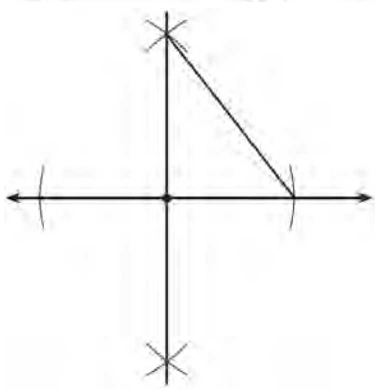
1



2



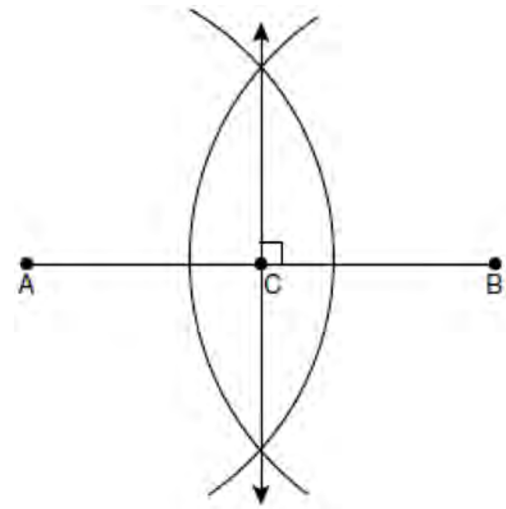
3



4

G.G.18: CONSTRUCTIONS

136 The diagram below shows the construction of the perpendicular bisector of $\overline{AB}$.



Which statement is *not* true?

1 $AC = CB$

2 $CB = \frac{1}{2}AB$

3 $AC = 2AB$

4 $AC + CB = AB$

137 One step in a construction uses the endpoints of $\overline{AB}$ to create arcs with the same radii. The arcs intersect above and below the segment. What is the relationship of $\overline{AB}$ and the line connecting the points of intersection of these arcs?

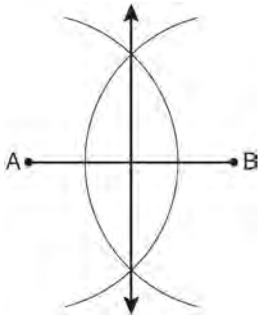
1 collinear

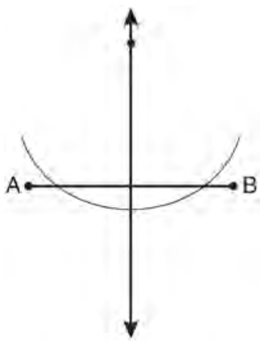
2 congruent

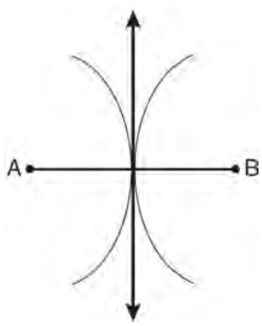
3 parallel

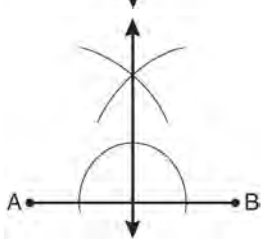
4 perpendicular

138 Which diagram shows the construction of the perpendicular bisector of $\overline{AB}$?

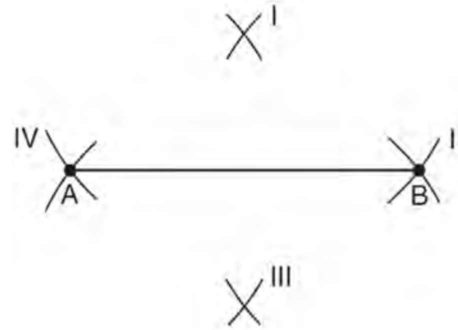
1 

2 

3 

4 

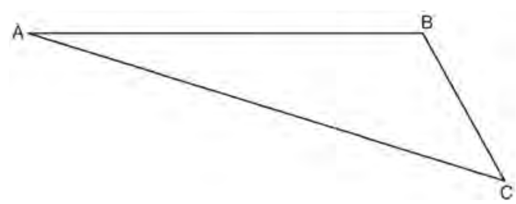
139 Line segment *AB* is shown in the diagram below.



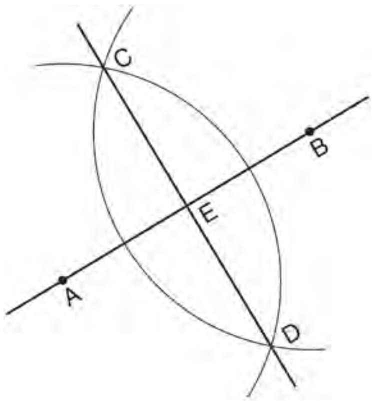
Which two sets of construction marks, labeled I, II, III, and IV, are part of the construction of the perpendicular bisector of line segment *AB*?

1 I and II
2 I and III
3 II and III
4 II and IV

140 On the diagram of ΔABC shown below, use a compass and straightedge to construct the perpendicular bisector of $\overline{AC}$. [Leave all construction marks.]

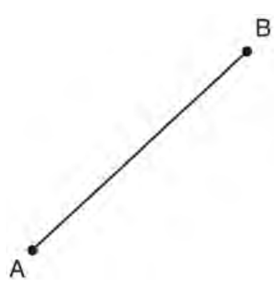


141 Based on the construction below, which conclusion is *not* always true?



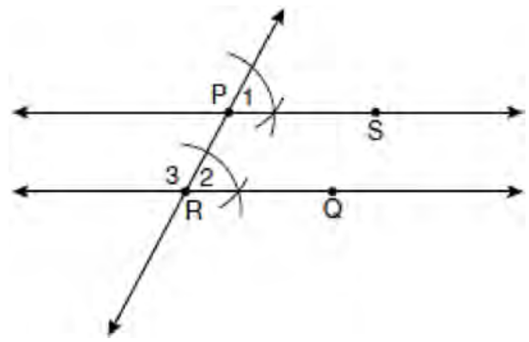
1 $\overline{AB} \perp \overline{CD}$
2 $AB = CD$
3 $AE = EB$
4 $CE = DE$

142 Using a compass and straightedge, construct the perpendicular bisector of $\overline{AB}$. [Leave all construction marks.]



G.G.19: CONSTRUCTIONS

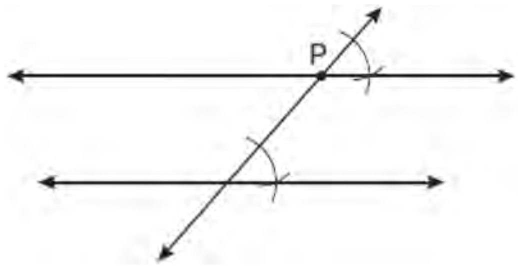
143 The diagram below illustrates the construction of $\overleftrightarrow{PS}$ parallel to $\overleftrightarrow{RQ}$ through point *P*.



Which statement justifies this construction?
1 $m\angle 1 = m\angle 2$
2 $m\angle 1 = m\angle 3$
3 $\overline{PR} \cong \overline{RQ}$
4 $\overline{PS} \cong \overline{RQ}$

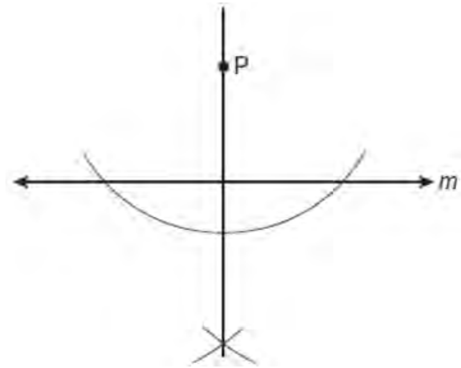
144 Using a compass and straightedge, construct a line that passes through point *P* and is perpendicular to line *m*. [Leave all construction marks.]

145 Which geometric principle is used to justify the construction below?



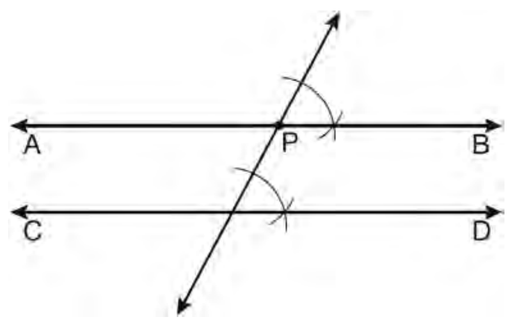
1 A line perpendicular to one of two parallel lines is perpendicular to the other.
2 Two lines are perpendicular if they intersect to form congruent adjacent angles.
3 When two lines are intersected by a transversal and alternate interior angles are congruent, the lines are parallel.
4 When two lines are intersected by a transversal and the corresponding angles are congruent, the lines are parallel.

146 The diagram below shows the construction of a line through point *P* perpendicular to line *m*.



Which statement is demonstrated by this construction?
1 If a line is parallel to a line that is perpendicular to a third line, then the line is also perpendicular to the third line.
2 The set of points equidistant from the endpoints of a line segment is the perpendicular bisector of the segment.
3 Two lines are perpendicular if they are equidistant from a given point.
4 Two lines are perpendicular if they intersect to form a vertical line.

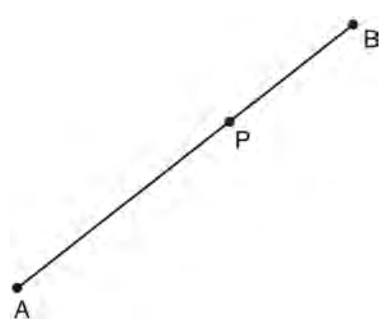
147 The diagram below shows the construction of $\overleftrightarrow{AB}$ through point P parallel to $\overleftrightarrow{CD}$.



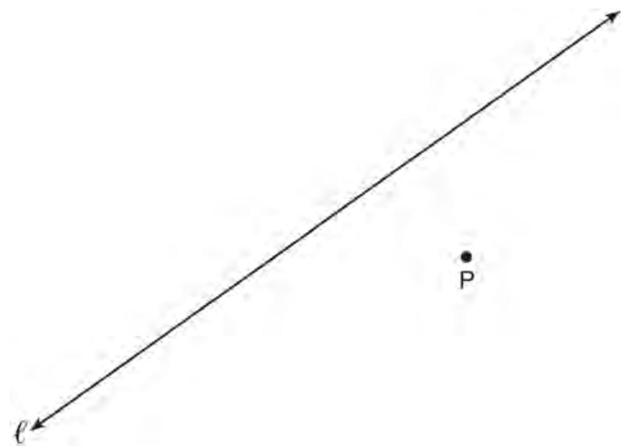
Which theorem justifies this method of construction?

1 If two lines in a plane are perpendicular to a transversal at different points, then the lines are parallel.
2 If two lines in a plane are cut by a transversal to form congruent corresponding angles, then the lines are parallel.
3 If two lines in a plane are cut by a transversal to form congruent alternate interior angles, then the lines are parallel.
4 If two lines in a plane are cut by a transversal to form congruent alternate exterior angles, then the lines are parallel.

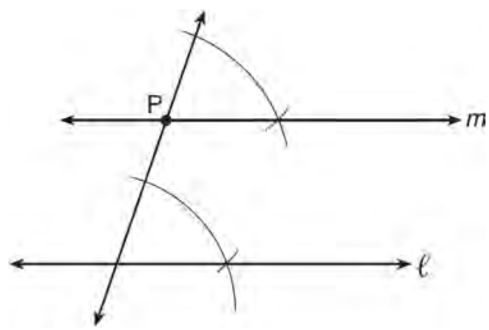
148 Using a compass and straightedge, construct a line perpendicular to $\overline{AB}$ through point P. [Leave all construction marks.]



149 Using a compass and straightedge, construct a line perpendicular to line ℓ through point P. [Leave all construction marks.]



150 The diagram below shows the construction of line *m*, parallel to line ℓ, through point *P*.



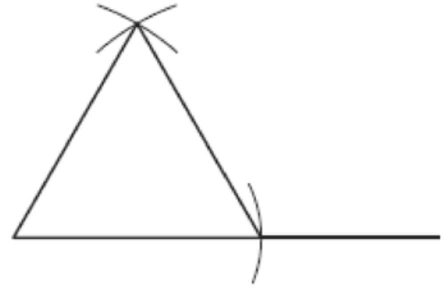
Which theorem was used to justify this construction?

1 If two lines are cut by a transversal and the alternate interior angles are congruent, the lines are parallel.
2 If two lines are cut by a transversal and the interior angles on the same side are supplementary, the lines are parallel.
3 If two lines are perpendicular to the same line, they are parallel.
4 If two lines are cut by a transversal and the corresponding angles are congruent, they are parallel.

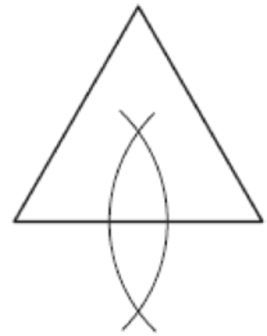
G.G.20: CONSTRUCTIONS

151 Using a compass and straightedge, and $\overline{AB}$ below, construct an equilateral triangle with all sides congruent to $\overline{AB}$. [Leave all construction marks.]

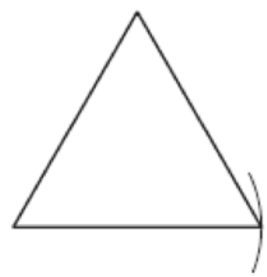
152 Which diagram shows the construction of an equilateral triangle?



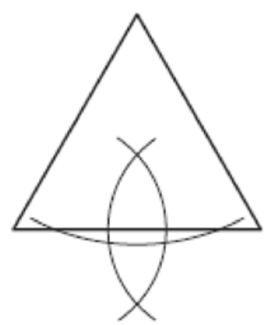
1



2



3

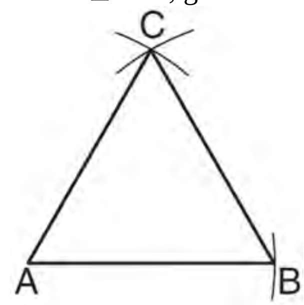


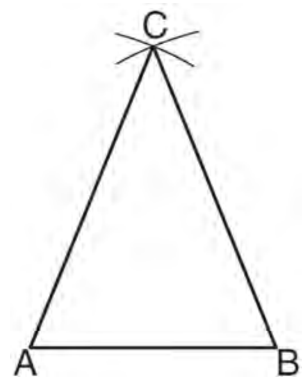
4

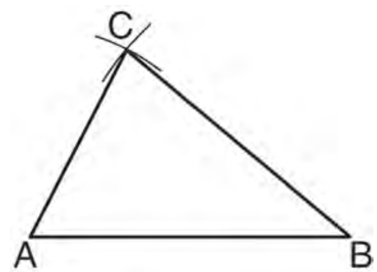
153 On the line segment below, use a compass and straightedge to construct equilateral triangle *ABC*. [Leave all construction marks.]

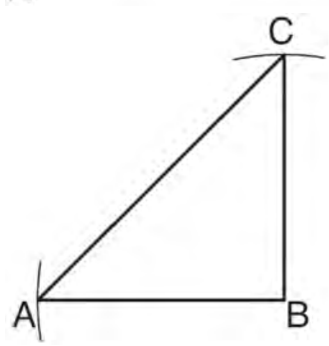
154 Using a compass and straightedge, on the diagram below of $\overleftrightarrow{RS}$, construct an equilateral triangle with $\overline{RS}$ as one side. [Leave all construction marks.]

155 Which diagram represents a correct construction of equilateral ΔABC, given side $\overline{AB}$?

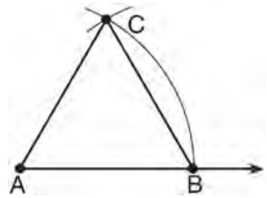
1


2


3


4


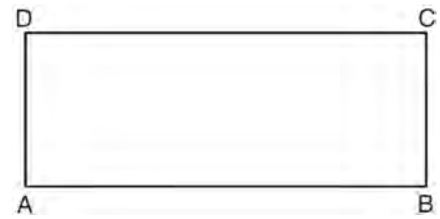
156 The diagram below shows the construction of an equilateral triangle.



Which statement justifies this construction?

1 $\angle A + \angle B + \angle C = 180$
2 $m\angle A = m\angle B = m\angle C$
3 $AB = AC = BC$
4 $AB + BC > AC$

157 On the ray drawn below, using a compass and straightedge, construct an equilateral triangle with a vertex at *R*. The length of a side of the triangle must be equal to a length of the diagonal of rectangle *ABCD*.



G.G.22: LOCUS

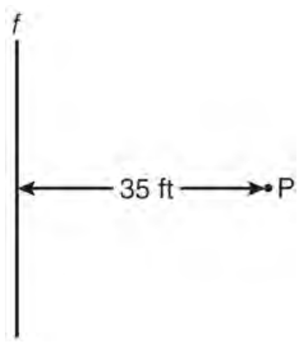
158 The length of $\overline{AB}$ is 3 inches. On the diagram below, sketch the points that are equidistant from *A* and *B* and sketch the points that are 2 inches from A. Label with an **X** all points that satisfy both conditions.

159 Towns *A* and *B* are 16 miles apart. How many points are 10 miles from town *A* and 12 miles from town *B*?
1 1
2 2
3 3
4 0

160 Two lines, $\overleftrightarrow{AB}$ and $\overleftrightarrow{CRD}$, are parallel and 10 inches apart. Sketch the locus of all points that are equidistant from $\overleftrightarrow{AB}$ and $\overleftrightarrow{CRD}$ and 7 inches from point *R*. Label with an **X** each point that satisfies both conditions.

161 In the diagram below, car A is parked 7 miles from car B. Sketch the points that are 4 miles from car A and sketch the points that are 4 miles from car B. Label with an **X** all points that satisfy both conditions.

162 A man wants to place a new bird bath in his yard so that it is 30 feet from a fence, f, and also 10 feet from a light pole, P. As shown in the diagram below, the light pole is 35 feet away from the fence.



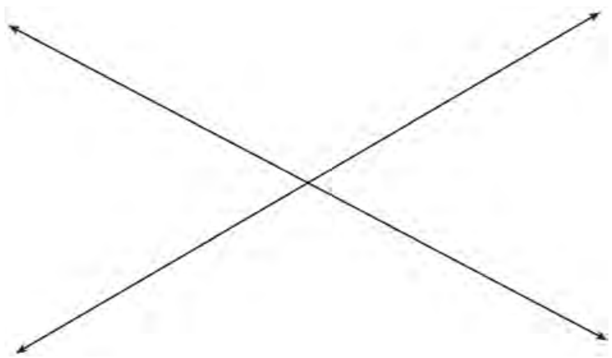
How many locations are possible for the bird bath?
1 1
2 2
3 3
4 0

163 In the diagram below, point M is located on $\overleftrightarrow{AB}$. Sketch the locus of points that are 1 unit from $\overleftrightarrow{AB}$ and the locus of points 2 units from point M. Label with an **X** all points that satisfy both conditions.

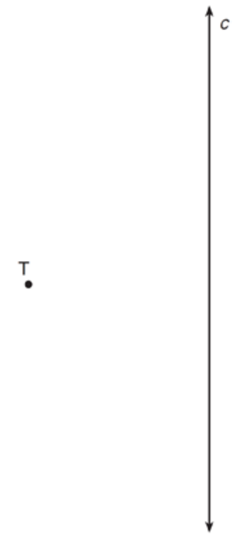
164 How many points are 5 units from a line and also equidistant from two points on the line?
1 1
2 2
3 3
4 0

165 In a park, two straight paths intersect. The city wants to install lampposts that are both equidistant from each path and also 15 feet from the intersection of the paths. How many lampposts are needed?
1 1
2 2
3 3
4 4

166 Two intersecting lines are shown in the diagram below. Sketch the locus of points that are equidistant from the two lines. Sketch the locus of points that are a given distance, *d*, from the point of intersection of the given lines. State the number of points that satisfy both conditions.

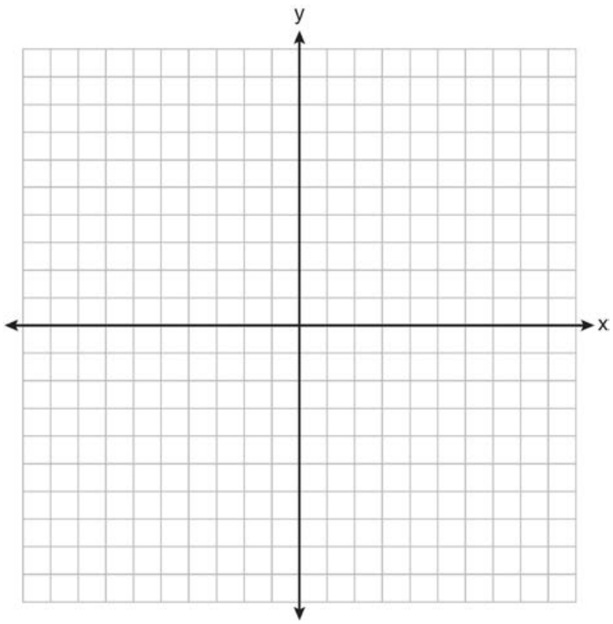


167 A tree, *T*, is 6 meters from a row of corn, *c*, as represented in the diagram below. A farmer wants to place a scarecrow 2 meters from the row of corn and also 5 meters from the tree. Sketch both loci. Indicate, with an **X**, all possible locations for the scarecrow.



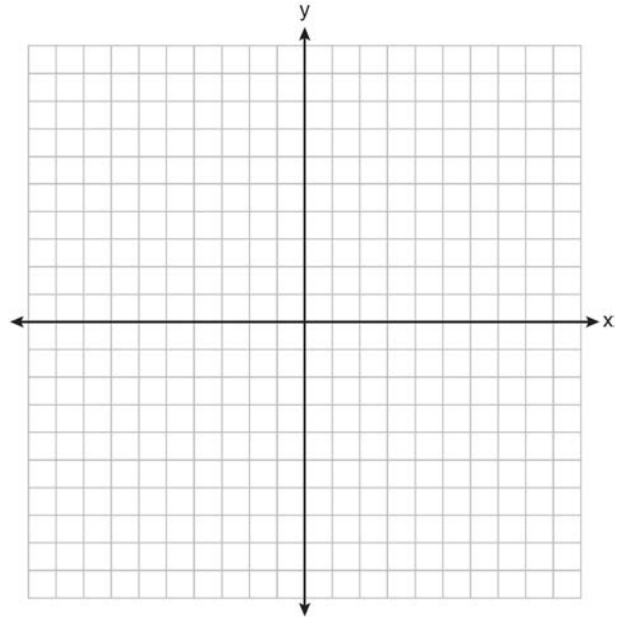
G.G.23: LOCUS

168 A city is planning to build a new park. The park must be equidistant from school A at $(3,3)$ and school B at $(3,-5)$. The park also must be exactly 5 miles from the center of town, which is located at the origin on the coordinate graph. Each unit on the graph represents 1 mile. On the set of axes below, sketch the compound loci and label with an **X** all possible locations for the new park.

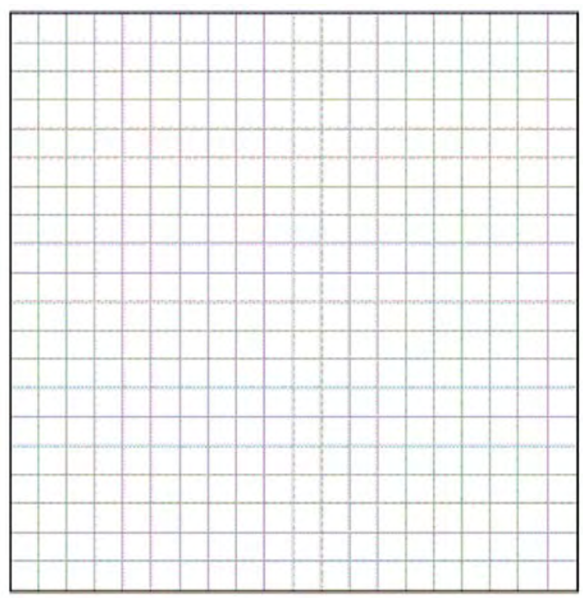


169 In a coordinate plane, how many points are both 5 units from the origin and 2 units from the x-axis?
1 1
2 2
3 3
4 4

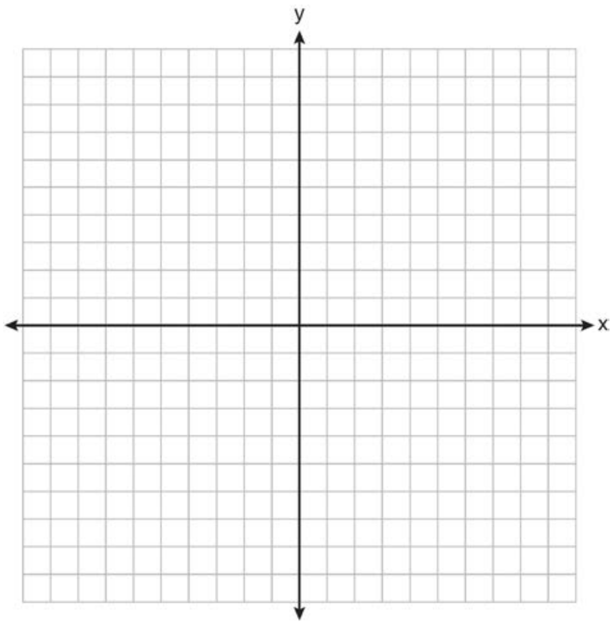
170 On the set of axes below, sketch the points that are 5 units from the origin and sketch the points that are 2 units from the line $y = 3$. Label with an **X** all points that satisfy both conditions.



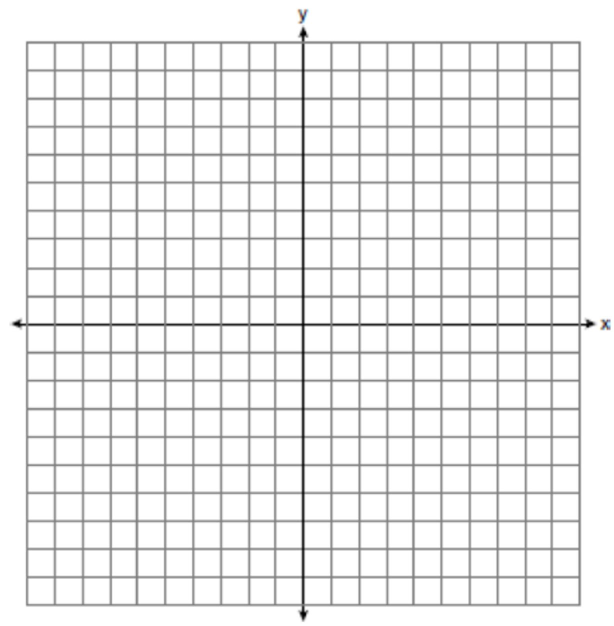
171 On the grid below, graph the points that are equidistant from both the x and y axes and the points that are 5 units from the origin. Label with an **X** all points that satisfy *both* conditions.



172 On the set of axes below, graph the locus of points that are four units from the point $(2, 1)$. On the same set of axes, graph the locus of points that are two units from the line $x = 4$. State the coordinates of all points that satisfy both conditions.



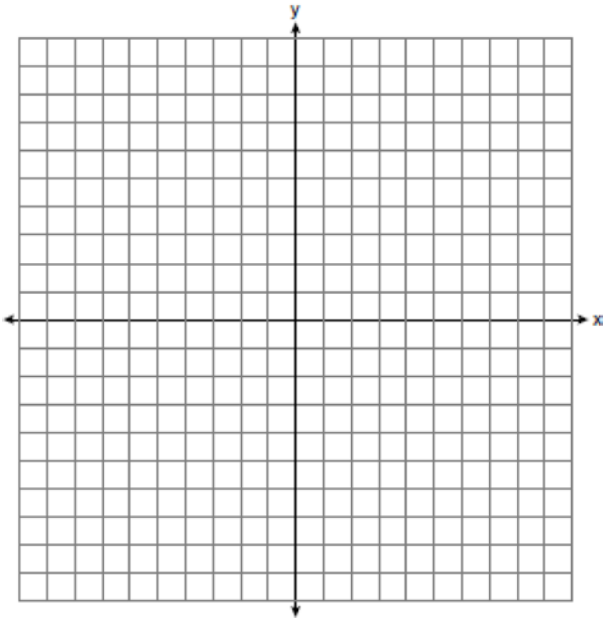
173 On the set of coordinate axes below, graph the locus of points that are equidistant from the lines $y = 6$ and $y = 2$ and also graph the locus of points that are 3 units from the y-axis. State the coordinates of *all* points that satisfy *both* conditions.



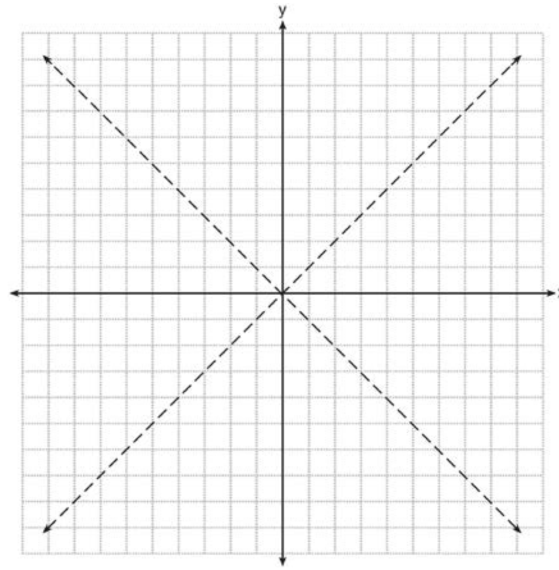
174 How many points are both 4 units from the origin and also 2 units from the line $y = 4$?

1 1
2 2
3 3
4 4

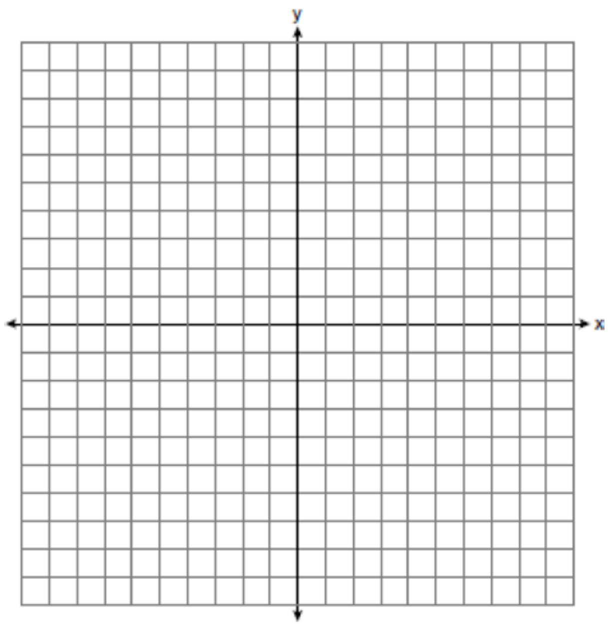
175 On the set of axes below, graph the locus of points that are 4 units from the line $x = 3$ and the locus of points that are 5 units from the point $(0, 2)$. Label with an **X** all points that satisfy both conditions.



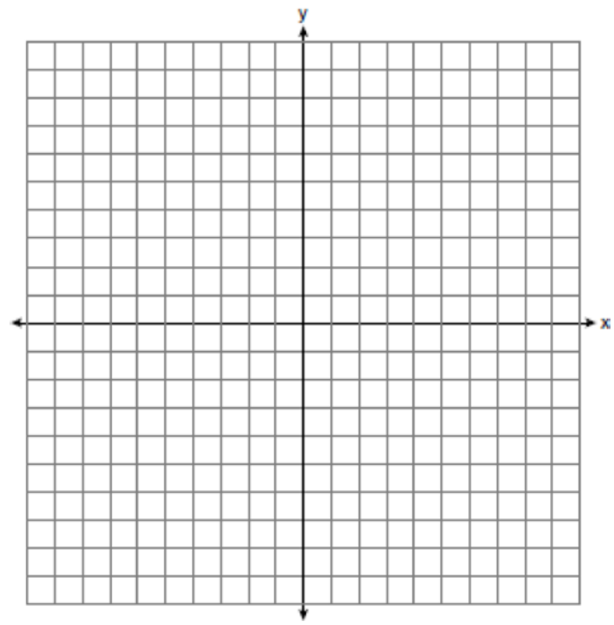
176 The graph below shows the locus of points equidistant from the *x*-axis and *y*-axis. On the same set of axes, graph the locus of points 3 units from the line $x = 0$. Label with an **X** *all* points that satisfy both conditions.



177 On the set of axes below, graph the locus of points 4 units from $(0, 1)$ and the locus of points 3 units from the origin. Label with an **X** *any* points that satisfy *both* conditions.



178 On the set of axes below, graph the locus of points 4 units from the x-axis and equidistant from the points whose coordinates are $(-2, 0)$ and $(8, 0)$. Mark with an **X** all points that satisfy *both* conditions.



179 In a coordinate plane, the locus of points 5 units from the x-axis is the

1 lines $x = 5$ and $x = -5$
2 lines $y = 5$ and $y = -5$
3 line $x = 5$, only
4 line $y = 5$, only

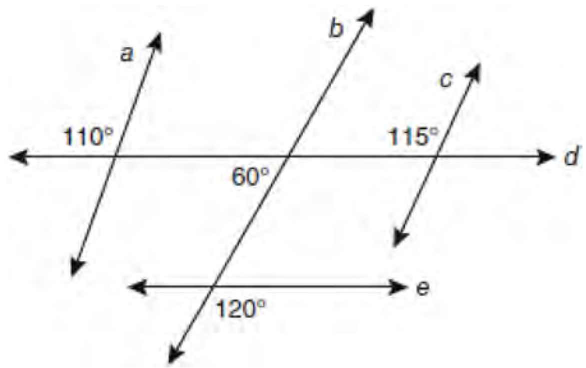
180 How many points in the coordinate plane are 3 units from the origin and also equidistant from both the x-axis and the y-axis?

1 1
2 2
3 8
4 4

ANGLES

G.G.35: PARALLEL LINES & TRANSVERSALS

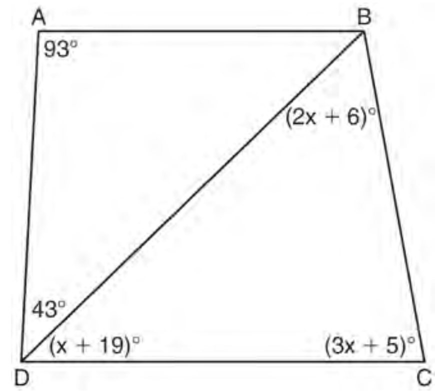
181 Based on the diagram below, which statement is true?



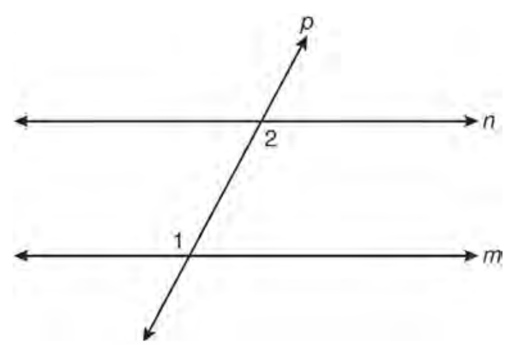
1 $a \parallel b$
2 $a \parallel c$
3 $b \parallel c$
4 $d \parallel e$

182 A transversal intersects two lines. Which condition would always make the two lines parallel?
1 Vertical angles are congruent.
2 Alternate interior angles are congruent.
3 Corresponding angles are supplementary.
4 Same-side interior angles are complementary.

183 In the diagram below of quadrilateral *ABCD* with diagonal $\overline{BD}$, $m\angle A = 93$, $m\angle ADB = 43$, $m\angle C = 3x + 5$, $m\angle BDC = x + 19$, and $m\angle DBC = 2x + 6$. Determine if $\overline{AB}$ is parallel to $\overline{DC}$. Explain your reasoning.

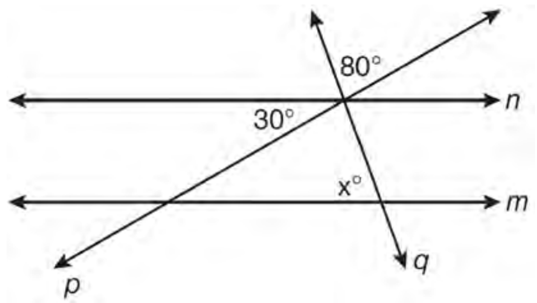


184 In the diagram below, line *p* intersects line *m* and line *n*.



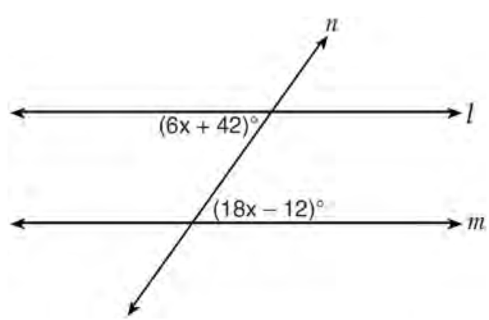
If $m\angle 1 = 7x$ and $m\angle 2 = 5x + 30$, lines *m* and *n* are parallel when *x* equals
1 12.5
2 15
3 87.5
4 105

185 In the diagram below, lines n and m are cut by transversals p and q.



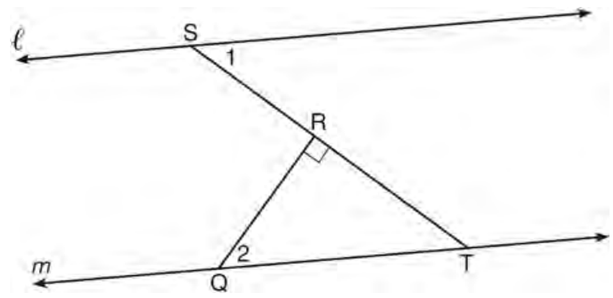
What value of x would make lines n and m parallel?
1 110
2 80
3 70
4 50

186 Line n intersects lines l and m, forming the angles shown in the diagram below.



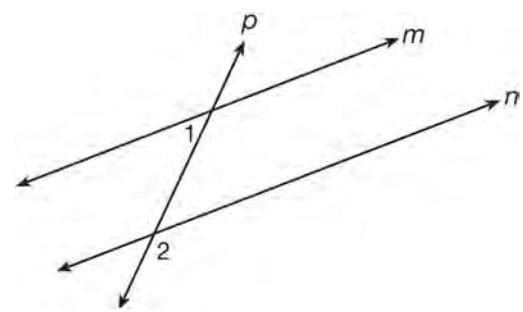
Which value of x would prove $l \parallel m$?
1 2.5
2 4.5
3 6.25
4 8.75

187 In the diagram below, $\ell \parallel m$ and $\overline{QR} \perp \overline{ST}$ at R.



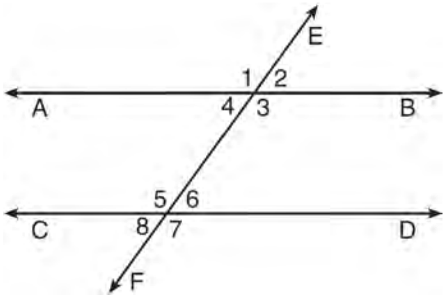
If $m\angle 1 = 63$, find $m\angle 2$.

188 As shown in the diagram below, lines m and n are cut by transversal p.



If $m\angle 1 = 4x + 14$ and $m\angle 2 = 8x + 10$, lines m and n are parallel when x equals
1 1
2 6
3 13
4 17

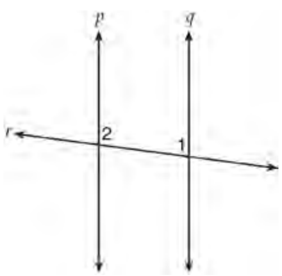
189 Transversal $\overleftrightarrow{EF}$ intersects $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$, as shown in the diagram below.



Which statement could always be used to prove $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$?

1 $\angle 2 \cong \angle 4$
2 $\angle 7 \cong \angle 8$
3 $\angle 3$ and $\angle 6$ are supplementary
4 $\angle 1$ and $\angle 5$ are supplementary

190 Lines p and q are intersected by line r, as shown below.



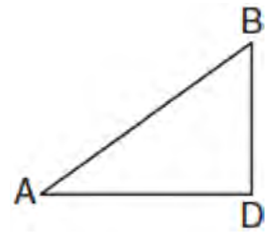
If $m\angle 1 = 7x - 36$ and $m\angle 2 = 5x + 12$, for which value of x would $p \parallel q$?

1 17
2 24
3 83
4 97

TRIANGLES

G.G.48: PYTHAGOREAN THEOREM

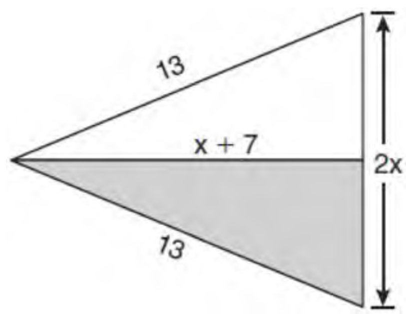
191 In the diagram below of $\triangle ADB$, $m\angle BDA = 90$, $AD = 5\sqrt{2}$, and $AB = 2\sqrt{15}$.



What is the length of $\overline{BD}$?

1 $\sqrt{10}$
2 $\sqrt{20}$
3 $\sqrt{50}$
4 $\sqrt{110}$

192 The diagram below shows a pennant in the shape of an isosceles triangle. The equal sides each measure 13, the altitude is $x + 7$, and the base is $2x$.

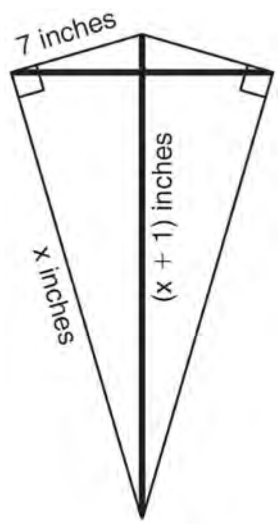


What is the length of the base?

1 5
2 10
3 12
4 24

193 Which set of numbers does *not* represent the sides of a right triangle?
1 $\{6, 8, 10\}$
2 $\{8, 15, 17\}$
3 $\{8, 24, 25\}$
4 $\{15, 36, 39\}$

194 As shown in the diagram below, a kite needs a vertical and a horizontal support bar attached at opposite corners. The upper edges of the kite are 7 inches, the side edges are x inches, and the vertical support bar is $(x+1)$ inches.



What is the measure, in inches, of the vertical support bar?
1 23
2 24
3 25
4 26

195 Which set of numbers could *not* represent the lengths of the sides of a right triangle?
1 $\{1, 3, \sqrt{10}\}$
2 $\{2, 3, 4\}$
3 $\{3, 4, 5\}$
4 $\{8, 15, 17\}$

G.G.30: INTERIOR AND EXTERIOR ANGLES OF TRIANGLES

196 Juliann plans on drawing $\triangle ABC$, where the measure of $\angle A$ can range from 50° to 60° and the measure of $\angle B$ can range from 90° to 100°. Given these conditions, what is the correct range of measures possible for $\angle C$?
1 20° to 40°
2 30° to 50°
3 80° to 90°
4 120° to 130°

197 In an equilateral triangle, what is the difference between the sum of the exterior angles and the sum of the interior angles?
1 180°
2 120°
3 90°
4 60°

198 The degree measures of the angles of $\triangle ABC$ are represented by x, $3x$, and $5x - 54$. Find the value of x.

199 In $\triangle ABC$, $m\angle A = x$, $m\angle B = 2x + 2$, and $m\angle C = 3x + 4$. What is the value of x?
1 29
2 31
3 59
4 61

200 In right $\triangle DEF$, $m\angle D = 90$ and $m\angle F$ is 12 degrees less than twice $m\angle E$. Find $m\angle E$.

201 In $\triangle DEF$, $m\angle D = 3x + 5$, $m\angle E = 4x - 15$, and $m\angle F = 2x + 10$. Which statement is true?
1 $DF = FE$
2 $DE = FE$
3 $m\angle E = m\angle F$
4 $m\angle D = m\angle F$

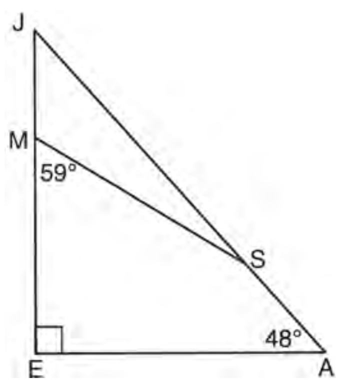
202 Triangle PQR has angles in the ratio of $2:3:5$. Which type of triangle is ΔPQR?

1 acute
2 isosceles
3 obtuse
4 right

203 The angles of triangle ABC are in the ratio of $8:3:4$. What is the measure of the *smallest* angle?

1 12º
2 24º
3 36º
4 72º

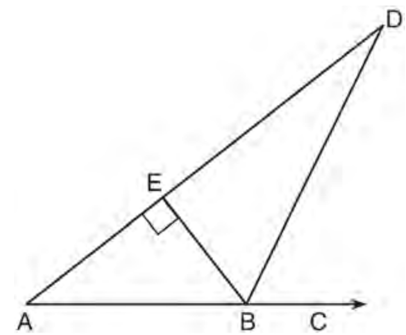
204 In the diagram of ΔJEA below, $m\angle JEA = 90$ and $m\angle EAJ = 48$. Line segment MS connects points M and S on the triangle, such that $m\angle EMS = 59$.



What is $m\angle JSM$?

1 163
2 121
3 42
4 17

205 The diagram below shows ΔABD, with $\overrightarrow{ABC}$, $\overline{BE} \perp \overline{AD}$, and $\angle EBD \cong \angle CBD$.



If $m\angle ABE = 52$, what is $m\angle D$?

1 26
2 38
3 52
4 64

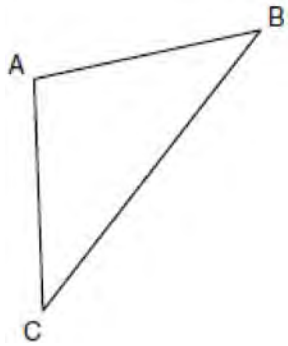
206 In ΔABC, $m\angle A = 3x + 1$, $m\angle B = 4x - 17$, and $m\angle C = 5x - 20$. Which type of triangle is ΔABC?

1 right
2 scalene
3 isosceles
4 equilateral

207 In ΔABC, the measure of angle A is fifteen less than twice the measure of angle B. The measure of angle C equals the sum of the measures of angle A and angle B. Determine the measure of angle B.

G.G.31: ISOSCELES TRIANGLE THEOREM

208 In the diagram of $\triangle ABC$ below, $\overline{AB} \cong \overline{AC}$. The measure of $\angle B$ is 40°.



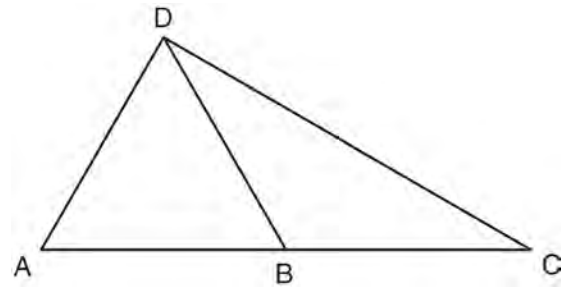
What is the measure of $\angle A$?
1 40°
2 50°
3 70°
4 100°

209 In $\triangle ABC$, $\overline{AB} \cong \overline{BC}$. An altitude is drawn from B to $\overline{AC}$ and intersects $\overline{AC}$ at D. Which conclusion is *not* always true?
1 $\angle ABD \cong \angle CBD$
2 $\angle BDA \cong \angle BDC$
3 $\overline{AD} \cong \overline{BD}$
4 $\overline{AD} \cong \overline{DC}$

210 In $\triangle RST$, $m\angle RST = 46$ and $\overline{RS} \cong \overline{ST}$. Find $m\angle STR$.

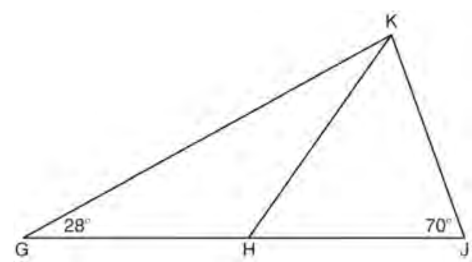
211 In isosceles triangle ABC, $AB = BC$. Which statement will always be true?
1 $m\angle B = m\angle A$
2 $m\angle A > m\angle B$
3 $m\angle A = m\angle C$
4 $m\angle C < m\angle B$

212 In the diagram below of $\triangle ACD$, B is a point on $\overline{AC}$ such that $\triangle ADB$ is an equilateral triangle, and $\triangle DBC$ is an isosceles triangle with $\overline{DB} \cong \overline{BC}$. Find $m\angle C$.

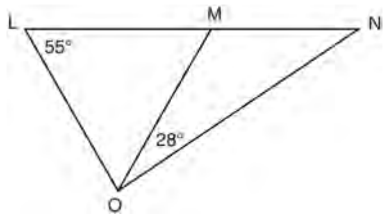


213 If the vertex angles of two isosceles triangles are congruent, then the triangles must be
1 acute
2 congruent
3 right
4 similar

214 In the diagram below of $\triangle GJK$, H is a point on $\overline{GJ}$, $\overline{HJ} \cong \overline{JK}$, $m\angle G = 28$, and $m\angle GJK = 70$. Determine whether $\triangle GHK$ is an isosceles triangle and justify your answer.

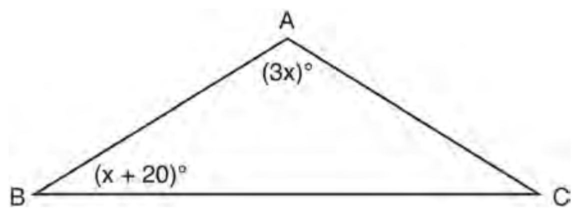


215 In the diagram below, ΔLMO is isosceles with $LO = MO$.



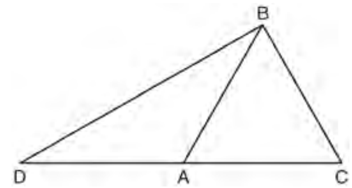
If $m\angle L = 55$ and $m\angle NOM = 28$, what is $m\angle N$?
1 27
2 28
3 42
4 70

216 In the diagram below of ΔABC, $\overline{AB} \cong \overline{AC}$, $m\angle A = 3x$, and $m\angle B = x + 20$.



What is the value of x?
1 10
2 28
3 32
4 40

217 In the diagram of ΔBCD shown below, $\overline{BA}$ is drawn from vertex B to point A on $\overline{DC}$, such that $\overline{BC} \cong \overline{BA}$.

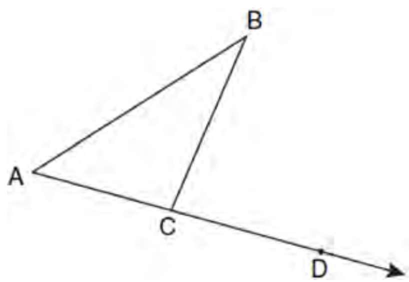


In ΔDAB, $m\angle D = x$, $m\angle DAB = 5x - 30$, and $m\angle DBA = 3x - 60$. In ΔABC, $AB = 6y - 8$ and $BC = 4y - 2$. [Only algebraic solutions can receive full credit.] Find $m\angle D$. Find $m\angle BAC$. Find the length of $\overline{BC}$. Find the length of $\overline{DC}$.

G.G.32: EXTERIOR ANGLE THEOREM

218 Side $\overline{PQ}$ of ΔPQR is extended through Q to point T. Which statement is *not* always true?
1 $m\angle RQT > m\angle R$
2 $m\angle RQT > m\angle P$
3 $m\angle RQT = m\angle P + m\angle R$
4 $m\angle RQT > m\angle PQR$

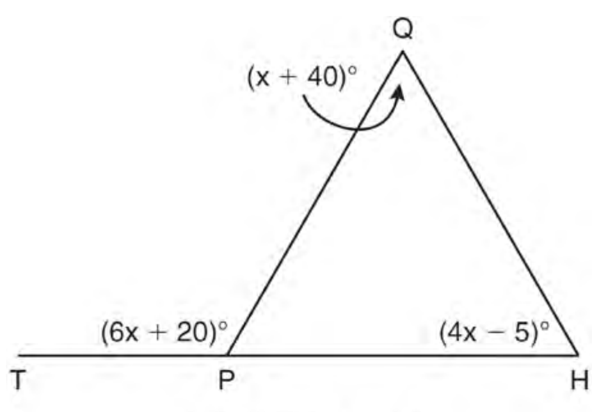
219 In the diagram below, $\triangle ABC$ is shown with $\overline{AC}$ extended through point D.



If $m\angle BCD = 6x + 2$, $m\angle BAC = 3x + 15$, and $m\angle ABC = 2x - 1$, what is the value of x?

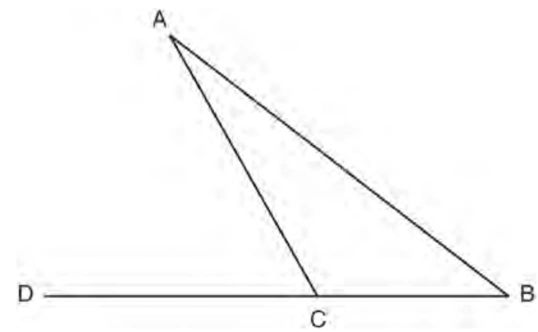
1 12
2 $14\frac{10}{11}$
3 16
4 $18\frac{1}{9}$

220 In the diagram below of $\triangle HQP$, side $\overline{HP}$ is extended through P to T, $m\angle QPT = 6x + 20$, $m\angle HQP = x + 40$, and $m\angle PHQ = 4x - 5$. Find $m\angle QPT$.



(Not drawn to scale)

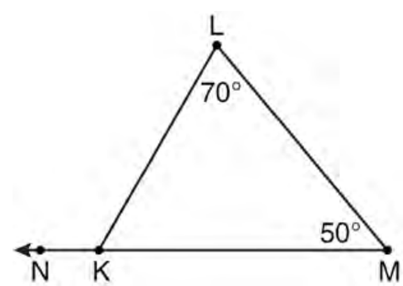
221 In the diagram below of $\triangle ABC$, side $\overline{BC}$ is extended to point D, $m\angle A = x$, $m\angle B = 2x + 15$, and $m\angle ACD = 5x + 5$.



What is $m\angle B$?

1 5
2 20
3 25
4 55

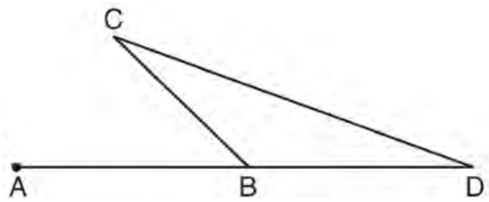
222 In the diagram of $\triangle KLM$ below, $m\angle L = 70$, $m\angle M = 50$, and $\overline{MK}$ is extended through N.



What is the measure of $\angle LKN$?

1 60º
2 120º
3 180º
4 300º

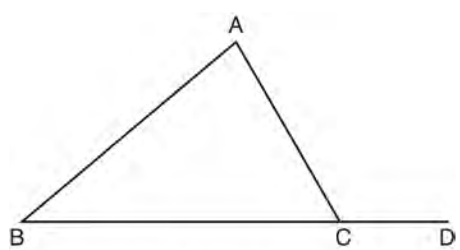
223 In the diagram below of $\triangle BCD$, side $\overline{DB}$ is extended to point A.



Which statement must be true?
1 $m\angle C > m\angle D$
2 $m\angle ABC < m\angle D$
3 $m\angle ABC > m\angle C$
4 $m\angle ABC > m\angle C + m\angle D$

224 In $\triangle FGH$, $m\angle F = 42$ and an exterior angle at vertex H has a measure of 104. What is $m\angle G$?
1 34
2 62
3 76
4 146

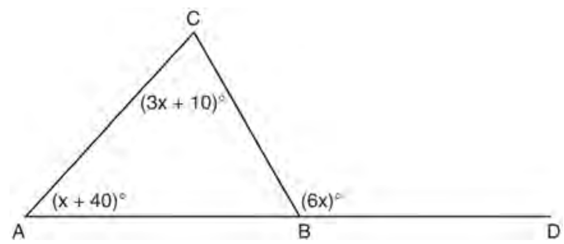
225 In the diagram below of $\triangle ABC$, $\overline{BC}$ is extended to D.



(Not drawn to scale)

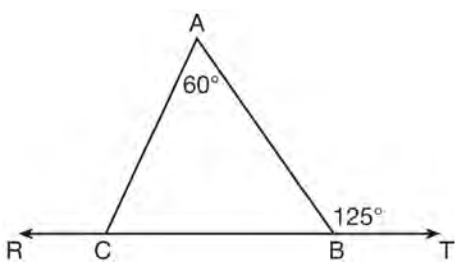
If $m\angle A = x^2 - 6x$, $m\angle B = 2x - 3$, and $m\angle ACD = 9x + 27$, what is the value of x?
1 10
2 2
3 3
4 15

226 In the diagram of $\triangle ABC$ below, $\overline{AB}$ is extended to point D.



If $m\angle CAB = x + 40$, $m\angle ACB = 3x + 10$, $m\angle CBD = 6x$, what is $m\angle CAB$?
1 13
2 25
3 53
4 65

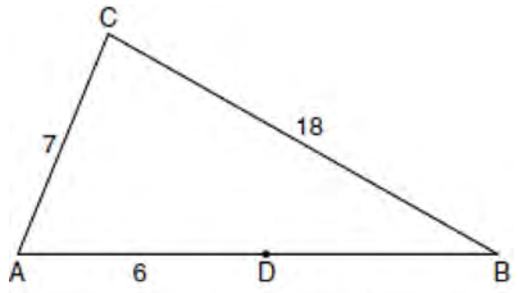
227 In the diagram below, $\overleftrightarrow{RCBT}$ and $\triangle ABC$ are shown with $m\angle A = 60$ and $m\angle ABT = 125$.



What is $m\angle ACR$?
1 125
2 115
3 65
4 55

G.G.33: TRIANGLE INEQUALITY THEOREM

228 In the diagram below of ΔABC, D is a point on $\overline{AB}$, $AC = 7$, $AD = 6$, and $BC = 18$.



(Not drawn to scale)

The length of $\overline{DB}$ could be
1 5
2 12
3 19
4 25

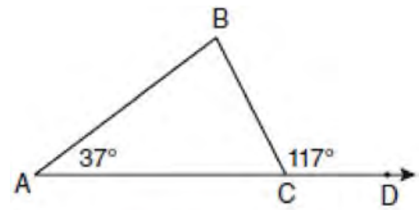
229 Which set of numbers represents the lengths of the sides of a triangle?
1 $\{5, 18, 13\}$
2 $\{6, 17, 22\}$
3 $\{16, 24, 7\}$
4 $\{26, 8, 15\}$

230 In ΔABC, $AB = 5$ feet and $BC = 3$ feet. Which inequality represents all possible values for the length of $\overline{AC}$, in feet?
1 $2 \le AC \le 8$
2 $2 < AC < 8$
3 $3 \le AC \le 7$
4 $3 < AC < 7$

G.G.34: ANGLE SIDE RELATIONSHIP

231 In ΔABC, $m\angle A = 95$, $m\angle B = 50$, and $m\angle C = 35$. Which expression correctly relates the lengths of the sides of this triangle?
1 $AB < BC < CA$
2 $AB < AC < BC$
3 $AC < BC < AB$
4 $BC < AC < AB$

232 In the diagram below of ΔABC with side $\overline{AC}$ extended through D, $m\angle A = 37$ and $m\angle BCD = 117$. Which side of ΔABC is the longest side? Justify your answer.



(Not drawn to scale)

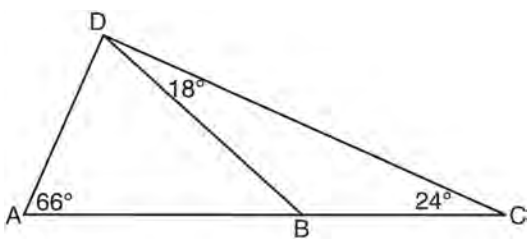
233 In ΔPQR, $PQ = 8$, $QR = 12$, and $RP = 13$. Which statement about the angles of ΔPQR must be true?
1 $m\angle Q > m\angle P > m\angle R$
2 $m\angle Q > m\angle R > m\angle P$
3 $m\angle R > m\angle P > m\angle Q$
4 $m\angle P > m\angle R > m\angle Q$

234 In ΔABC, $AB = 7$, $BC = 8$, and $AC = 9$. Which list has the angles of ΔABC in order from smallest to largest?
1 $\angle A, \angle B, \angle C$
2 $\angle B, \angle A, \angle C$
3 $\angle C, \angle B, \angle A$
4 $\angle C, \angle A, \angle B$

235 In scalene triangle ABC, m$\angle B = 45$ and m$\angle C = 55$. What is the order of the sides in length, from longest to shortest?
1 $\overline{AB}$, $\overline{BC}$, $\overline{AC}$
2 $\overline{BC}$, $\overline{AC}$, $\overline{AB}$
3 $\overline{AC}$, $\overline{BC}$, $\overline{AB}$
4 $\overline{BC}$, $\overline{AB}$, $\overline{AC}$

236 In $\triangle RST$, m$\angle R = 58$ and m$\angle S = 73$. Which inequality is true?
1 $RT < TS < RS$
2 $RS < RT < TS$
3 $RT < RS < TS$
4 $RS < TS < RT$

237 As shown in the diagram of $\triangle ACD$ below, B is a point on $\overline{AC}$ and $\overline{DB}$ is drawn.



If m$\angle A = 66$, m$\angle CDB = 18$, and m$\angle C = 24$, what is the longest side of $\triangle ABD$?
1 $\overline{AB}$
2 $\overline{DC}$
3 $\overline{AD}$
4 $\overline{BD}$

238 In $\triangle ABC$, m$\angle A = x^2 + 12$, m$\angle B = 11x + 5$, and m$\angle C = 13x - 17$. Determine the longest side of $\triangle ABC$.

239 In $\triangle ABC$, m$\angle A = 60$, m$\angle B = 80$, and m$\angle C = 40$. Which inequality is true?
1 $AB > BC$
2 $AC > BC$
3 $AC < BA$
4 $BC < BA$

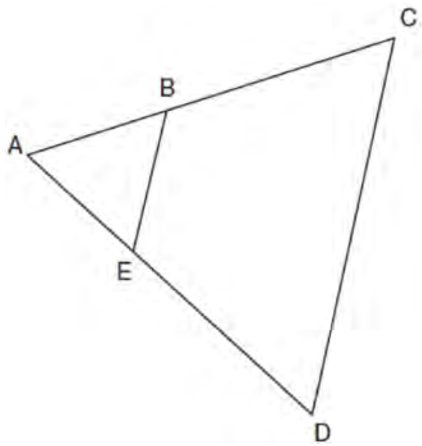
240 In $\triangle ABC$, $\angle A \cong \angle B$ and $\angle C$ is an obtuse angle. Which statement is true?
1 $\overline{AC} \cong \overline{AB}$ and $\overline{BC}$ is the longest side.
2 $\overline{AC} \cong \overline{BC}$ and $\overline{AB}$ is the longest side.
3 $\overline{AC} \cong \overline{AB}$ and $\overline{BC}$ is the shortest side.
4 $\overline{AC} \cong \overline{BC}$ and $\overline{AB}$ is the shortest side.

241 For which measures of the sides of $\triangle ABC$ is angle B the largest angle of the triangle?
1 $AB = 2$, $BC = 6$, $AC = 7$
2 $AB = 6$, $BC = 12$, $AC = 8$
3 $AB = 16$, $BC = 9$, $AC = 10$
4 $AB = 18$, $BC = 14$, $AC = 5$

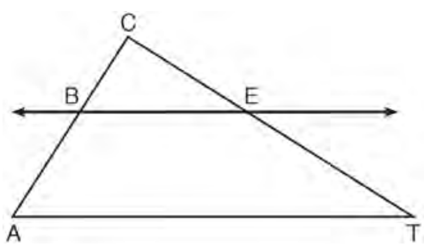
G.G.46: SIDE SPLITTER THEOREM

242 In $\triangle ABC$, point D is on $\overline{AB}$, and point E is on $\overline{BC}$ such that $\overline{DE} \parallel \overline{AC}$. If $DB = 2$, $DA = 7$, and $DE = 3$, what is the length of $\overline{AC}$?
1 8
2 9
3 10.5
4 13.5

243 In the diagram below of ΔACD, E is a point on $\overline{AD}$ and B is a point on $\overline{AC}$, such that $\overline{EB} \parallel \overline{DC}$. If $AE = 3$, $ED = 6$, and $DC = 15$, find the length of $\overline{EB}$.

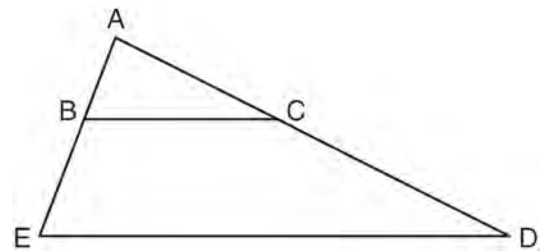


244 In the diagram below of ΔACT, $\overleftrightarrow{BE} \parallel \overline{AT}$.

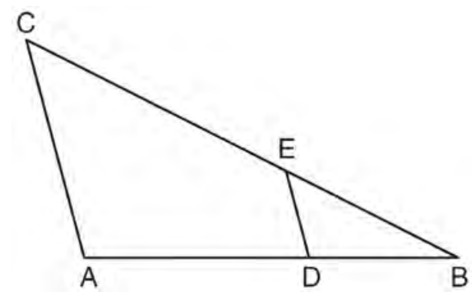


If $CB = 3$, $CA = 10$, and $CE = 6$, what is the length of $\overline{ET}$?
1 5
2 14
3 20
4 26

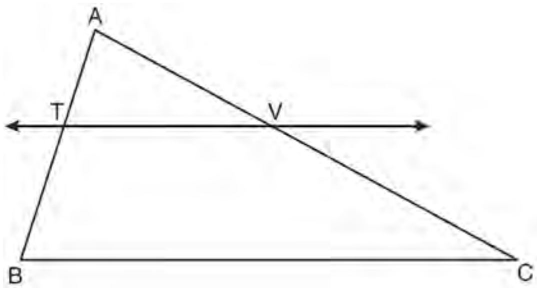
245 In the diagram below of ΔADE, B is a point on $\overline{AE}$ and C is a point on $\overline{AD}$ such that $\overline{BC} \parallel \overline{ED}$, $AC = x - 3$, $BE = 20$, $AB = 16$, and $AD = 2x + 2$. Find the length of $\overline{AC}$.



246 In the diagram below of ΔABC, D is a point on $\overline{AB}$, E is a point on $\overline{BC}$, $\overline{AC} \parallel \overline{DE}$, $CE = 25$ inches, $AD = 18$ inches, and $DB = 12$ inches. Find, to the *nearest tenth of an inch*, the length of $\overline{EB}$.



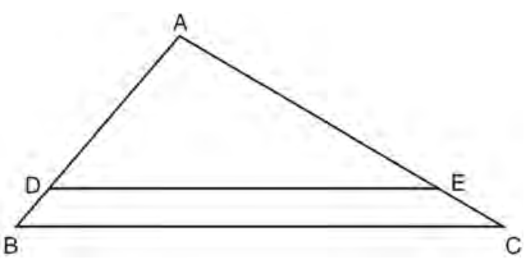
247 In the diagram below of $\triangle ABC$, $\overleftrightarrow{TV} \parallel \overline{BC}$, $AT = 5$, $TB = 7$, and $AV = 10$.



What is the length of $\overline{VC}$?

1 $3\frac{1}{2}$
2 $7\frac{1}{7}$
3 14
4 24

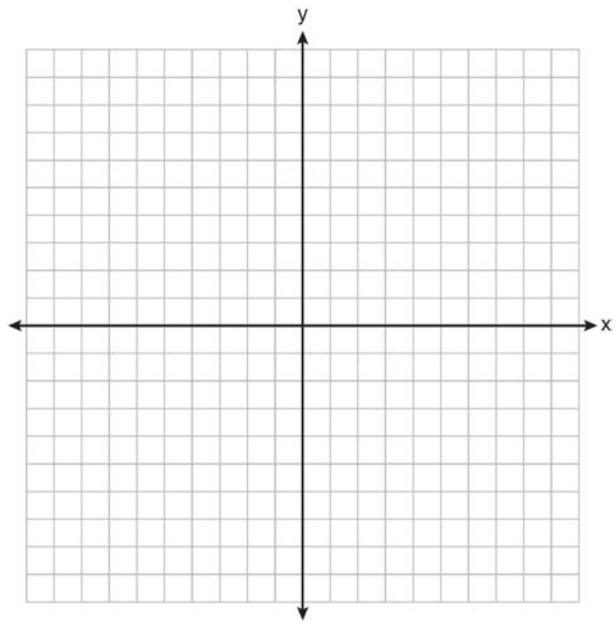
248 In the diagram of $\triangle ABC$ shown below, $\overline{DE} \parallel \overline{BC}$.



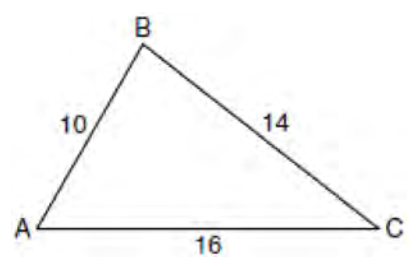
If $AB = 10$, $AD = 8$, and $AE = 12$, what is the length of $\overline{EC}$?
1 6
2 2
3 3
4 15

G.G.42: MIDSEGMENTS

249 On the set of axes below, graph and label $\triangle DEF$ with vertices at $D(-4,-4)$, $E(-2,2)$, and $F(8,-2)$. If G is the midpoint of $\overline{EF}$ and H is the midpoint of $\overline{DF}$, state the coordinates of G and H and label each point on your graph. Explain why $\overline{GH} \parallel \overline{DE}$.

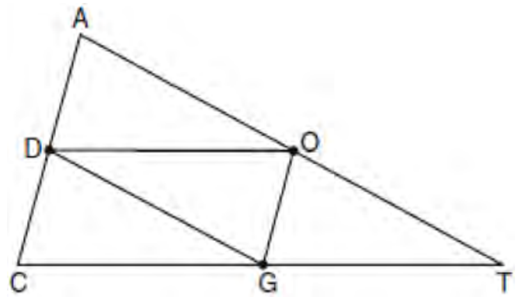


250 In the diagram of $\triangle ABC$ below, $AB = 10$, $BC = 14$, and $AC = 16$. Find the perimeter of the triangle formed by connecting the midpoints of the sides of $\triangle ABC$.



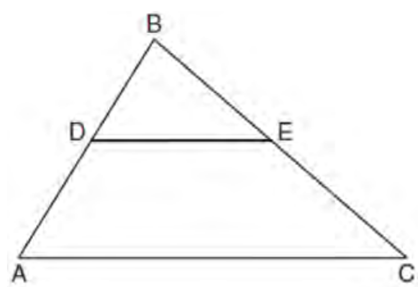
Geometry Regents Exam Questions by Performance Indicator: Topic

251 In the diagram below of $\triangle ACT$, D is the midpoint of $\overline{AC}$, O is the midpoint of $\overline{AT}$, and G is the midpoint of $\overline{CT}$.

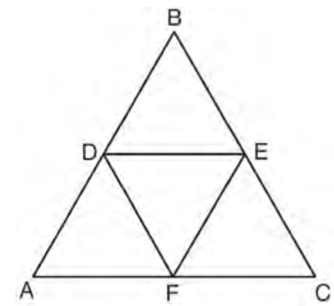


If $AC = 10$, $AT = 18$, and $CT = 22$, what is the perimeter of parallelogram $CDOG$?
1 21
2 25
3 32
4 40

252 In the diagram below of $\triangle ABC$, $\overline{DE}$ is a midsegment of $\triangle ABC$, $DE = 7$, $AB = 10$, and $BC = 13$. Find the perimeter of $\triangle ABC$.

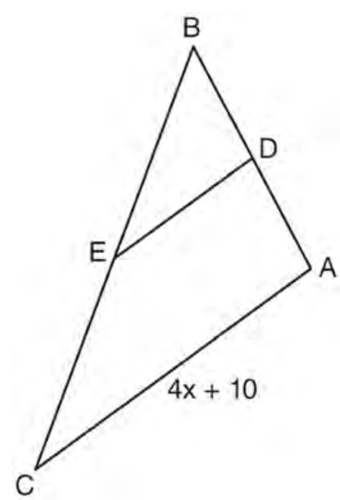


253 In the diagram below, the vertices of $\triangle DEF$ are the midpoints of the sides of equilateral triangle ABC, and the perimeter of $\triangle ABC$ is 36 cm.



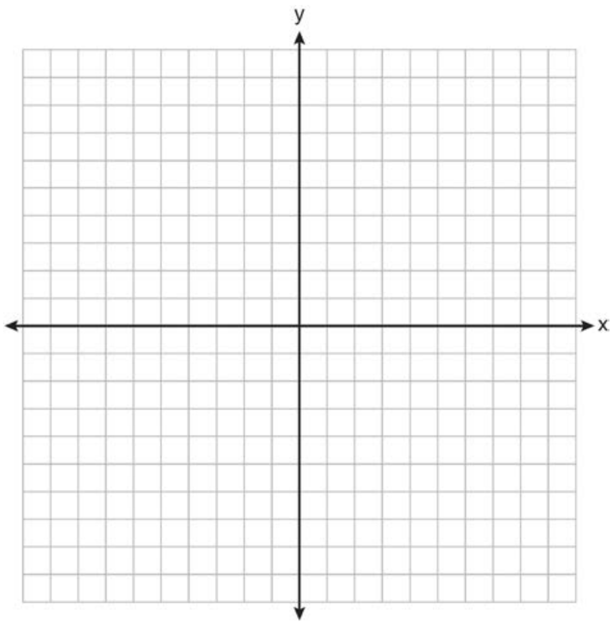
What is the length, in centimeters, of $\overline{EF}$?
1 6
2 12
3 18
4 4

254 In the diagram below of $\triangle ABC$, D is the midpoint of $\overline{AB}$, and E is the midpoint of $\overline{BC}$.

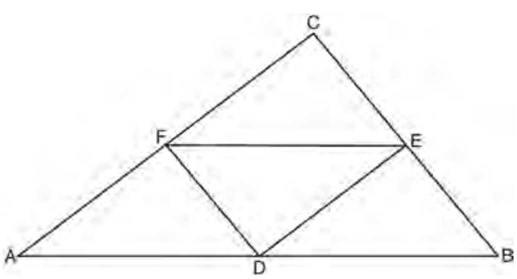


If $AC = 4x + 10$, which expression represents DE?
1 $x + 2.5$
2 $2x + 5$
3 $2x + 10$
4 $8x + 20$

255 Triangle HKL has vertices $H(-7,2)$, $K(3,-4)$, and $L(5,4)$. The midpoint of $\overline{HL}$ is M and the midpoint of $\overline{LK}$ is N. Determine and state the coordinates of points M and N. Justify the statement: $\overline{MN}$ is parallel to $\overline{HK}$. [The use of the set of axes below is optional.]

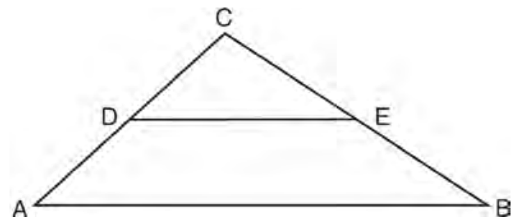


256 In the diagram of ΔABC shown below, D is the midpoint of $\overline{AB}$, E is the midpoint of $\overline{BC}$, and F is the midpoint of $\overline{AC}$.



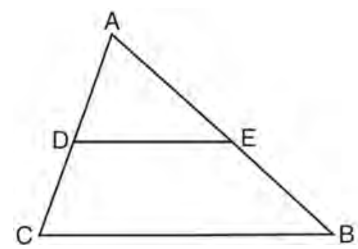
If $AB = 20$, $BC = 12$, and $AC = 16$, what is the perimeter of trapezoid $ABEF$?
1 24
2 36
3 40
4 44

257 In the diagram below, $\overline{DE}$ joins the midpoints of two sides of ΔABC.



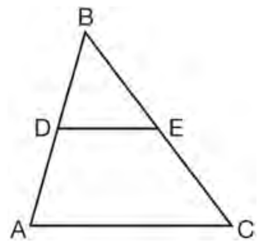
Which statement is *not* true?
1 $CE = \frac{1}{2}CB$
2 $DE = \frac{1}{2}AB$
3 area of $\Delta CDE = \frac{1}{2}$ area of ΔCAB
4 perimeter of $\Delta CDE = \frac{1}{2}$ perimeter of ΔCAB

258 Triangle ABC is shown in the diagram below.



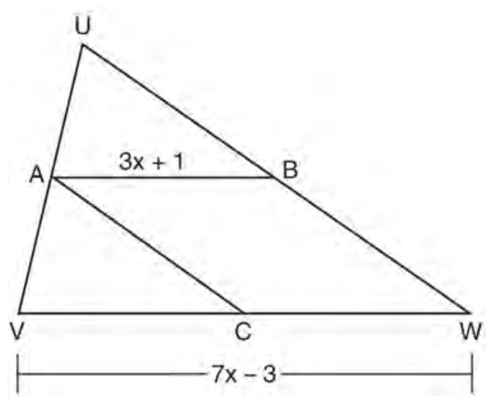
If $\overline{DE}$ joins the midpoints of $\overline{ADC}$ and $\overline{AEB}$, which statement is *not* true?
1 $DE = \frac{1}{2}CB$
2 $\overline{DE} \parallel \overline{CB}$
3 $\frac{AD}{DC} = \frac{DE}{CB}$
4 $\Delta ABC \sim \Delta AED$

259 In $\triangle ABC$, D is the midpoint of $\overline{AB}$ and E is the midpoint of $\overline{BC}$. If $AC = 3x - 15$ and $DE = 6$, what is the value of x?



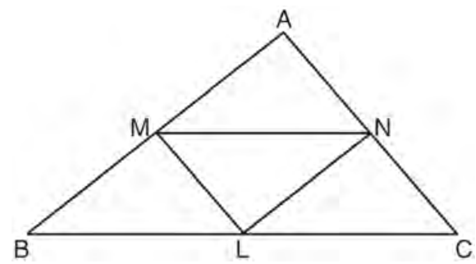
1 6
2 7
3 9
4 12

260 In the diagram of $\triangle UVW$ below, A is the midpoint of $\overline{UV}$, B is the midpoint of $\overline{UW}$, C is the midpoint of $\overline{VW}$, and $\overline{AB}$ and $\overline{AC}$ are drawn.



If $VW = 7x - 3$ and $AB = 3x + 1$, what is the length of $\overline{VC}$?
1 5
2 13
3 16
4 32

261 In $\triangle ABC$ shown below, L is the midpoint of $\overline{BC}$, M is the midpoint of $\overline{AB}$, and N is the midpoint of $\overline{AC}$.

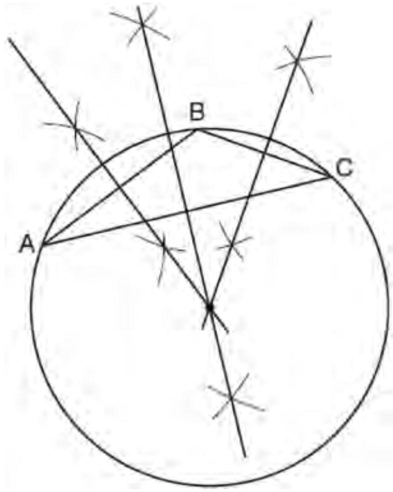


If $MN = 8$, $ML = 5$, and $NL = 6$, the perimeter of trapezoid $BMNC$ is
1 35
2 31
3 28
4 26

G.G.21: CENTROID, ORTHOCENTER, INCENTER AND CIRCUMCENTER

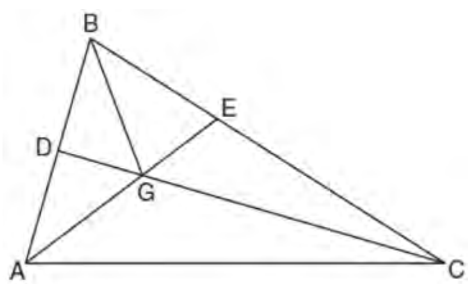
262 In which triangle do the three altitudes intersect outside the triangle?
1 a right triangle
2 an acute triangle
3 an obtuse triangle
4 an equilateral triangle

263 The diagram below shows the construction of the center of the circle circumscribed about $\triangle ABC$.



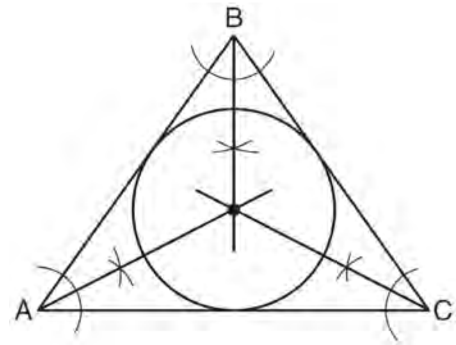
This construction represents how to find the intersection of
1 the angle bisectors of $\triangle ABC$
2 the medians to the sides of $\triangle ABC$
3 the altitudes to the sides of $\triangle ABC$
4 the perpendicular bisectors of the sides of $\triangle ABC$

264 In the diagram below of $\triangle ABC$, $\overline{CD}$ is the bisector of $\angle BCA$, $\overline{AE}$ is the bisector of $\angle CAB$, and $\overline{BG}$ is drawn.



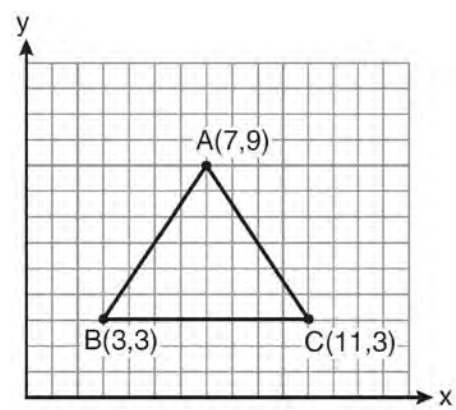
Which statement must be true?
1 $DG = EG$
2 $AG = BG$
3 $\angle AEB \cong \angle AEC$
4 $\angle DBG \cong \angle EBG$

265 Which geometric principle is used in the construction shown below?



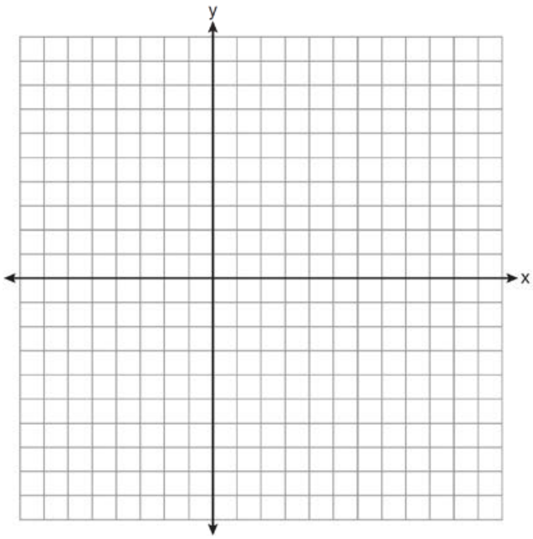
1 The intersection of the angle bisectors of a triangle is the center of the inscribed circle.
2 The intersection of the angle bisectors of a triangle is the center of the circumscribed circle.
3 The intersection of the perpendicular bisectors of the sides of a triangle is the center of the inscribed circle.
4 The intersection of the perpendicular bisectors of the sides of a triangle is the center of the circumscribed circle.

266 The vertices of the triangle in the diagram below are $A(7,9)$, $B(3,3)$, and $C(11,3)$.



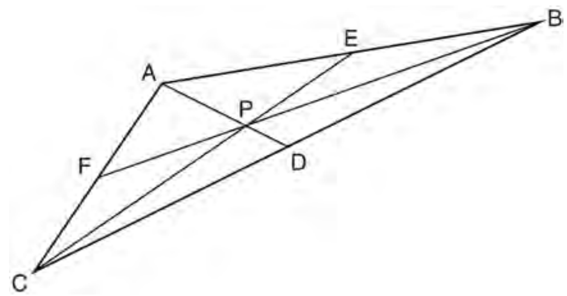
What are the coordinates of the centroid of $\triangle ABC$?
1 $(5,6)$
2 $(7,3)$
3 $(7,5)$
4 $(9,6)$

267 Triangle ABC has vertices $A(3,3)$, $B(7,9)$, and $C(11,3)$. Determine the point of intersection of the medians, and state its coordinates. [The use of the set of axes below is optional.]



268 In a given triangle, the point of intersection of the three medians is the same as the point of intersection of the three altitudes. Which classification of the triangle is correct?
1 scalene triangle
2 isosceles triangle
3 equilateral triangle
4 right isosceles triangle

269 In the diagram below of $\triangle ABC$, $\overline{AE} \cong \overline{BE}$, $\overline{AF} \cong \overline{CF}$, and $\overline{CD} \cong \overline{BD}$.

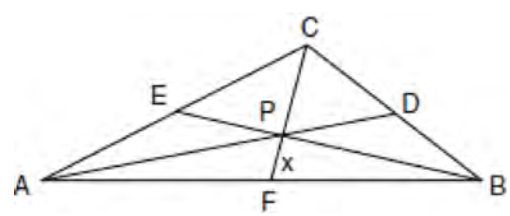


Point P must be the
1 centroid
2 circumcenter
3 Incenter
4 orthocenter

270 For a triangle, which two points of concurrence could be located outside the triangle?
1 incenter and centroid
2 centroid and orthocenter
3 incenter and circumcenter
4 circumcenter and orthocenter

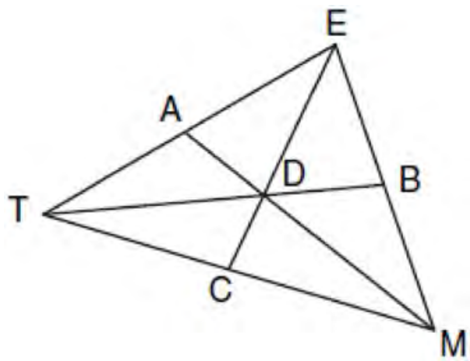
G.G.43: CENTROID

271 In the diagram of $\triangle ABC$ below, Jose found centroid P by constructing the three medians. He measured $\overline{CF}$ and found it to be 6 inches.

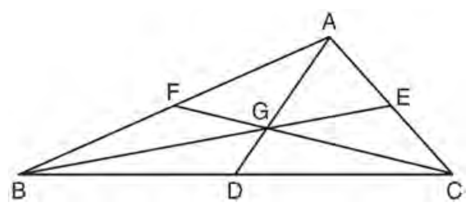


If $PF = x$, which equation can be used to find x?
1 $x + x = 6$
2 $2x + x = 6$
3 $3x + 2x = 6$
4 $x + \frac{2}{3}x = 6$

272 In the diagram below of $\triangle TEM$, medians $\overline{TB}$, $\overline{EC}$, and $\overline{MA}$ intersect at D, and $TB = 9$. Find the length of $\overline{TD}$.

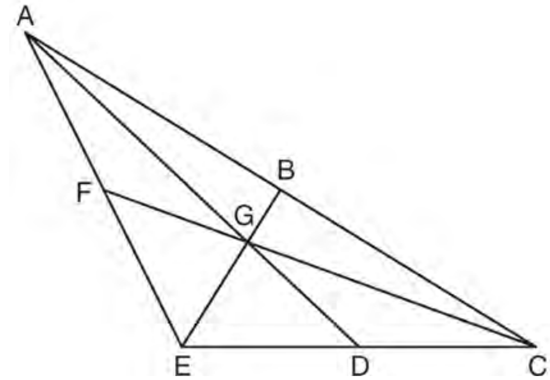


273 In the diagram below of $\triangle ABC$, medians $\overline{AD}$, $\overline{BE}$, and $\overline{CF}$ intersect at G.



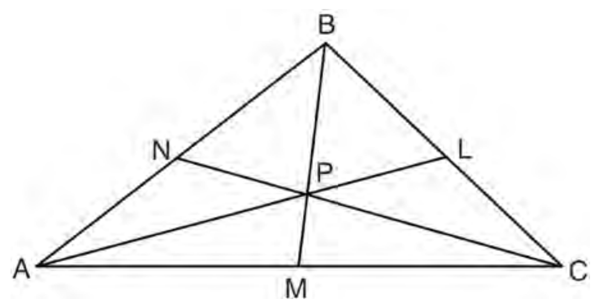
If $CF = 24$, what is the length of $\overline{FG}$?
1 8
2 10
3 12
4 16

274 In the diagram below of $\triangle ACE$, medians $\overline{AD}$, $\overline{EB}$, and $\overline{CF}$ intersect at G. The length of $\overline{FG}$ is 12 cm.



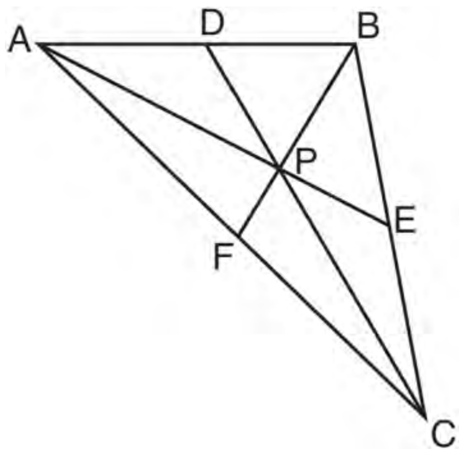
What is the length, in centimeters, of $\overline{GC}$?
1 24
2 12
3 6
4 4

275 In the diagram below, point P is the centroid of $\triangle ABC$.



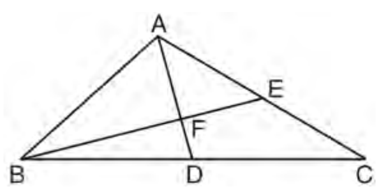
If $PM = 2x + 5$ and $BP = 7x + 4$, what is the length of $\overline{PM}$?
1 9
2 2
3 18
4 27

276 In $\triangle ABC$ shown below, P is the centroid and $BF = 18$.



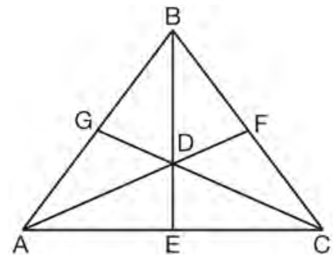
What is the length of $\overline{BP}$?
1 6
2 9
3 3
4 12

277 In the diagram of $\triangle ABC$ below, medians $\overline{AD}$ and $\overline{BE}$ intersect at point F.



If $AF = 6$, what is the length of $\overline{FD}$?
1 6
2 2
3 3
4 9

278 As shown below, the medians of $\triangle ABC$ intersect at D.

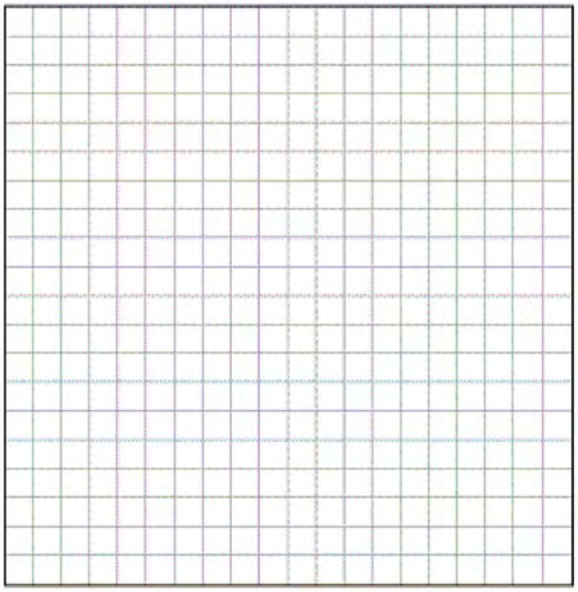


If the length of $\overline{BE}$ is 12, what is the length of $\overline{BD}$?
1 8
2 9
3 3
4 4

G.G.69: TRIANGLES IN THE COORDINATE PLANE

279 The vertices of $\triangle ABC$ are $A(-1,-2)$, $B(-1,2)$ and $C(6,0)$. Which conclusion can be made about the angles of $\triangle ABC$?
1 $m\angle A = m\angle B$
2 $m\angle A = m\angle C$
3 $m\angle ACB = 90$
4 $m\angle ABC = 60$

280 Triangle ABC has coordinates $A(-6,2)$, $B(-3,6)$, and $C(5,0)$. Find the perimeter of the triangle. Express your answer in simplest radical form. [The use of the grid below is optional.]



281 Triangle ABC has vertices $A(0,0)$, $B(3,2)$, and $C(0,4)$. The triangle may be classified as
1 equilateral
2 isosceles
3 right
4 scalene

282 Which type of triangle can be drawn using the points $(-2,3)$, $(-2,-7)$, and $(4,-5)$?
1 scalene
2 isosceles
3 equilateral
4 no triangle can be drawn

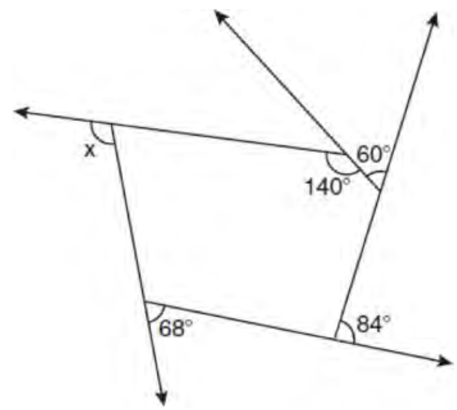
283 If the vertices of ΔABC are $A(-2,4)$, $B(-2,8)$, and $C(-5,6)$, then ΔABC is classified as
1 right
2 scalene
3 isosceles
4 equilateral

284 Triangle ABC has vertices at $A(3,0)$, $B(9,-5)$, and $C(7,-8)$. Find the length of $\overline{AC}$ in simplest radical form.

POLYGONS

G.G.36: INTERIOR AND EXTERIOR ANGLES OF POLYGONS

285 The pentagon in the diagram below is formed by five rays.



What is the degree measure of angle x?
1 72
2 96
3 108
4 112

286 In which polygon does the sum of the measures of the interior angles equal the sum of the measures of the exterior angles?
1 triangle
2 hexagon
3 octagon
4 quadrilateral

287 The number of degrees in the sum of the interior angles of a pentagon is
1 72
2 360
3 540
4 720

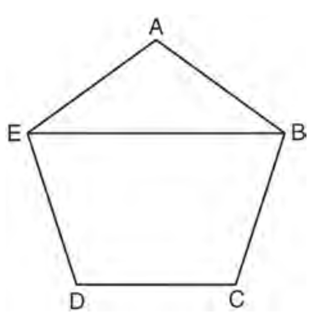
288 The sum of the interior angles of a polygon of n sides is
1 360
2 $\frac{360}{n}$
3 $(n-2)\cdot 180$
4 $\frac{(n-2)\cdot 180}{n}$

289 For which polygon does the sum of the measures of the interior angles equal the sum of the measures of the exterior angles?
1 hexagon
2 pentagon
3 quadrilateral
4 triangle

G.G.37: INTERIOR AND EXTERIOR ANGLES OF POLYGONS

290 What is the measure of an interior angle of a regular octagon?
1 45º
2 60º
3 120º
4 135º

291 In the diagram below of regular pentagon *ABCDE*, $\overline{EB}$ is drawn.



What is the measure of $\angle AEB$?
1 36º
2 54º
3 72º
4 108º

292 Find, in degrees, the measures of both an interior angle and an exterior angle of a regular pentagon.

293 What is the measure of each interior angle of a regular hexagon?
1 60°
2 120°
3 135°
4 270°

294 The measure of an interior angle of a regular polygon is 120°. How many sides does the polygon have?
1 5
2 6
3 3
4 4

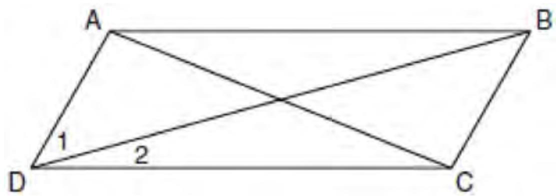
295 Determine, in degrees, the measure of each interior angle of a regular octagon.

296 What is the difference between the sum of the measures of the interior angles of a regular pentagon and the sum of the measures of the exterior angles of a regular pentagon?
1 36
2 72
3 108
4 180

297 What is the measure of the largest exterior angle that any regular polygon can have?
1 60º
2 90º
3 120º
4 360º

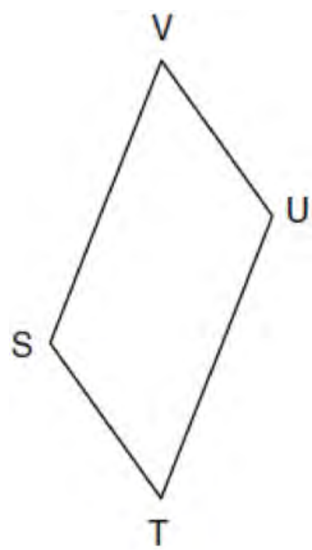
G.G.38: PARALLELOGRAMS

298 In the diagram below of parallelogram *ABCD* with diagonals $\overline{AC}$ and $\overline{BD}$, m∠1 = 45 and m∠*DCB* = 120.



What is the measure of ∠2?
1 15º
2 30º
3 45º
4 60º

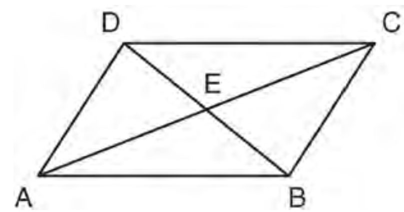
299 In the diagram below of parallelogram *STUV*, $SV = x + 3$, $VU = 2x - 1$, and $TU = 4x - 3$.



What is the length of $\overline{SV}$?
1 5
2 2
3 7
4 4

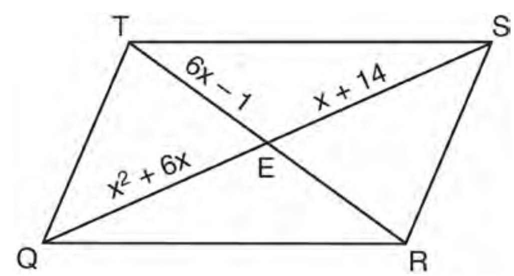
300 Which statement is true about every parallelogram?
1 All four sides are congruent.
2 The interior angles are all congruent.
3 Two pairs of opposite sides are congruent.
4 The diagonals are perpendicular to each other.

301 In the diagram below, parallelogram *ABCD* has diagonals $\overline{AC}$ and $\overline{BD}$ that intersect at point *E*.



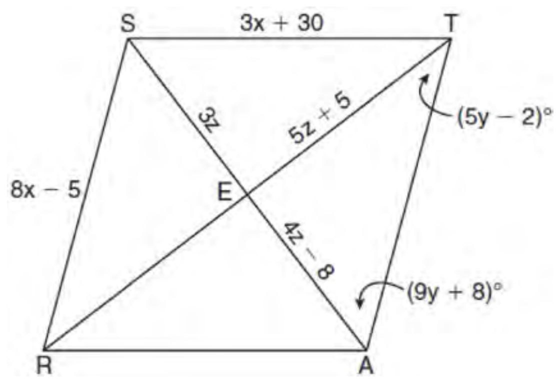
Which expression is *not* always true?
1 ∠*DAE* ≅ ∠*BCE*
2 ∠*DEC* ≅ ∠*BEA*
3 $\overline{AC} \cong \overline{DB}$
4 $\overline{DE} \cong \overline{EB}$

302 As shown in the diagram below, the diagonals of parallelogram *QRST* intersect at *E*. If $QE = x^2 + 6x$, $SE = x + 14$, and $TE = 6x - 1$, determine *TE* algebraically.

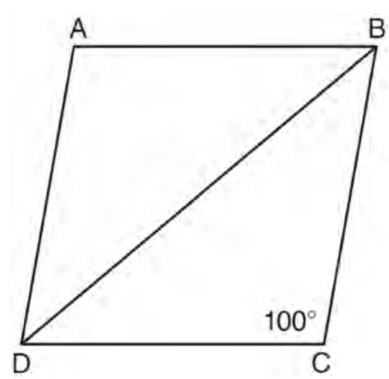


G.G.39: PARALLELOGRAMS

303 In the diagram below, quadrilateral *STAR* is a rhombus with diagonals $\overline{SA}$ and $\overline{TR}$ intersecting at *E*. $ST = 3x + 30$, $SR = 8x - 5$, $SE = 3z$, $TE = 5z + 5$, $AE = 4z - 8$, $m\angle RTA = 5y - 2$, and $m\angle TAS = 9y + 8$. Find *SR*, *RT*, and $m\angle TAS$.



304 In the diagram below of rhombus *ABCD*, $m\angle C = 100$.



What is $m\angle DBC$?
1 40
2 45
3 50
4 80

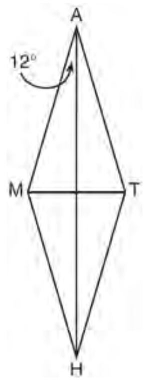
305 In rhombus *ABCD*, the diagonals $\overline{AC}$ and $\overline{BD}$ intersect at *E*. If $AE = 5$ and $BE = 12$, what is the length of $\overline{AB}$?
1 7
2 10
3 13
4 17

306 Which quadrilateral has diagonals that always bisect its angles and also bisect each other?
1 rhombus
2 rectangle
3 parallelogram
4 isosceles trapezoid

307 The diagonals of a quadrilateral are congruent but do not bisect each other. This quadrilateral is
1 an isosceles trapezoid
2 a parallelogram
3 a rectangle
4 a rhombus

308 Given three distinct quadrilaterals, a square, a rectangle, and a rhombus, which quadrilaterals must have perpendicular diagonals?
1 the rhombus, only
2 the rectangle and the square
3 the rhombus and the square
4 the rectangle, the rhombus, and the square

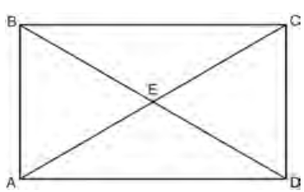
309 In the diagram below, $MATH$ is a rhombus with diagonals $\overline{AH}$ and $\overline{MT}$.



If $m\angle HAM = 12$, what is $m\angle AMT$?
1 12
2 78
3 84
4 156

310 Which reason could be used to prove that a parallelogram is a rhombus?
1 Diagonals are congruent.
2 Opposite sides are parallel.
3 Diagonals are perpendicular.
4 Opposite angles are congruent.

311 As shown in the diagram of rectangle $ABCD$ below, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at E.



If $AE = x + 2$ and $BD = 4x - 16$, then the length of $\overline{AC}$ is
1 6
2 10
3 12
4 24

312 What is the perimeter of a rhombus whose diagonals are 16 and 30?
1 92
2 68
3 60
4 17

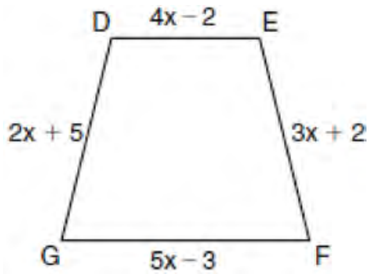
313 What is the perimeter of a square whose diagonal is $3\sqrt{2}$?
1 18
2 12
3 9
4 6

314 Which quadrilateral does *not* always have congruent diagonals?
1 isosceles trapezoid
2 rectangle
3 rhombus
4 square

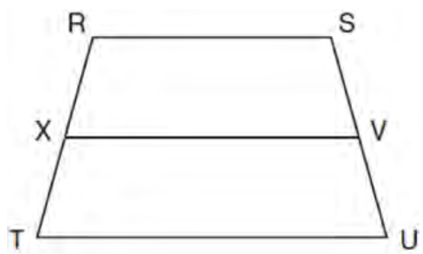
G.G.40: TRAPEZOIDS

315 Isosceles trapezoid $ABCD$ has diagonals $\overline{AC}$ and $\overline{BD}$. If $AC = 5x + 13$ and $BD = 11x - 5$, what is the value of x?
1 28
2 $10\frac{3}{4}$
3 3
4 $\frac{1}{2}$

316 In the diagram below of isosceles trapezoid *DEFG*, $\overline{DE} \parallel \overline{GF}$, $DE = 4x - 2$, $EF = 3x + 2$, $FG = 5x - 3$, and $GD = 2x + 5$. Find the value of x.



317 In the diagram below of trapezoid *RSUT*, $\overline{RS} \parallel \overline{TU}$, X is the midpoint of $\overline{RT}$, and V is the midpoint of $\overline{SU}$.

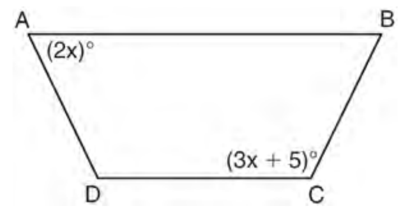


If $RS = 30$ and $XV = 44$, what is the length of $\overline{TU}$?
1 37
2 58
3 74
4 118

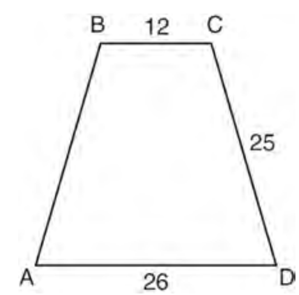
318 If the diagonals of a quadrilateral do *not* bisect each other, then the quadrilateral could be a
1 rectangle
2 rhombus
3 square
4 trapezoid

319 In isosceles trapezoid *ABCD*, $\overline{AB} \cong \overline{CD}$. If $BC = 20$, $AD = 36$, and $AB = 17$, what is the length of the altitude of the trapezoid?
1 10
2 12
3 15
4 16

320 The diagram below shows isosceles trapezoid *ABCD* with $\overline{AB} \parallel \overline{DC}$ and $\overline{AD} \cong \overline{BC}$. If $m\angle BAD = 2x$ and $m\angle BCD = 3x + 5$, find $m\angle BAD$.

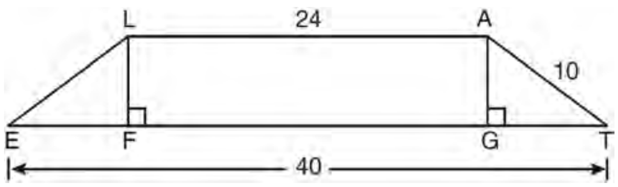


321 In the diagram below of isosceles trapezoid *ABCD*, $AB = CD = 25$, $AD = 26$, and $BC = 12$.



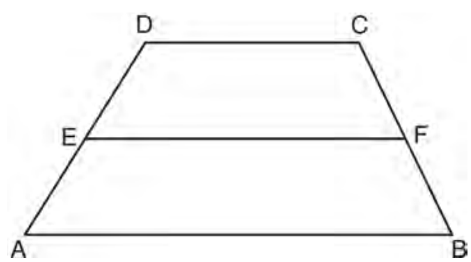
What is the length of an altitude of the trapezoid?
1 7
2 14
3 19
4 24

322 In the diagram below, $LATE$ is an isosceles trapezoid with $\overline{LE} \cong \overline{AT}$, $LA = 24$, $ET = 40$, and $AT = 10$. Altitudes $\overline{LF}$ and $\overline{AG}$ are drawn.



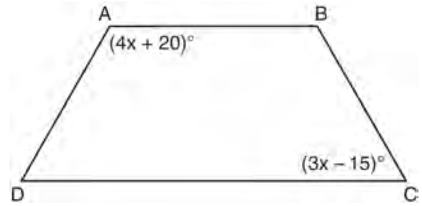
What is the length of $\overline{LF}$?
1 6
2 8
3 3
4 4

323 In the diagram below, $\overline{EF}$ is the median of trapezoid $ABCD$.



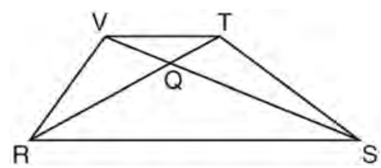
If $AB = 5x - 9$, $DC = x + 3$, and $EF = 2x + 2$, what is the value of x?
1 5
2 2
3 7
4 8

324 In the diagram of trapezoid $ABCD$ below, $\overline{AB} \parallel \overline{DC}$, $\overline{AD} \cong \overline{BC}$, $m\angle A = 4x + 20$, and $m\angle C = 3x - 15$.



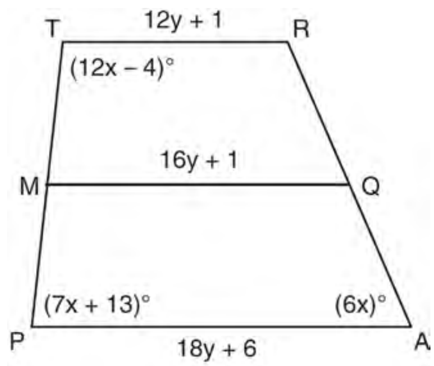
What is $m\angle D$?
1 25
2 35
3 60
4 90

325 In trapezoid $RSTV$ with bases $\overline{RS}$ and $\overline{VT}$, diagonals $\overline{RT}$ and $\overline{SV}$ intersect at Q.



If trapezoid $RSTV$ is *not* isosceles, which triangle is equal in area to ΔRSV?
1 ΔRQV
2 ΔRST
3 ΔRVT
4 ΔSVT

326 Trapezoid *TRAP*, with median $\overline{MQ}$, is shown in the diagram below. Solve algebraically for *x* and *y*.



G.G.41: SPECIAL QUADRILATERALS

327 A quadrilateral whose diagonals bisect each other and are perpendicular is a

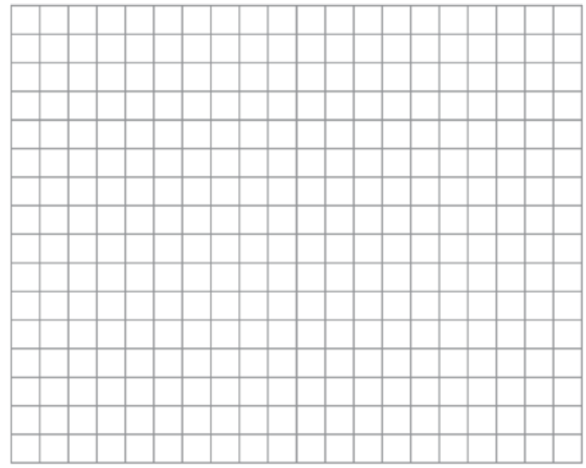
1 rhombus
2 rectangle
3 trapezoid
4 parallelogram

G.G.69: QUADRILATERALS IN THE COORDINATE PLANE

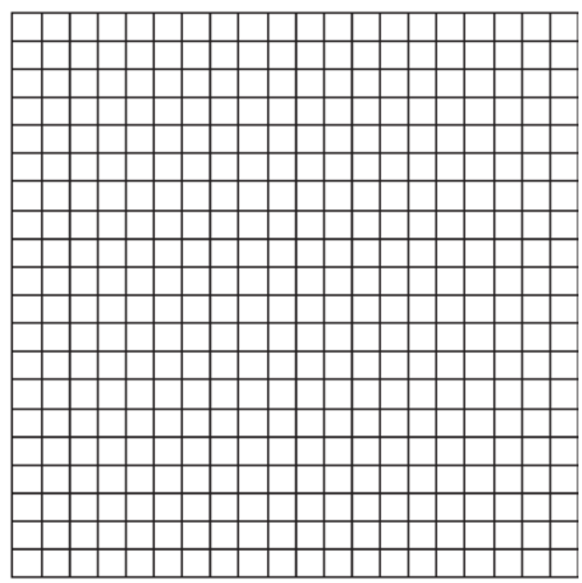
328 The coordinates of the vertices of parallelogram *ABCD* are $A(-3,2)$, $B(-2,-1)$, $C(4,1)$, and $D(3,4)$. The slopes of which line segments could be calculated to show that *ABCD* is a rectangle?

1 $\overline{AB}$ and $\overline{DC}$
2 $\overline{AB}$ and $\overline{BC}$
3 $\overline{AD}$ and $\overline{BC}$
4 $\overline{AC}$ and $\overline{BD}$

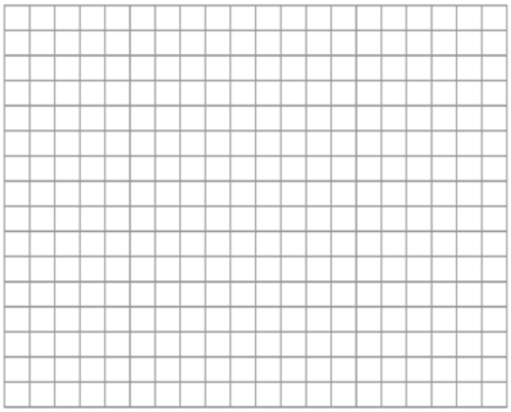
329 Given: Quadrilateral *ABCD* has vertices $A(-5,6)$, $B(6,6)$, $C(8,-3)$, and $D(-3,-3)$.
Prove: Quadrilateral *ABCD* is a parallelogram but is neither a rhombus nor a rectangle. [The use of the grid below is optional.]



330 Quadrilateral *MATH* has coordinates $M(1,1)$, $A(-2,5)$, $T(3,5)$, and $H(6,1)$. Prove that quadrilateral *MATH* is a rhombus and prove that it is *not* a square. [The use of the grid is optional.]



331 Given: ΔABC with vertices $A(-6,-2)$, $B(2,8)$, and $C(6,-2)$. $\overline{AB}$ has midpoint D, $\overline{BC}$ has midpoint E, and $\overline{AC}$ has midpoint F.
Prove: $ADEF$ is a parallelogram
$ADEF$ is *not* a rhombus
[The use of the grid is optional.]

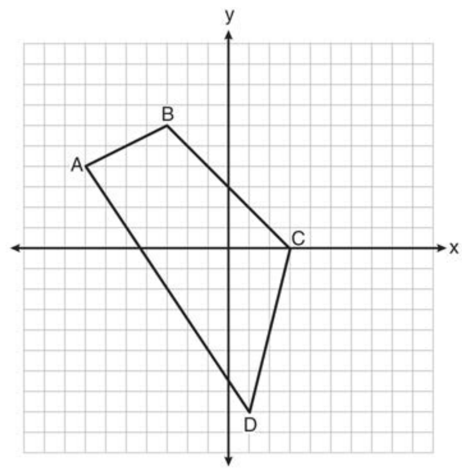


332 Parallelogram $ABCD$ has coordinates $A(1,5)$, $B(6,3)$, $C(3,-1)$, and $D(-2,1)$. What are the coordinates of E, the intersection of diagonals $\overline{AC}$ and $\overline{BD}$?
1 $(2,2)$
2 $(4.5,1)$
3 $(3.5,2)$
4 $(-1,3)$

333 Square $ABCD$ has vertices $A(-2,-3)$, $B(4,-1)$, $C(2,5)$, and $D(-4,3)$. What is the length of a side of the square?
1 $2\sqrt{5}$
2 $2\sqrt{10}$
3 $4\sqrt{5}$
4 $10\sqrt{2}$

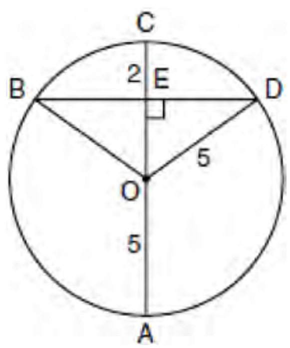
334 The coordinates of two vertices of square $ABCD$ are $A(2,1)$ and $B(4,4)$. Determine the slope of side $\overline{BC}$.

335 Quadrilateral $ABCD$ with vertices $A(-7,4)$, $B(-3,6)$, $C(3,0)$, and $D(1,-8)$ is graphed on the set of axes below. Quadrilateral $MNPQ$ is formed by joining M, N, P, and Q, the midpoints of $\overline{AB}$, $\overline{BC}$, $\overline{CD}$, and $\overline{AD}$, respectively. Prove that quadrilateral $MNPQ$ is a parallelogram. Prove that quadrilateral $MNPQ$ is *not* a rhombus.



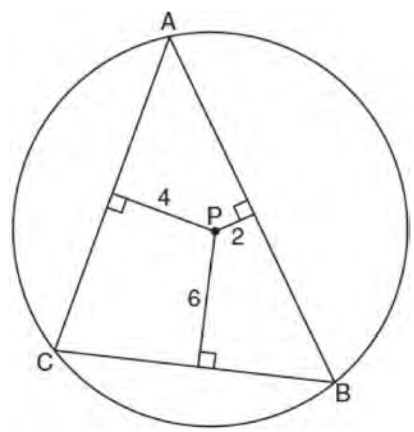
CONICS
G.G.49: CHORDS

336 In the diagram below, circle O has a radius of 5, and $CE = 2$. Diameter $\overline{AC}$ is perpendicular to chord $\overline{BD}$ at E.



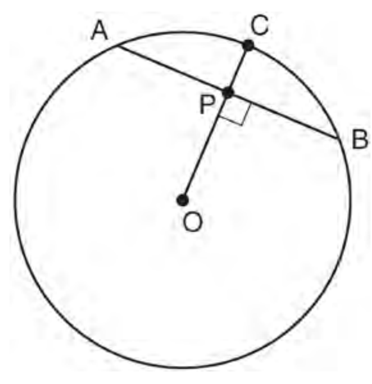
What is the length of $\overline{BD}$?
1 12
2 10
3 8
4 4

337 In the diagram below, ΔABC is inscribed in circle P. The distances from the center of circle P to each side of the triangle are shown.



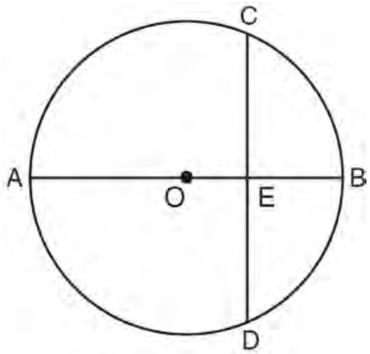
Which statement about the sides of the triangle is true?
1 $AB > AC > BC$
2 $AB < AC$ and $AC > BC$
3 $AC > AB > BC$
4 $AC = AB$ and $AB > BC$

338 In the diagram below of circle O, radius $\overline{OC}$ is 5 cm. Chord $\overline{AB}$ is 8 cm and is perpendicular to $\overline{OC}$ at point P.



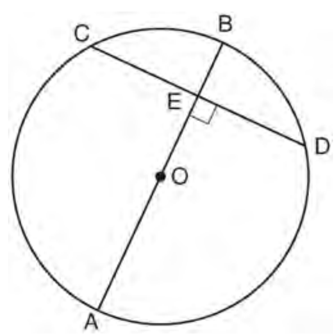
What is the length of $\overline{OP}$, in centimeters?
1 8
2 2
3 3
4 4

339 In the diagram below of circle O, diameter $\overline{AOB}$ is perpendicular to chord $\overline{CD}$ at point E, $OA = 6$, and $OE = 2$.

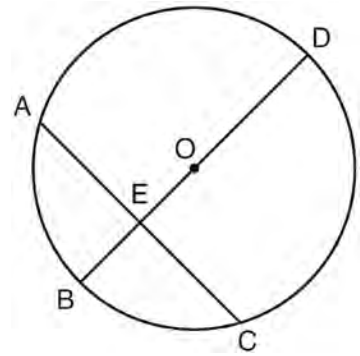


What is the length of $\overline{CE}$?
1 $4\sqrt{3}$
2 $2\sqrt{3}$
3 $8\sqrt{2}$
4 $4\sqrt{2}$

340 In the diagram below of circle O, diameter $\overline{AB}$ is perpendicular to chord $\overline{CD}$ at E. If $AO = 10$ and $BE = 4$, find the length of $\overline{CE}$.

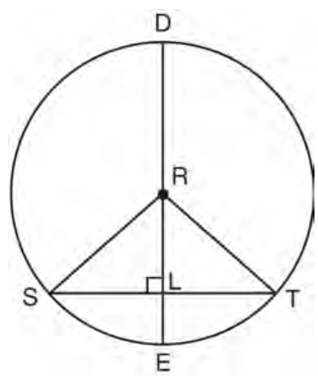


341 In circle O shown below, diameter $\overline{DB}$ is perpendicular to chord $\overline{AC}$ at E.



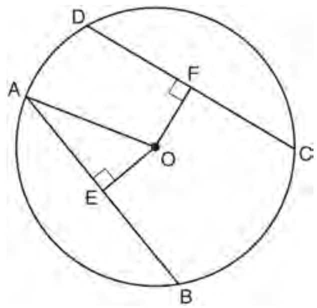
If $DB = 34$, $AC = 30$, and $DE > BE$, what is the length of $\overline{BE}$?
1 8
2 9
3 16
4 25

342 In circle R shown below, diameter $\overline{DE}$ is perpendicular to chord $\overline{ST}$ at point L.



Which statement is *not* always true?
1 $\overline{SL} \cong \overline{TL}$
2 $RS = DR$
3 $\overline{RL} \cong \overline{LE}$
4 $(DL)(LE) = (SL)(LT)$

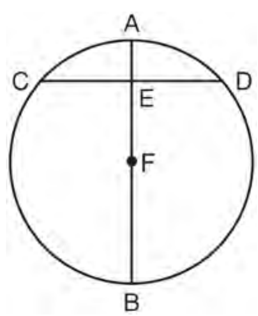
343 In circle O shown below, chords $\overline{AB}$ and $\overline{CD}$ and radius $\overline{OA}$ are drawn, such that $\overline{AB} \cong \overline{CD}$, $\overline{OE} \perp \overline{AB}$, $\overline{OF} \perp \overline{CD}$, $OF = 16$, $CF = y + 10$, and $CD = 4y - 20$.



Determine the length of $\overline{DF}$. Determine the length of $\overline{OA}$.

344 In circle O, diameter $\overline{AB}$ intersects chord $\overline{CD}$ at E. If $CE = ED$, then $\angle CEA$ is which type of angle?
1 straight
2 obtuse
3 acute
4 right

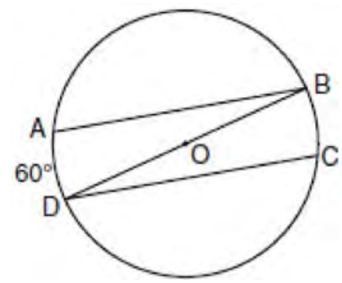
345 In the diagram below, diameter $\overline{AB}$ bisects chord $\overline{CD}$ at point E in circle F.



If $AE = 2$ and $FB = 17$, then the length of $\overline{CE}$ is
1 7
2 8
3 15
4 16

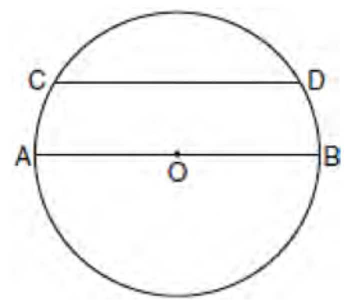
G.G.52: CHORDS

346 In the diagram of circle O below, chords $\overline{AB}$ and $\overline{CD}$ are parallel, and $\overline{BD}$ is a diameter of the circle.



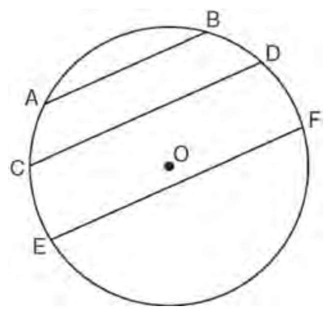
If $m\overset{\frown}{AD} = 60$, what is $m\angle CDB$?
1 20
2 30
3 60
4 120

347 In the diagram of circle O below, chord $\overline{CD}$ is parallel to diameter $\overline{AOB}$ and $m\overset{\frown}{AC} = 30$.



What is $m\overset{\frown}{CD}$?
1 150
2 120
3 100
4 60

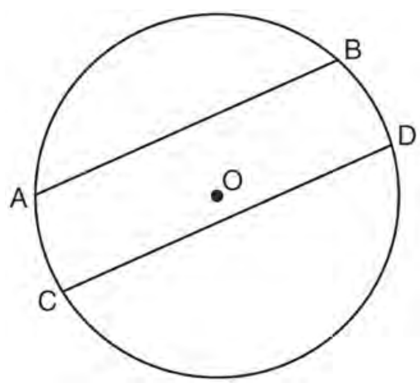
348 In the diagram below of circle O, chord $\overline{AB} \parallel$ chord $\overline{CD}$, and chord $\overline{CD} \parallel$ chord $\overline{EF}$.



Which statement must be true?

1 $\overset{\frown}{CE} \cong \overset{\frown}{DF}$
2 $\overset{\frown}{AC} \cong \overset{\frown}{DF}$
3 $\overset{\frown}{AC} \cong \overset{\frown}{CE}$
4 $\overset{\frown}{EF} \cong \overset{\frown}{CD}$

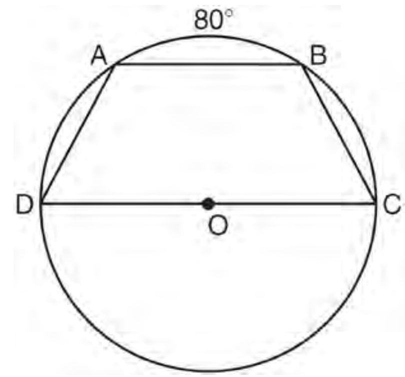
349 In the diagram below of circle O, chord $\overline{AB}$ is parallel to chord $\overline{CD}$.



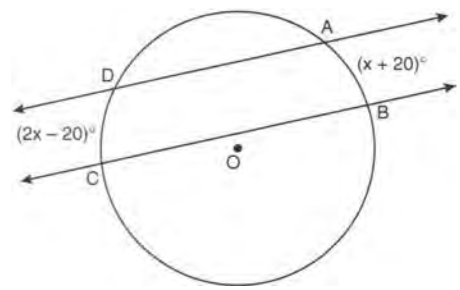
Which statement must be true?

1 $\overset{\frown}{AC} \cong \overset{\frown}{BD}$
2 $\overset{\frown}{AB} \cong \overset{\frown}{CD}$
3 $\overline{AB} \cong \overline{CD}$
4 $\overset{\frown}{ABD} \cong \overset{\frown}{CDB}$

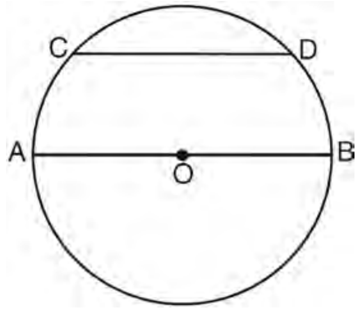
350 In the diagram below, trapezoid $ABCD$, with bases $\overline{AB}$ and $\overline{DC}$, is inscribed in circle O, with diameter $\overline{DC}$. If $m\overset{\frown}{AB}=80$, find $m\overset{\frown}{BC}$.



351 In the diagram below, two parallel lines intersect circle O at points A, B, C, and D, with $m\overset{\frown}{AB} = x + 20$ and $m\overset{\frown}{DC} = 2x - 20$. Find $m\overset{\frown}{AB}$.

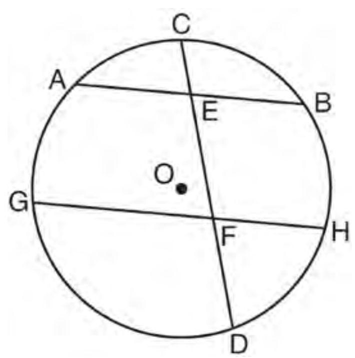


352 In the diagram below of circle O, diameter $\overline{AB}$ is parallel to chord $\overline{CD}$.



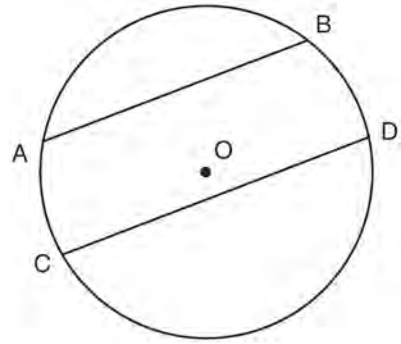
If $m\overparen{CD} = 70$, what is $m\overparen{AC}$?
1 110
2 70
3 55
4 35

353 In the diagram below of circle O, chord $\overline{AB}$ is parallel to chord $\overline{GH}$. Chord $\overline{CD}$ intersects $\overline{AB}$ at E and $\overline{GH}$ at F.



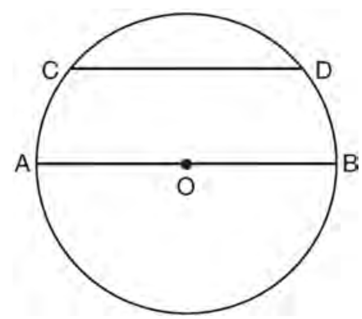
Which statement must always be true?
1 $\overparen{AC} \cong \overparen{CB}$
2 $\overparen{DH} \cong \overparen{BH}$
3 $\overparen{AB} \cong \overparen{GH}$
4 $\overparen{AG} \cong \overparen{BH}$

354 In circle O shown in the diagram below, chords $\overline{AB}$ and $\overline{CD}$ are parallel.



If $m\overparen{AB} = 104$ and $m\overparen{CD} = 168$, what is $m\overparen{BD}$?
1 38
2 44
3 88
4 96

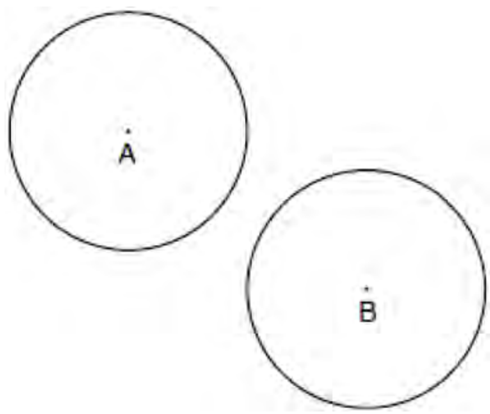
355 In the diagram of circle O below, chord $\overline{CD}$ is parallel to diameter $\overline{AOB}$ and $m\overparen{CD} = 110$.



What is $m\overparen{DB}$?
1 35
2 55
3 70
4 110

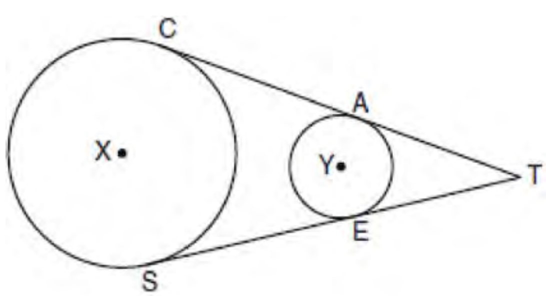
G.G.50: TANGENTS

356 In the diagram below, circle A and circle B are shown.



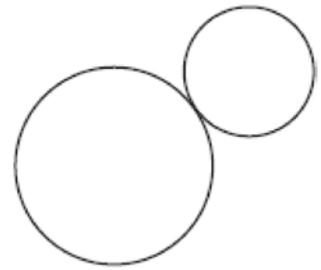
What is the total number of lines of tangency that are common to circle A and circle B?
1 1
2 2
3 3
4 4

357 In the diagram below, circles X and Y have two tangents drawn to them from external point T. The points of tangency are C, A, S, and E. The ratio of TA to AC is 1:3. If $TS = 24$, find the length of $\overline{SE}$.



(Not drawn to scale)

358 How many common tangent lines can be drawn to the two externally tangent circles shown below?

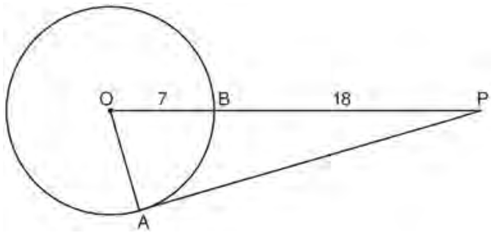


1 1
2 2
3 3
4 4

359 Line segment AB is tangent to circle O at A. Which type of triangle is always formed when points A, B, and O are connected?
1 right
2 obtuse
3 scalene
4 isosceles

360 Tangents $\overline{PA}$ and $\overline{PB}$ are drawn to circle O from an external point, P, and radii $\overline{OA}$ and $\overline{OB}$ are drawn. If $m\angle APB = 40$, what is the measure of $\angle AOB$?
1 140º
2 100º
3 70º
4 50º

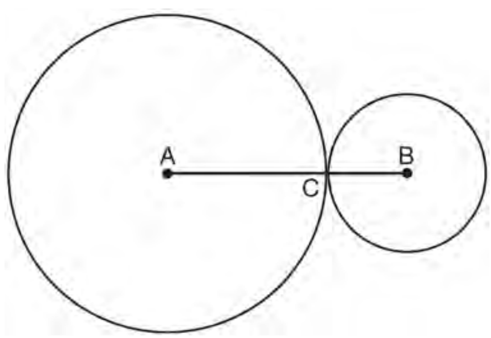
361 In the diagram below of ΔPAO, $\overline{AP}$ is tangent to circle O at point A, $OB = 7$, and $BP = 18$.



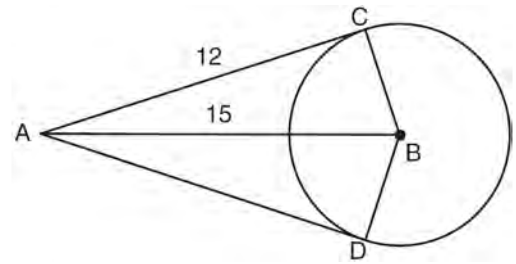
What is the length of $\overline{AP}$?
1 10
2 12
3 17
4 24

362 The angle formed by the radius of a circle and a tangent to that circle has a measure of
1 45°
2 90°
3 135°
4 180°

363 In the diagram below, circles A and B are tangent at point C and $\overline{AB}$ is drawn. Sketch all common tangent lines.

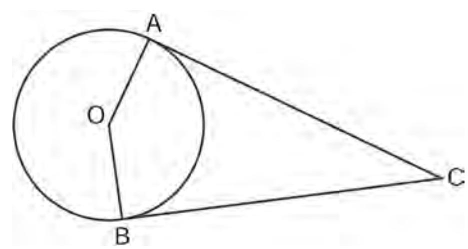


364 In the diagram below, $\overline{AC}$ and $\overline{AD}$ are tangent to circle B at points C and D, respectively, and $\overline{BC}$, $\overline{BD}$, and $\overline{BA}$ are drawn.



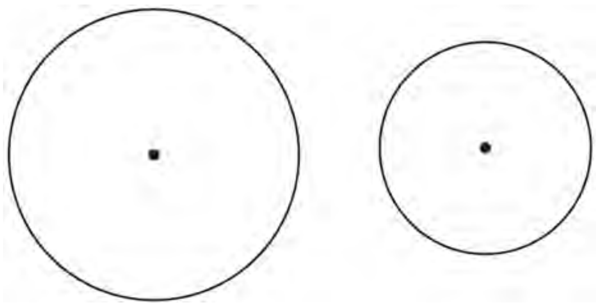
If $AC = 12$ and $AB = 15$, what is the length of $\overline{BD}$?
1 5.5
2 9
3 12
4 18

365 In the diagram below, $\overline{AC}$ and $\overline{BC}$ are tangent to circle O at A and B, respectively, from external point C.



If $m\angle ACB = 38$, what is $m\angle AOB$?
1 71
2 104
3 142
4 161

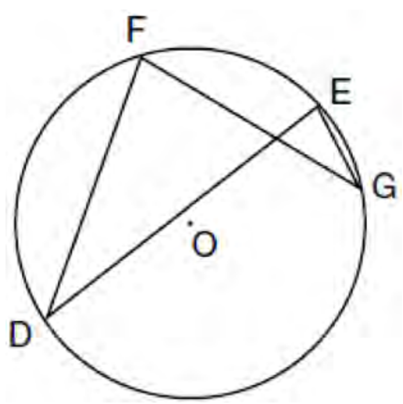
366 How many common tangent lines can be drawn to the circles shown below?



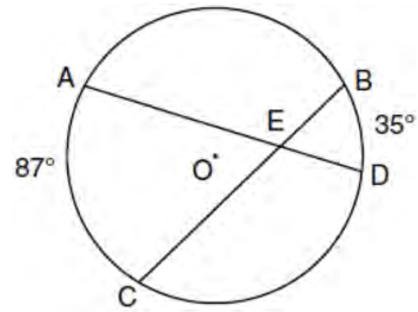
1 1
2 2
3 3
4 4

G.G.51: ARCS DETERMINED BY ANGLES

367 In the diagram below of circle O, chords $\overline{DF}$, $\overline{DE}$, $\overline{FG}$, and $\overline{EG}$ are drawn such that $m\overset{\frown}{DF}:m\overset{\frown}{FE}:m\overset{\frown}{EG}:m\overset{\frown}{GD} = 5:2:1:7$. Identify one pair of inscribed angles that are congruent to each other and give their measure.

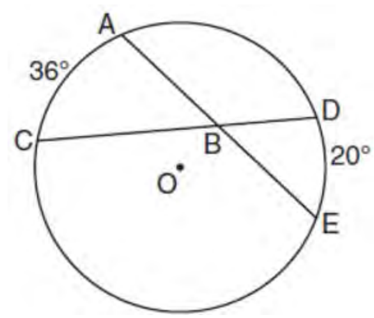


368 In the diagram below of circle O, chords $\overline{AD}$ and $\overline{BC}$ intersect at E, $m\overset{\frown}{AC} = 87$, and $m\overset{\frown}{BD} = 35$.



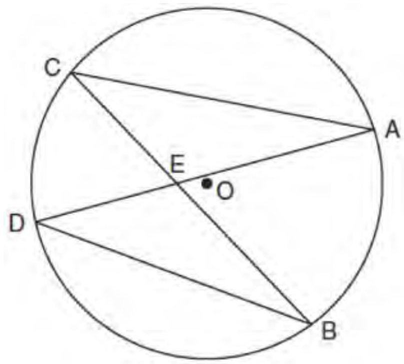
What is the degree measure of $\angle CEA$?
1 87
2 61
3 43.5
4 26

369 In the diagram below of circle O, chords $\overline{AE}$ and $\overline{DC}$ intersect at point B, such that $m\overset{\frown}{AC} = 36$ and $m\overset{\frown}{DE} = 20$.



What is $m\angle ABC$?
1 56
2 36
3 28
4 8

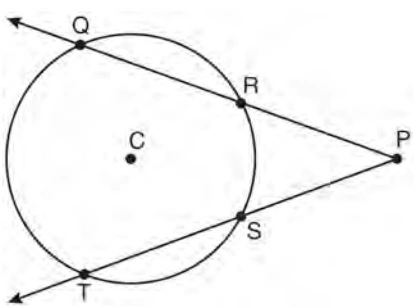
370 In the diagram below of circle O, chords $\overline{AD}$ and $\overline{BC}$ intersect at E.



Which relationship must be true?

1 $\triangle CAE \cong \triangle DBE$
2 $\triangle AEC \sim \triangle BED$
3 $\angle ACB \cong \angle CBD$
4 $\overset{\frown}{CA} \cong \overset{\frown}{DB}$

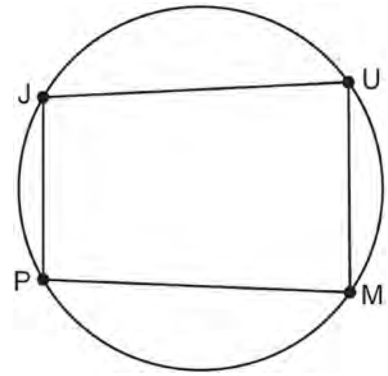
371 In the diagram below of circle C, $m\overset{\frown}{QT} = 140$, and $m\angle P = 40$.



What is $m\overset{\frown}{RS}$?

1 50
2 60
3 90
4 110

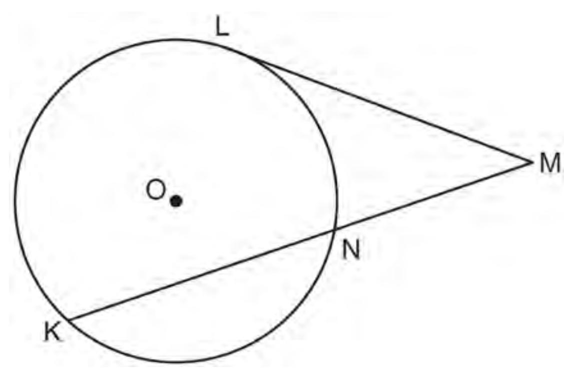
372 In the diagram below, quadrilateral $JUMP$ is inscribed in a circle..



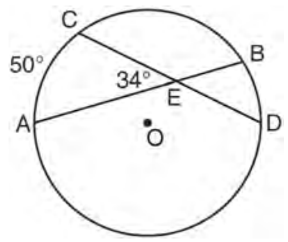
Opposite angles J and M must be

1 right
2 complementary
3 congruent
4 supplementary

373 In the diagram below, tangent $\overline{ML}$ and secant $\overline{MNK}$ are drawn to circle O. The ratio $m\overset{\frown}{LN} : m\overset{\frown}{NK} : m\overset{\frown}{KL}$ is $3:4:5$. Find $m\angle LMK$.

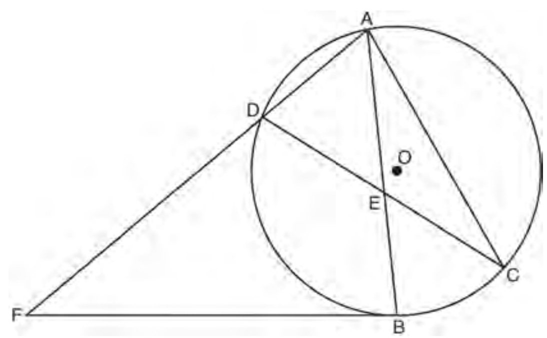


374 In the diagram below of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E.



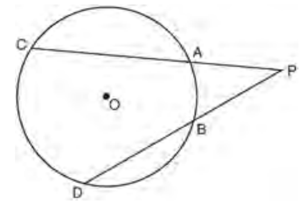
If $m\angle AEC = 34$ and $m\overset{\frown}{AC} = 50$, what is $m\overset{\frown}{DB}$?
1 16
2 18
3 68
4 118

375 Chords $\overline{AB}$ and $\overline{CD}$ intersect at E in circle O, as shown in the diagram below. Secant $\overline{FDA}$ and tangent $\overline{FB}$ are drawn to circle O from external point F and chord $\overline{AC}$ is drawn. The $m\overset{\frown}{DA} = 56$, $m\overset{\frown}{DB} = 112$, and the ratio of $m\overset{\frown}{AC} : m\overset{\frown}{CB} = 3:1$.



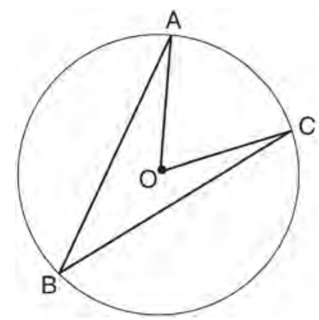
Determine $m\angle CEB$. Determine $m\angle F$. Determine $m\angle DAC$.

376 In the diagram below of circle O, $\overline{PAC}$ and $\overline{PBD}$ are secants.



If $m\overset{\frown}{CD} = 70$ and $m\overset{\frown}{AB} = 20$, what is the degree measure of $\angle P$?
1 25
2 35
3 45
4 50

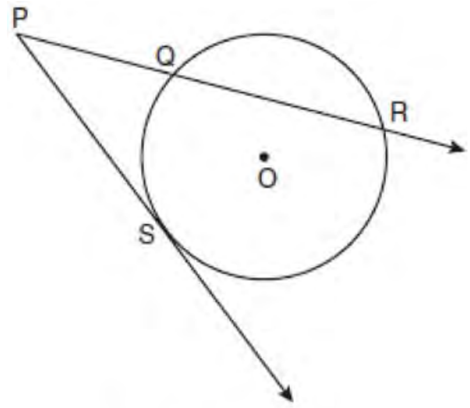
377 Circle O with $\angle AOC$ and $\angle ABC$ is shown in the diagram below.



What is the ratio of $m\angle AOC$ to $m\angle ABC$?
1 1 : 1
2 2 : 1
3 3 : 1
4 1 : 2

G.G.53: SEGMENTS INTERCEPTED BY CIRCLE

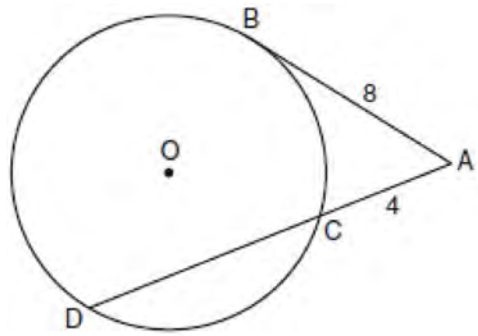
378 In the diagram below, $\overline{PS}$ is a tangent to circle O at point S, $\overline{PQR}$ is a secant, $PS = x$, $PQ = 3$, and $PR = x + 18$.



(Not drawn to scale)

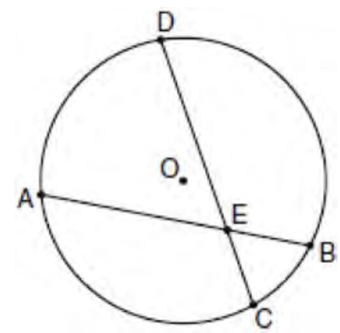
What is the length of $\overline{PS}$?
1 6
2 9
3 3
4 27

379 In the diagram below, tangent $\overline{AB}$ and secant $\overline{ACD}$ are drawn to circle O from an external point A, $AB = 8$, and $AC = 4$.



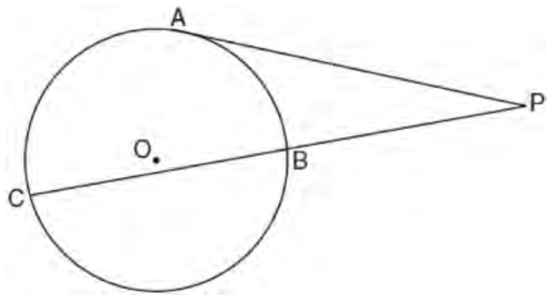
What is the length of $\overline{CD}$?
1 16
2 13
3 12
4 10

380 In the diagram of circle O below, chord $\overline{AB}$ intersects chord $\overline{CD}$ at E, $DE = 2x + 8$, $EC = 3$, $AE = 4x - 3$, and $EB = 4$.



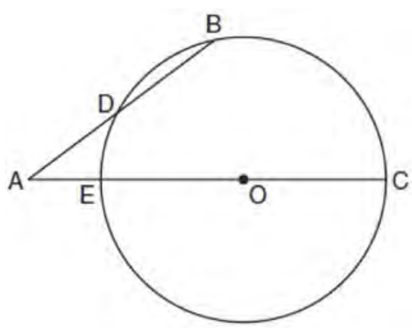
What is the value of x?
1 1
2 3.6
3 5
4 10.25

381 In the diagram below, tangent $\overline{PA}$ and secant $\overline{PBC}$ are drawn to circle O from external point P.



If $PB = 4$ and $BC = 5$, what is the length of $\overline{PA}$?
1 20
2 9
3 8
4 6

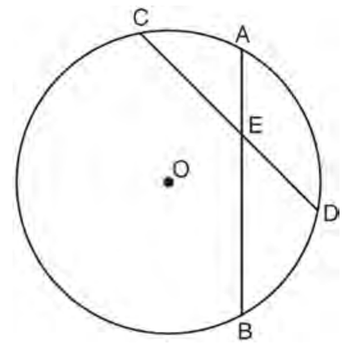
382 In the diagram below of circle O, secant $\overline{AB}$ intersects circle O at D, secant $\overline{AOC}$ intersects circle O at E, $AE = 4$, $AB = 12$, and $DB = 6$.



(Not drawn to scale)

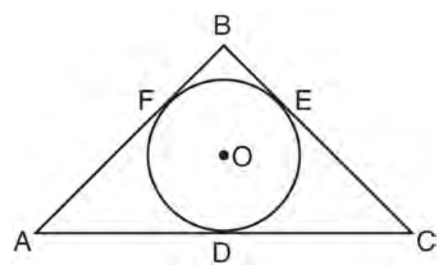
What is the length of $\overline{OC}$?
1 4.5
2 7
3 9
4 14

383 In the diagram below of circle O, chords $\overline{AB}$ and $\overline{CD}$ intersect at E.



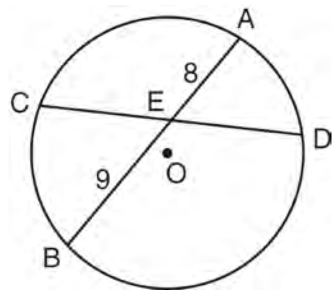
If $CE = 10$, $ED = 6$, and $AE = 4$, what is the length of $\overline{EB}$?
1 15
2 12
3 6.7
4 2.4

384 In the diagram below, $\overline{AB}$, $\overline{BC}$, and $\overline{AC}$ are tangents to circle O at points F, E, and D, respectively, $AF = 6$, $CD = 5$, and $BE = 4$.

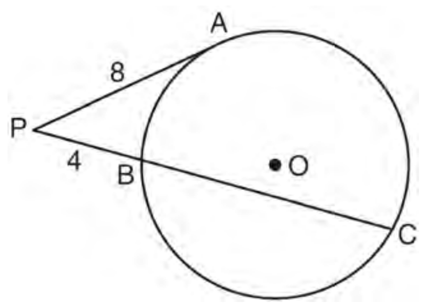


What is the perimeter of $\triangle ABC$?
1 15
2 25
3 30
4 60

385 In the diagram below of circle O, chord $\overline{AB}$ bisects chord $\overline{CD}$ at E. If $AE = 8$ and $BE = 9$, find the length of $\overline{CE}$ in simplest radical form.

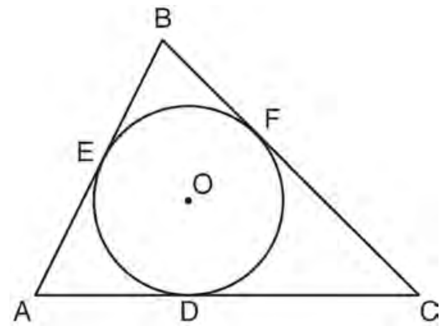


386 In the diagram below of circle O, $\overline{PA}$ is tangent to circle O at A, and $\overline{PBC}$ is a secant with points B and C on the circle.



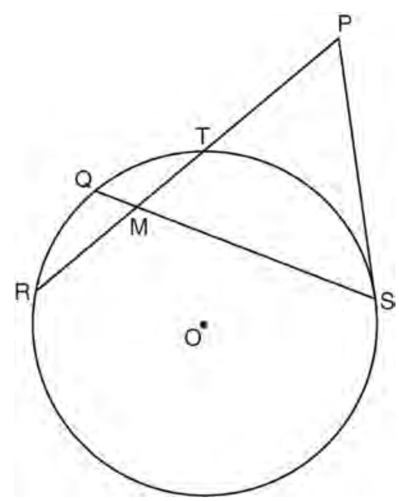
If $PA = 8$ and $PB = 4$, what is the length of $\overline{BC}$?
1 20
2 16
3 15
4 12

387 In the diagram below, $\triangle ABC$ is circumscribed about circle O and the sides of $\triangle ABC$ are tangent to the circle at points D, E, and F.



If $AB = 20$, $AE = 12$, and $CF = 15$, what is the length of $\overline{AC}$?
1 8
2 15
3 23
4 27

388 In the diagram below of circle O, chords $\overline{RT}$ and $\overline{QS}$ intersect at M. Secant $\overline{PTR}$ and tangent $\overline{PS}$ are drawn to circle O. The length of $\overline{RM}$ is two more than the length of $\overline{TM}$, $QM = 2$, $SM = 12$, and $PT = 8$.



Find the length of $\overline{RT}$. Find the length of $\overline{PS}$.

389 Secants $\overline{JKL}$ and $\overline{JMN}$ are drawn to circle O from an external point, J. If $JK = 8$, $LK = 4$, and $JM = 6$, what is the length of $\overline{JN}$?
1 16
2 12
3 10
4 8

390 Chords $\overline{AB}$ and $\overline{CD}$ intersect at point E in a circle with center at O. If $AE = 8$, $AB = 20$, and $DE = 16$, what is the length of $\overline{CE}$?
1 6
2 9
3 10
4 12

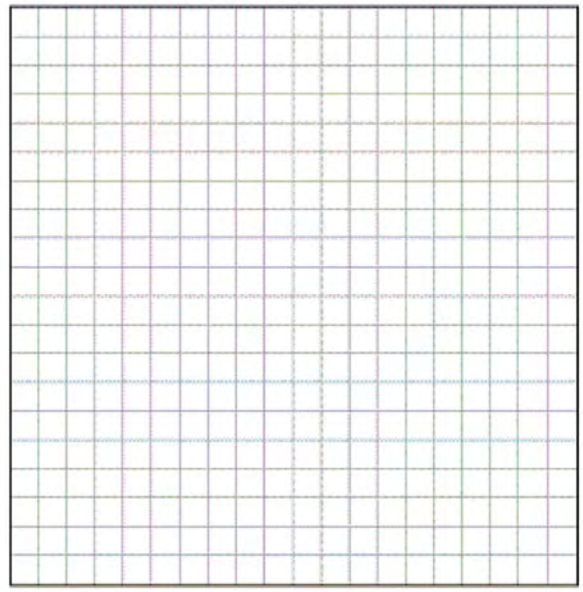
G.G.71: EQUATIONS OF CIRCLES

391 The diameter of a circle has endpoints at $(-2,3)$ and $(6,3)$. What is an equation of the circle?
1 $(x-2)^2+(y-3)^2=16$
2 $(x-2)^2+(y-3)^2=4$
3 $(x+2)^2+(y+3)^2=16$
4 $(x+2)^2+(y+3)^2=4$

392 What is an equation of a circle with its center at $(-3,5)$ and a radius of 4?
1 $(x-3)^2+(y+5)^2=16$
2 $(x+3)^2+(y-5)^2=16$
3 $(x-3)^2+(y+5)^2=4$
4 $(x+3)^2+(y-5)^2=4$

393 Which equation represents the circle whose center is $(-2,3)$ and whose radius is 5?
1 $(x-2)^2+(y+3)^2=5$
2 $(x+2)^2+(y-3)^2=5$
3 $(x+2)^2+(y-3)^2=25$
4 $(x-2)^2+(y+3)^2=25$

394 Write an equation of the circle whose diameter $\overline{AB}$ has endpoints $A(-4,2)$ and $B(4,-4)$. [The use of the grid below is optional.]



395 What is an equation of a circle with center $(7,-3)$ and radius 4?
1 $(x-7)^2+(y+3)^2=4$
2 $(x+7)^2+(y-3)^2=4$
3 $(x-7)^2+(y+3)^2=16$
4 $(x+7)^2+(y-3)^2=16$

396 What is an equation of the circle with a radius of 5 and center at $(1,-4)$?
1 $(x+1)^2+(y-4)^2=5$
2 $(x-1)^2+(y+4)^2=5$
3 $(x+1)^2+(y-4)^2=25$
4 $(x-1)^2+(y+4)^2=25$

397 Which equation represents circle *O* with center (2, –8) and radius 9?

1 $(x+2)^2+(y-8)^2=9$

2 $(x-2)^2+(y+8)^2=9$

3 $(x+2)^2+(y-8)^2=81$

4 $(x-2)^2+(y+8)^2=81$

398 What is the equation of a circle whose center is 4 units above the origin in the coordinate plane and whose radius is 6?

1 $x^2+(y-6)^2=16$

2 $(x-6)^2+y^2=16$

3 $x^2+(y-4)^2=36$

4 $(x-4)^2+y^2=36$

399 The equation of a circle with its center at (–3, 5) and a radius of 4 is

1 $(x+3)^2+(y-5)^2=4$

2 $(x-3)^2+(y+5)^2=4$

3 $(x+3)^2+(y-5)^2=16$

4 $(x-3)^2+(y+5)^2=16$

400 Write an equation of a circle whose center is (–3, 2) and whose diameter is 10.

401 Which equation represents the circle whose center is (–5, 3) and that passes through the point (–1, 3)?

1 $(x+1)^2+(y-3)^2=16$

2 $(x-1)^2+(y+3)^2=16$

3 $(x+5)^2+(y-3)^2=16$

4 $(x-5)^2+(y+3)^2=16$

402 What is an equation of the circle with center (–5, 4) and a radius of 7?

1 $(x-5)^2+(y+4)^2=14$

2 $(x-5)^2+(y+4)^2=49$

3 $(x+5)^2+(y-4)^2=14$

4 $(x+5)^2+(y-4)^2=49$

403 What is the equation of the circle with its center at (–1, 2) and that passes through the point (1, 2)?

1 $(x+1)^2+(y-2)^2=4$

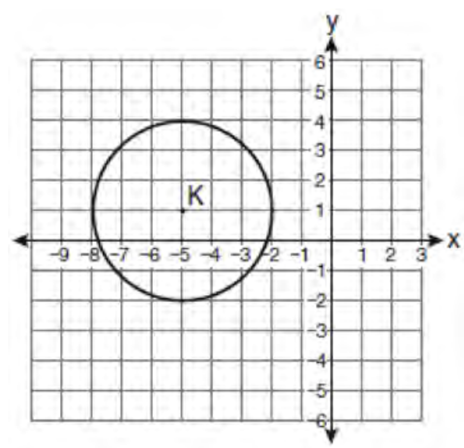
2 $(x-1)^2+(y+2)^2=4$

3 $(x+1)^2+(y-2)^2=2$

4 $(x-1)^2+(y+2)^2=2$

G.G.72: EQUATIONS OF CIRCLES

404 Which equation represents circle *K* shown in the graph below?



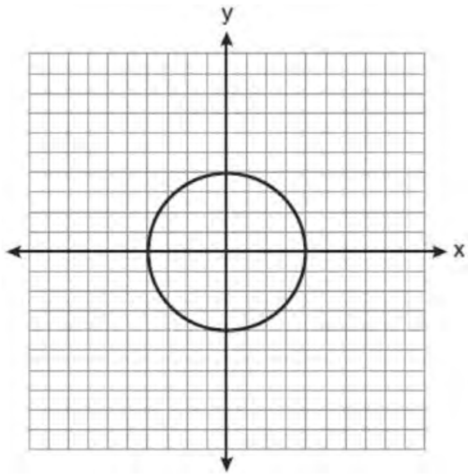
1 $(x+5)^2+(y-1)^2=3$

2 $(x+5)^2+(y-1)^2=9$

3 $(x-5)^2+(y+1)^2=3$

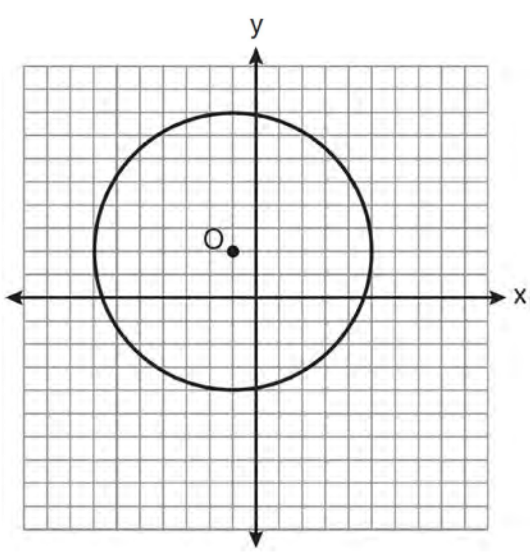
4 $(x-5)^2+(y+1)^2=9$

405 What is an equation for the circle shown in the graph below?

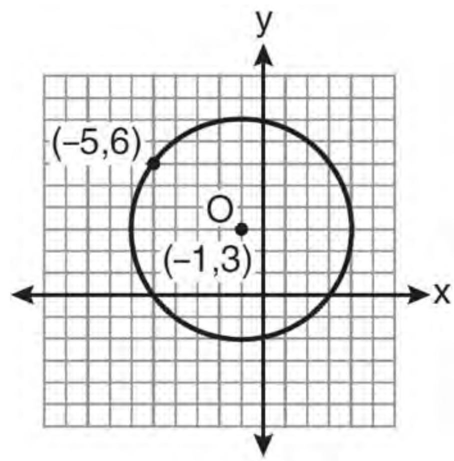


1 $x^2 + y^2 = 2$
2 $x^2 + y^2 = 4$
3 $x^2 + y^2 = 8$
4 $x^2 + y^2 = 16$

406 Write an equation for circle O shown on the graph below.

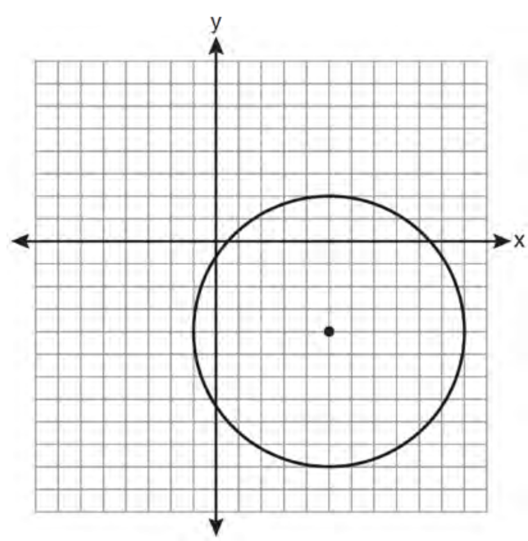


407 What is an equation of circle O shown in the graph below?

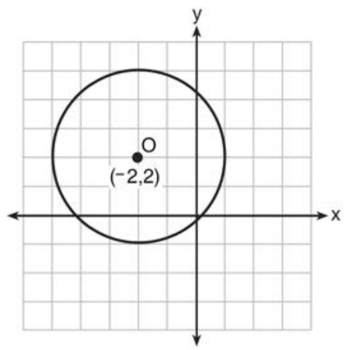


1 $(x+1)^2 + (y-3)^2 = 25$
2 $(x-1)^2 + (y+3)^2 = 25$
3 $(x-5)^2 + (y+6)^2 = 25$
4 $(x+5)^2 + (y-6)^2 = 25$

408 Write an equation of the circle graphed in the diagram below.

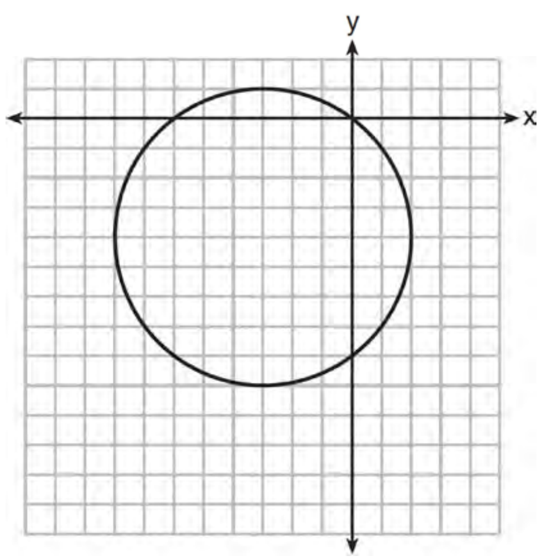


409 What is an equation of circle O shown in the graph below?



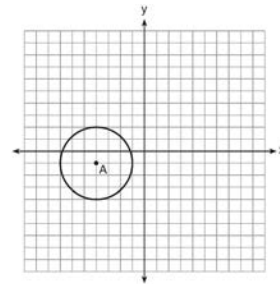
1 $(x+2)^2+(y-2)^2=9$
2 $(x+2)^2+(y-2)^2=3$
3 $(x-2)^2+(y+2)^2=9$
4 $(x-2)^2+(y+2)^2=3$

410 What is an equation of the circle shown in the graph below?



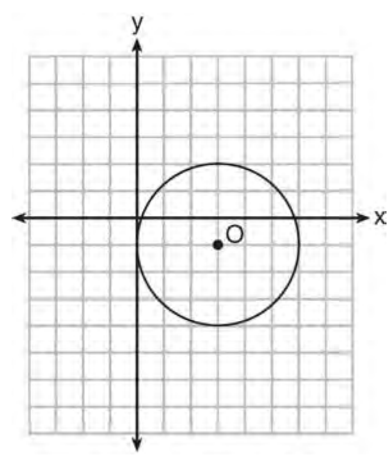
1 $(x-3)^2+(y-4)^2=25$
2 $(x+3)^2+(y+4)^2=25$
3 $(x-3)^2+(y-4)^2=10$
4 $(x+3)^2+(y+4)^2=10$

411 Which equation represents circle A shown in the diagram below?



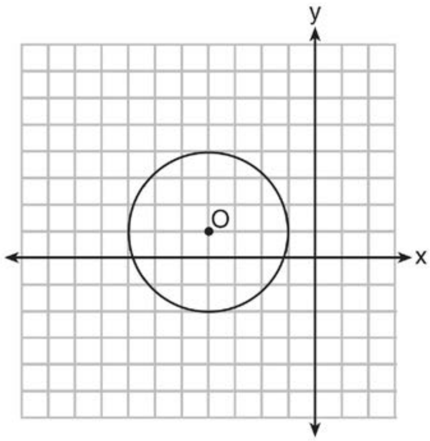
1 $(x-4)^2+(y-1)^2=3$
2 $(x+4)^2+(y+1)^2=3$
3 $(x-4)^2+(y-1)^2=9$
4 $(x+4)^2+(y+1)^2=9$

412 What is the equation for circle O shown in the graph below?



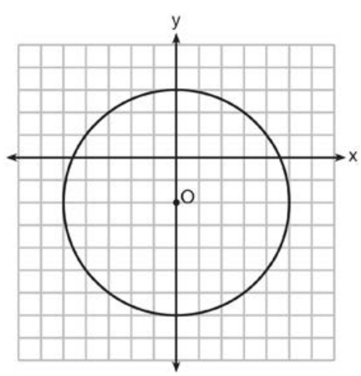
1 $(x-3)^2+(y+1)^2=6$
2 $(x+3)^2+(y-1)^2=6$
3 $(x-3)^2+(y+1)^2=9$
4 $(x+3)^2+(y-1)^2=9$

413 What is the equation of circle O shown in the diagram below?



1 $(x+4)^2 + (y-1)^2 = 3$
2 $(x-4)^2 + (y+1)^2 = 3$
3 $(x+4)^2 + (y-1)^2 = 9$
4 $(x-4)^2 + (y+1)^2 = 9$

414 Which equation represents circle O shown in the graph below?



1 $x^2 + (y-2)^2 = 10$
2 $x^2 + (y+2)^2 = 10$
3 $x^2 + (y-2)^2 = 25$
4 $x^2 + (y+2)^2 = 25$

G.G.73: EQUATIONS OF CIRCLES

415 What are the center and radius of a circle whose equation is $(x-A)^2 + (y-B)^2 = C$?
1 center = (A, B); radius = C
2 center = $(-A, -B)$; radius = C
3 center = (A, B); radius = $\sqrt{C}$
4 center = $(-A, -B)$; radius = $\sqrt{C}$

416 A circle is represented by the equation $x^2 + (y+3)^2 = 13$. What are the coordinates of the center of the circle and the length of the radius?
1 $(0, 3)$ and 13
2 $(0, 3)$ and $\sqrt{13}$
3 $(0, -3)$ and 13
4 $(0, -3)$ and $\sqrt{13}$

417 What are the center and the radius of the circle whose equation is $(x-3)^2 + (y+3)^2 = 36$
1 center = $(3, -3)$; radius = 6
2 center = $(-3, 3)$; radius = 6
3 center = $(3, -3)$; radius = 36
4 center = $(-3, 3)$; radius = 36

418 The equation of a circle is $x^2 + (y-7)^2 = 16$. What are the center and radius of the circle?
1 center = $(0, 7)$; radius = 4
2 center = $(0, 7)$; radius = 16
3 center = $(0, -7)$; radius = 4
4 center = $(0, -7)$; radius = 16

419 What are the center and the radius of the circle whose equation is $(x-5)^2 + (y+3)^2 = 16$?
1 $(-5, 3)$ and 16
2 $(5, -3)$ and 16
3 $(-5, 3)$ and 4
4 $(5, -3)$ and 4

420 A circle has the equation $(x-2)^2+(y+3)^2=36$. What are the coordinates of its center and the length of its radius?
1 $(-2,3)$ and 6
2 $(2,-3)$ and 6
3 $(-2,3)$ and 36
4 $(2,-3)$ and 36

421 Which equation of a circle will have a graph that lies entirely in the first quadrant?
1 $(x-4)^2+(y-5)^2=9$
2 $(x+4)^2+(y+5)^2=9$
3 $(x+4)^2+(y+5)^2=25$
4 $(x-5)^2+(y-4)^2=25$

422 The equation of a circle is $(x-2)^2+(y+5)^2=32$. What are the coordinates of the center of this circle and the length of its radius?
1 $(-2,5)$ and 16
2 $(2,-5)$ and 16
3 $(-2,5)$ and $4\sqrt{2}$
4 $(2,-5)$ and $4\sqrt{2}$

423 Which set of equations represents two circles that have the same center?
1 $x^2+(y+4)^2=16$ and $(x+4)^2+y^2=16$
2 $(x+3)^2+(y-3)^2=16$ and $(x-3)^2+(y+3)^2=25$
3 $(x-7)^2+(y-2)^2=16$ and $(x+7)^2+(y+2)^2=25$
4 $(x-2)^2+(y-5)^2=16$ and $(x-2)^2+(y-5)^2=25$

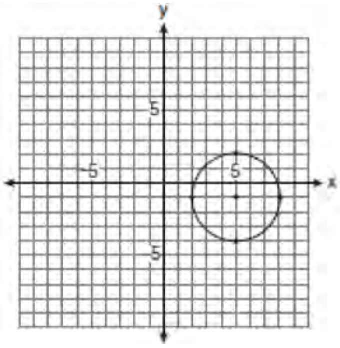
424 A circle has the equation $(x-3)^2+(y+4)^2=10$. Find the coordinates of the center of the circle and the length of the circle's radius.

425 What are the coordinates of the center and the length of the radius of the circle whose equation is $(x+1)^2+(y-5)^2=16$?
1 $(1,-5)$ and 16
2 $(-1,5)$ and 16
3 $(1,-5)$ and 4
4 $(-1,5)$ and 4

426 A circle with the equation $(x+6)^2+(y-7)^2=64$ does *not* include points in Quadrant
1 I
2 II
3 III
4 IV

G.G.74: GRAPHING CIRCLES

427 Which graph represents a circle with the equation $(x-5)^2+(y+1)^2=9$?



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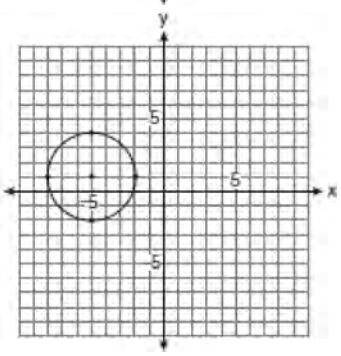

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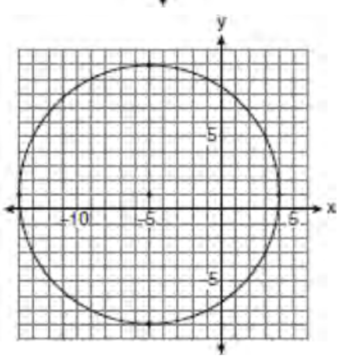

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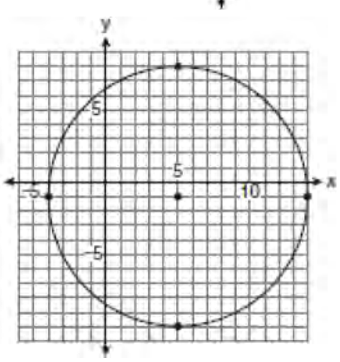
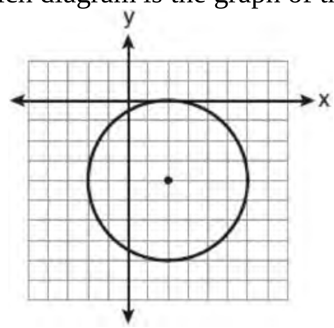


4

428 The equation of a circle is $(x-2)^2+(y+4)^2=4$. Which diagram is the graph of the circle?



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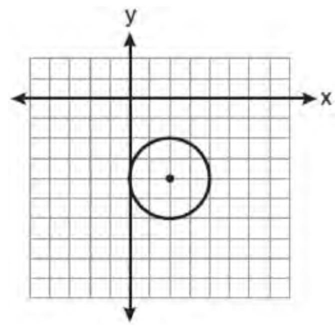

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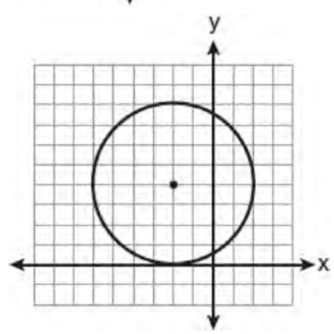

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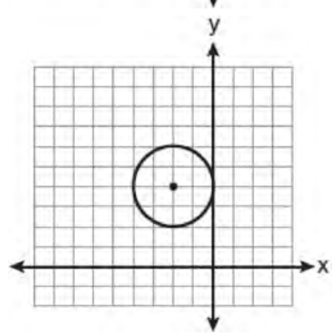

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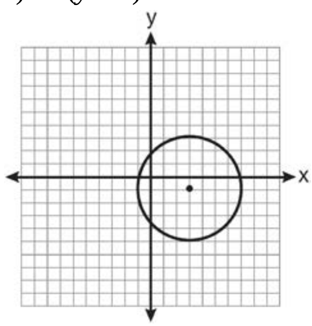
429 Which graph represents a circle with the equation $(x-3)^2+(y+1)^2=4$?



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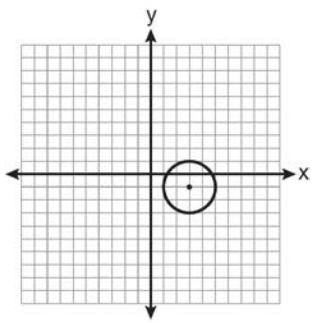

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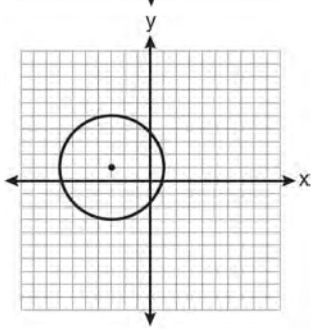

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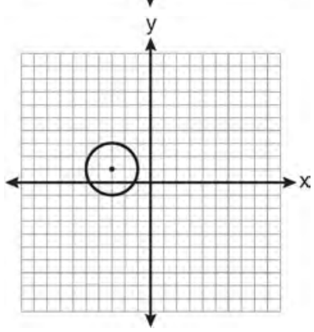

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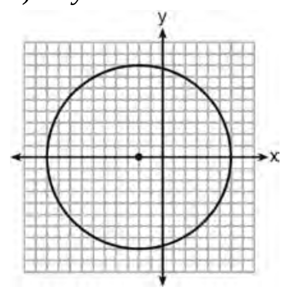
430 Which graph represents a circle whose equation is $(x+2)^2+y^2=16$?



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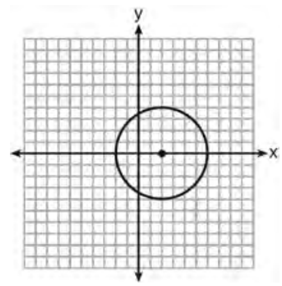

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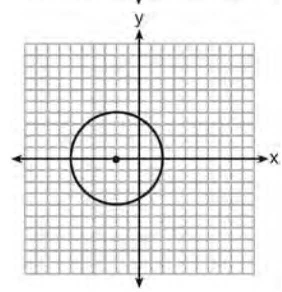

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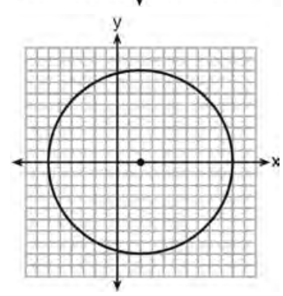

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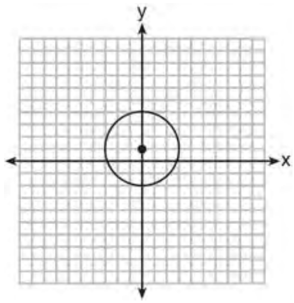
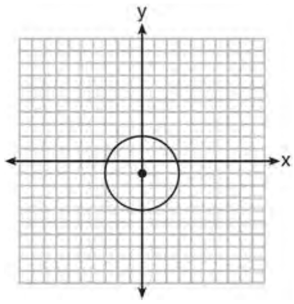
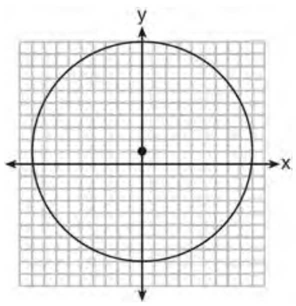
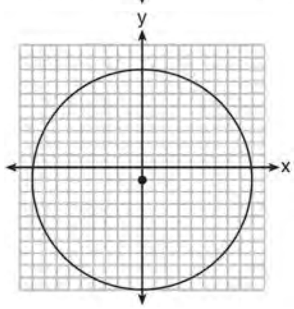
431 Which graph represents a circle whose equation is $x^2 + (y - 1)^2 = 9$?

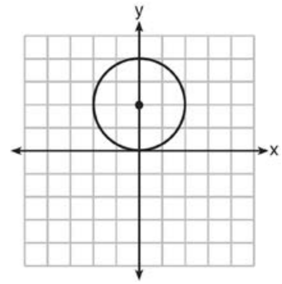
1 

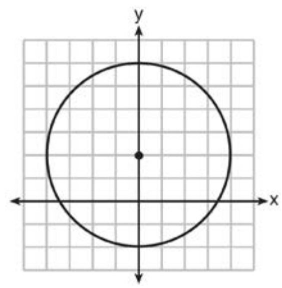
2 

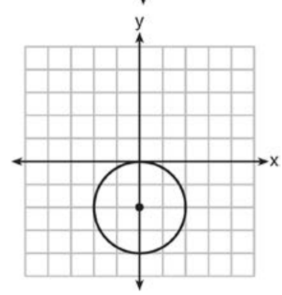
3 

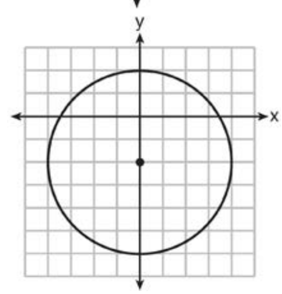
4 

432 Which graph represents a circle whose equation is $x^2 + (y - 2)^2 = 4$?

1 

2 

3 

4 

MEASURING IN THE PLANE AND SPACE

G.G.11: VOLUME

433 Tim has a rectangular prism with a length of 10 centimeters, a width of 2 centimeters, and an unknown height. He needs to build another rectangular prism with a length of 5 centimeters and the same height as the original prism. The volume of the two prisms will be the same. Find the width, in centimeters, of the new prism.

434 A rectangular prism has a base with a length of 25, a width of 9, and a height of 12. A second prism has a square base with a side of 15. If the volumes of the two prisms are equal, what is the height of the second prism?
1 6
2 8
3 12
4 15

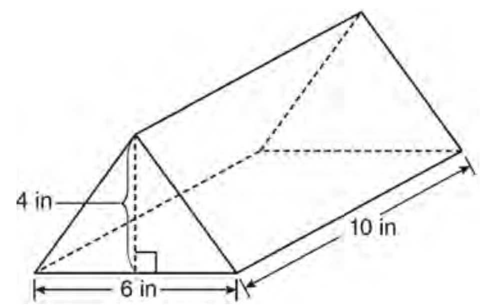
435 Two prisms have equal heights and equal volumes. The base of one is a pentagon and the base of the other is a square. If the area of the pentagonal base is 36 square inches, how many inches are in the length of each side of the square base?
1 6
2 9
3 24
4 36

G.G.12: VOLUME

436 A rectangular prism has a volume of $3x^2 + 18x + 24$. Its base has a length of $x + 2$ and a width of 3. Which expression represents the height of the prism?
1 $x + 4$
2 $x + 2$
3 3
4 $x^2 + 6x + 8$

437 The Parkside Packing Company needs a rectangular shipping box. The box must have a length of 11 inches and a width of 8 inches. Find, to the *nearest tenth of an inch*, the minimum height of the box such that the volume is *at least* 800 cubic inches.

438 A packing carton in the shape of a triangular prism is shown in the diagram below.



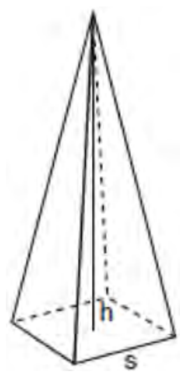
What is the volume, in cubic inches, of this carton?
1 20
2 60
3 120
4 240

439 The volume of a rectangular prism is 144 cubic inches. The height of the prism is 8 inches. Which measurements, in inches, could be the dimensions of the base?
1 3.3 by 5.5
2 2.5 by 7.2
3 12 by 8
4 9 by 9

440 A right prism has a square base with an area of 12 square meters. The volume of the prism is 84 cubic meters. Determine and state the height of the prism, in meters.

G.G.13: VOLUME

441 A regular pyramid with a square base is shown in the diagram below.



A side, *s*, of the base of the pyramid is 12 meters, and the height, *h*, is 42 meters. What is the volume of the pyramid in cubic meters?

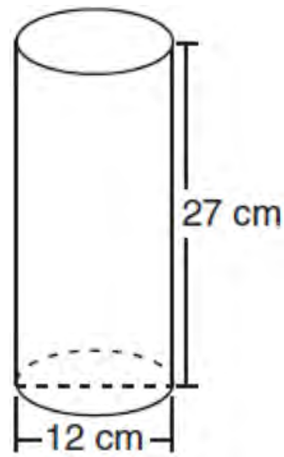
442 The base of a pyramid is a rectangle with a width of 6 cm and a length of 8 cm. Find, in centimeters, the height of the pyramid if the volume is 288 cm^3.

G.G.14: VOLUME AND LATERAL AREA

443 The volume of a cylinder is 12,566.4 cm^3. The height of the cylinder is 8 cm. Find the radius of the cylinder to the *nearest tenth of a centimeter*.

444 A right circular cylinder has a volume of 1,000 cubic inches and a height of 8 inches. What is the radius of the cylinder to the *nearest tenth of an inch*?
1 6.3
2 11.2
3 19.8
4 39.8

445 Which expression represents the volume, in cubic centimeters, of the cylinder represented in the diagram below?



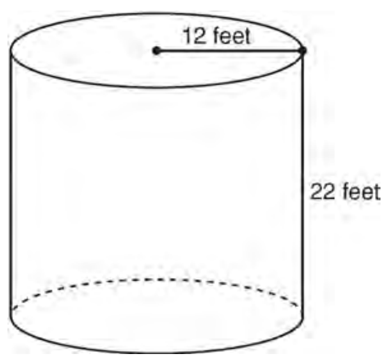
1 162π
2 324π
3 972π
4 $3,888\pi$

446 A right circular cylinder has an altitude of 11 feet and a radius of 5 feet. What is the lateral area, in square feet, of the cylinder, to the *nearest tenth*?
1 172.7
2 172.8
3 345.4
4 345.6

447 What is the volume, in cubic centimeters, of a cylinder that has a height of 15 cm and a diameter of 12 cm?
1 180π
2 540π
3 675π
4 $2,160\pi$

448 A paint can is in the shape of a right circular cylinder. The volume of the paint can is 600π cubic inches and its altitude is 12 inches. Find the radius, in inches, of the base of the paint can. Express the answer in simplest radical form. Find, to the *nearest tenth of a square inch*, the lateral area of the paint can.

449 The cylindrical tank shown in the diagram below is to be painted. The tank is open at the top, and the bottom does *not* need to be painted. Only the outside needs to be painted. Each can of paint covers 600 square feet. How many cans of paint must be purchased to complete the job?



450 A cylinder has a height of 7 cm and a base with a diameter of 10 cm. Determine the volume, in cubic centimeters, of the cylinder in terms of π.

451 A right circular cylinder with a height of 5 cm has a base with a diameter of 6 cm. Find the lateral area of the cylinder to the *nearest hundredth of a square centimeter*. Find the volume of the cylinder to the *nearest hundredth of a cubic centimeter*.

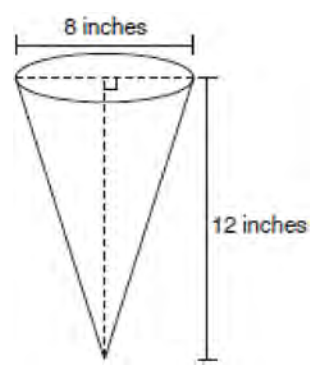
452 A right circular cylinder has a height of 7 inches and the base has a diameter of 6 inches. Determine the lateral area, in square inches, of the cylinder in terms of π.

453 As shown in the diagram below, a landscaper uses a cylindrical lawn roller on a lawn. The roller has a radius of 9 inches and a width of 42 inches.

To the *nearest square inch*, the area the roller covers in one complete rotation is
1 2,374
2 2,375
3 10,682
4 10,688

G.G.15: VOLUME AND LATERAL AREA

454 In the diagram below, a right circular cone has a diameter of 8 inches and a height of 12 inches.



What is the volume of the cone to the *nearest cubic inch*?
1 201
2 481
3 603
4 804

455 A right circular cone has a base with a radius of 15 cm, a vertical height of 20 cm, and a slant height of 25 cm. Find, in terms of' π, the number of square centimeters in the lateral area of the cone.

456 The lateral area of a right circular cone is equal to 120π cm^2. If the base of the cone has a diameter of 24 cm, what is the length of the slant height, in centimeters?
1 2.5
2 5
3 10
4 15.7

G.G.16: VOLUME AND SURFACE AREA

457 Tim is going to paint a wooden sphere that has a diameter of 12 inches. Find the surface area of the sphere, to the *nearest square inch*.

458 If the surface area of a sphere is represented by 144π, what is the volume in terms of π?
1 36π
2 48π
3 216π
4 288π

459 The volume, in cubic centimeters, of a sphere whose diameter is 6 centimeters is
1 12π
2 36π
3 48π
4 288π

460 A sphere has a diameter of 18 meters. Find the volume of the sphere, in cubic meters, in terms of π.

461 The diameter of a sphere is 15 inches. What is the volume of the sphere, to the *nearest tenth of a cubic inch*?
1 706.9
2 1767.1
3 2827.4
4 14,137.2

462 A sphere is inscribed inside a cube with edges of 6 cm. In cubic centimeters, what is the volume of the sphere, in terms of π?
1 12π
2 36π
3 48π
4 288π

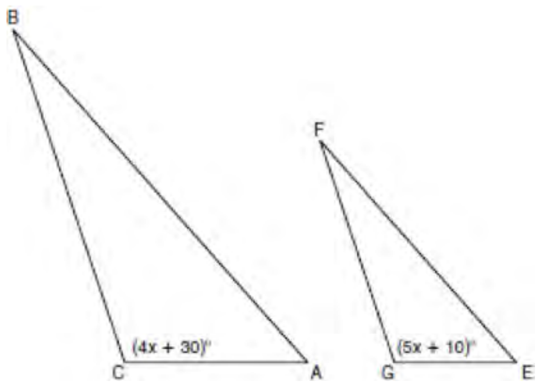
463 The volume of a sphere is approximately 44.6022 cubic centimeters. What is the radius of the sphere, to the *nearest tenth of a centimeter*?
1 2.2
2 3.3
3 4.4
4 4.7

464 The diameter of a sphere is 5 inches. Determine and state the surface area of the sphere, to the *nearest hundredth of a square inch*.

G.G.45: SIMILARITY

465 Two triangles are similar, and the ratio of each pair of corresponding sides is $2:1$. Which statement regarding the two triangles is *not* true?
1 Their areas have a ratio of $4:1$.
2 Their altitudes have a ratio of $2:1$.
3 Their perimeters have a ratio of $2:1$.
4 Their corresponding angles have a ratio of $2:1$.

466 In the diagram below, $\triangle ABC \sim \triangle EFG$, $m\angle C = 4x + 30$, and $m\angle G = 5x + 10$. Determine the value of x.



467 Given $\triangle ABC \sim \triangle DEF$ such that $\frac{AB}{DE} = \frac{3}{2}$. Which statement is *not* true?

1 $\frac{BC}{EF} = \frac{3}{2}$

2 $\frac{m\angle A}{m\angle D} = \frac{3}{2}$

3 $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF} = \frac{9}{4}$

4 $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF} = \frac{3}{2}$

468 If $\triangle ABC \sim \triangle ZXY$, $m\angle A = 50$, and $m\angle C = 30$, what is $m\angle X$?

1 30
2 50
3 80
4 100

469 $\triangle ABC$ is similar to $\triangle DEF$. The ratio of the length of $\overline{AB}$ to the length of $\overline{DE}$ is 3:1. Which ratio is also equal to 3:1?

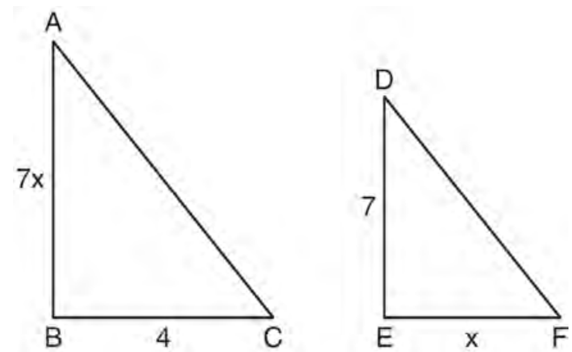
1 $\frac{m\angle A}{m\angle D}$

2 $\frac{m\angle B}{m\angle F}$

3 $\frac{\text{area of } \triangle ABC}{\text{area of } \triangle DEF}$

4 $\frac{\text{perimeter of } \triangle ABC}{\text{perimeter of } \triangle DEF}$

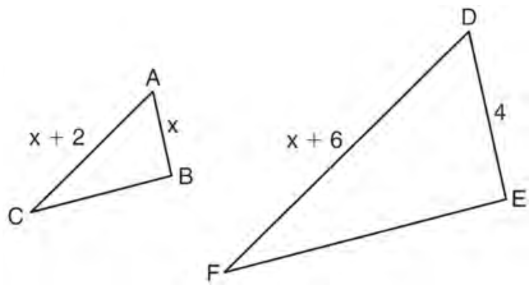
470 As shown in the diagram below, $\triangle ABC \sim \triangle DEF$, $AB = 7x$, $BC = 4$, $DE = 7$, and $EF = x$.



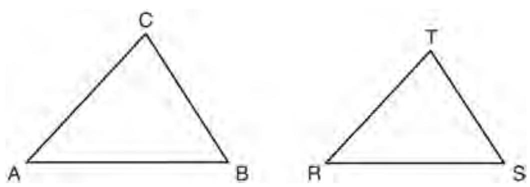
What is the length of $\overline{AB}$?

1 28
2 2
3 14
4 4

471 In the diagram below, $\triangle ABC \sim \triangle DEF$, $DE = 4$, $AB = x$, $AC = x + 2$, and $DF = x + 6$. Determine the length of $\overline{AB}$. [Only an algebraic solution can receive full credit.]



472 In the diagram below, $\triangle ABC \sim \triangle RST$.



Which statement is *not* true?
1 $\angle A \cong \angle R$
2 $\frac{AB}{RS} = \frac{BC}{ST}$
3 $\frac{AB}{BC} = \frac{ST}{RS}$
4 $\frac{AB + BC + AC}{RS + ST + RT} = \frac{AB}{RS}$

473 Scalene triangle ABC is similar to triangle DEF. Which statement is *false*?
1 $AB:BC = DE:EF$
2 $AC:DF = BC:EF$
3 $\angle ACB \cong \angle DFE$
4 $\angle ABC \cong \angle EDF$

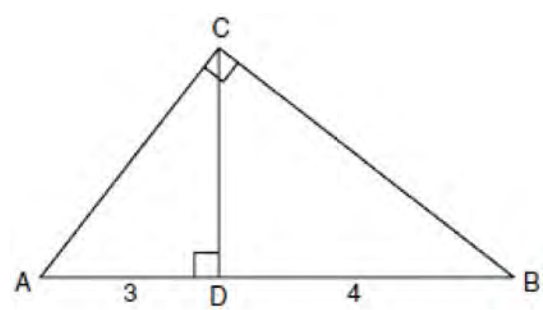
474 Triangle ABC is similar to triangle DEF. The lengths of the sides of $\triangle ABC$ are 5, 8, and 11. What is the length of the shortest side of $\triangle DEF$ if its perimeter is 60?
1 10
2 12.5
3 20
4 27.5

475 If $\triangle RST \sim \triangle ABC$, $m\angle A = x^2 - 8x$, $m\angle C = 4x - 5$, and $m\angle R = 5x + 30$, find $m\angle C$. [Only an algebraic solution can receive full credit.]

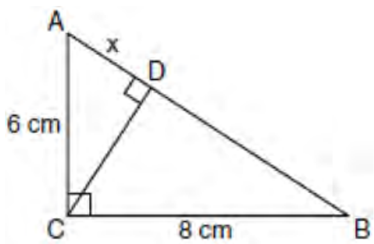
476 The sides of a triangle are 8, 12, and 15. The longest side of a similar triangle is 18. What is the ratio of the perimeter of the smaller triangle to the perimeter of the larger triangle?
1 2:3
2 4:9
3 5:6
4 25:36

G.G.47: SIMILARITY

477 In the diagram below of right triangle ACB, altitude $\overline{CD}$ intersects $\overline{AB}$ at D. If $AD = 3$ and $DB = 4$, find the length of $\overline{CD}$ in simplest radical form.

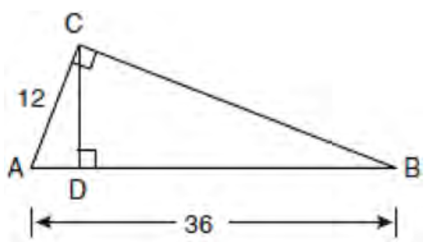


478 In the diagram below, the length of the legs $\overline{AC}$ and $\overline{BC}$ of right triangle ABC are 6 cm and 8 cm, respectively. Altitude $\overline{CD}$ is drawn to the hypotenuse of $\triangle ABC$.



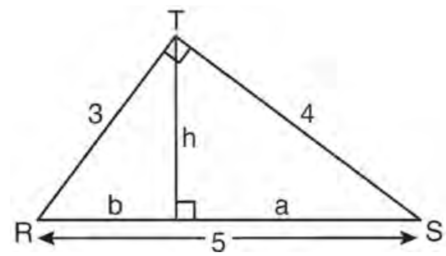
What is the length of $\overline{AD}$ to the *nearest tenth of a centimeter*?
1 3.6
2 6.0
3 6.4
4 4.0

479 In the diagram below of right triangle ACB, altitude $\overline{CD}$ is drawn to hypotenuse $\overline{AB}$.

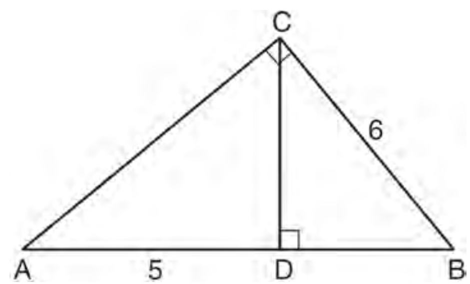


If $AB = 36$ and $AC = 12$, what is the length of $\overline{AD}$?
1 32
2 6
3 3
4 4

480 In the diagram below, $\triangle RST$ is a 3 – 4 – 5 right triangle. The altitude, h, to the hypotenuse has been drawn. Determine the length of h.

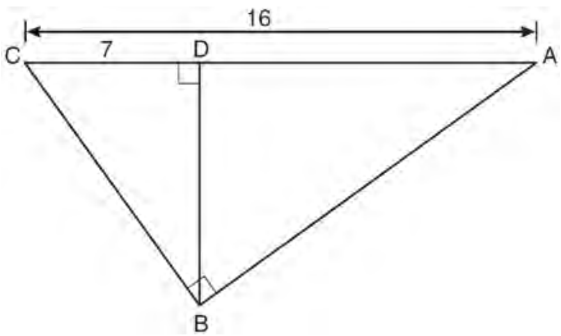


481 In the diagram below of right triangle ABC, $\overline{CD}$ is the altitude to hypotenuse $\overline{AB}$, $CB = 6$, and $AD = 5$.



What is the length of $\overline{BD}$?
1 5
2 9
3 3
4 4

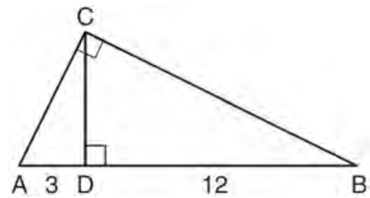
482 In the diagram below of right triangle *ABC*, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$, $AC = 16$, and $CD = 7$.



What is the length of $\overline{BD}$?
1 $3\sqrt{7}$
2 $4\sqrt{7}$
3 $7\sqrt{3}$
4 12

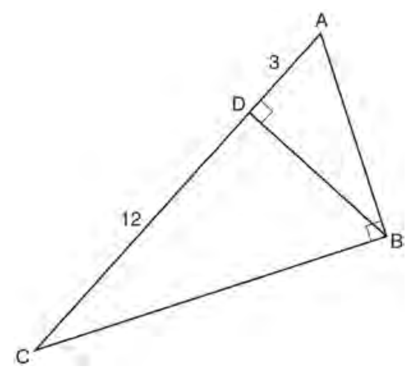
483 In $\triangle PQR$, $\angle PRQ$ is a right angle and $\overline{RT}$ is drawn perpendicular to hypotenuse $\overline{PQ}$. If $PT = x$, $RT = 6$, and $TQ = 4x$, what is the length of $\overline{PQ}$?
1 9
2 12
3 3
4 15

484 In the diagram below of right triangle *ABC*, altitude $\overline{CD}$ is drawn to hypotenuse $\overline{AB}$.



If $AD = 3$ and $DB = 12$, what is the length of altitude $\overline{CD}$?
1 6
2 $6\sqrt{5}$
3 3
4 $3\sqrt{5}$

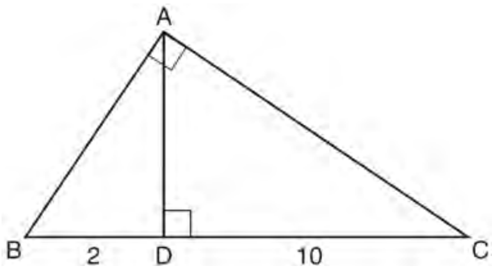
485 In right triangle *ABC* shown in the diagram below, altitude $\overline{BD}$ is drawn to hypotenuse $\overline{AC}$, $CD = 12$, and $AD = 3$.



What is the length of $\overline{AB}$?
1 $5\sqrt{3}$
2 6
3 $3\sqrt{5}$
4 9

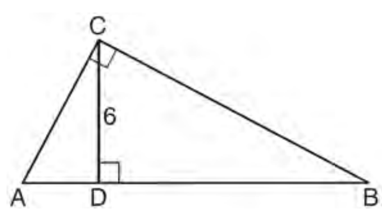
Geometry Regents Exam Questions by Performance Indicator: Topic

486 Triangle ABC shown below is a right triangle with altitude $\overline{AD}$ drawn to the hypotenuse $\overline{BC}$.



If $BD = 2$ and $DC = 10$, what is the length of $\overline{AB}$?
1 $2\sqrt{2}$
2 $2\sqrt{5}$
3 $2\sqrt{6}$
4 $2\sqrt{30}$

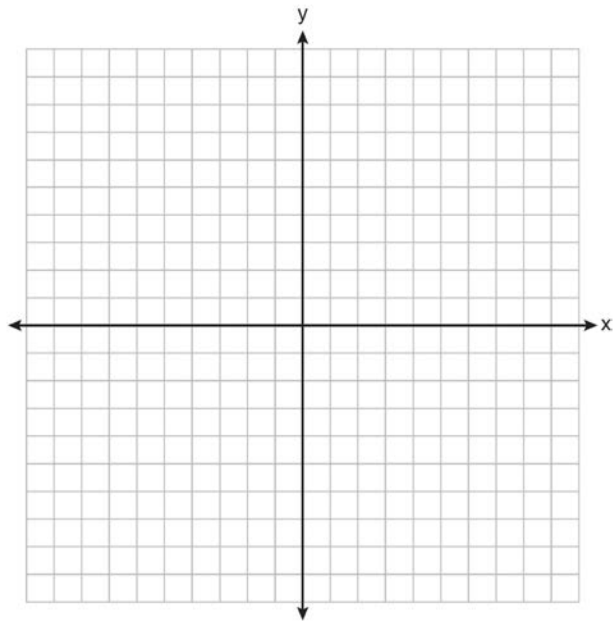
487 In right triangle ABC below, $\overline{CD}$ is the altitude to hypotenuse $\overline{AB}$. If $CD = 6$ and the ratio of AD to AB is 1:5, determine and state the length of $\overline{BD}$. [Only an algebraic solution can receive full credit.]



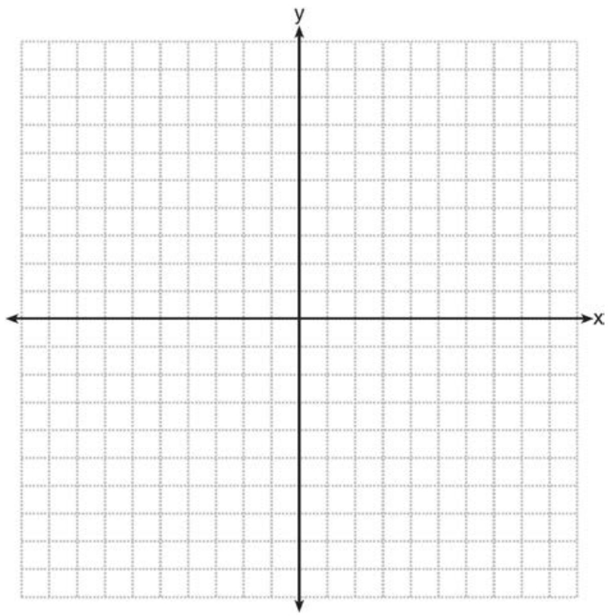
TRANSFORMATIONS

G.G.54: ROTATIONS

488 The coordinates of the vertices of $\triangle RST$ are $R(-2,3)$, $S(4,4)$, and $T(2,-2)$. Triangle $R'S'T'$ is the image of $\triangle RST$ after a rotation of 90° about the origin. State the coordinates of the vertices of $\triangle R'S'T'$. [The use of the set of axes below is optional.]



489 The coordinates of the vertices of $\triangle ABC$ are $A(1,2)$, $B(-4,3)$, and $C(-3,-5)$. State the coordinates of $\triangle A'B'C'$, the image of $\triangle ABC$ after a rotation of 90º about the origin. [The use of the set of axes below is optional.]



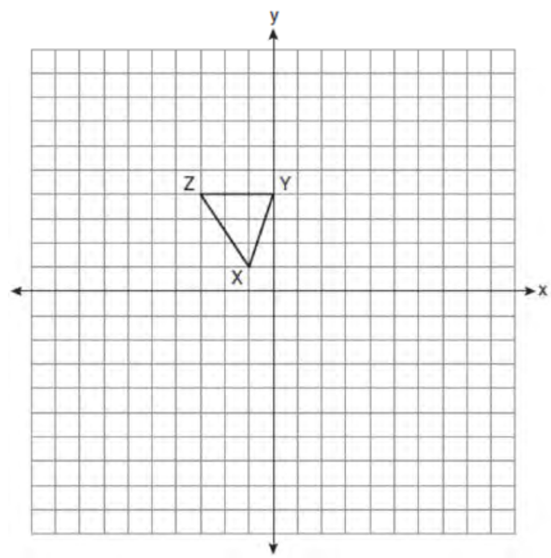
490 What are the coordinates of A', the image of $A(-3,4)$, after a rotation of 180º about the origin?
1 $(4,-3)$
2 $(-4,-3)$
3 $(3,4)$
4 $(3,-4)$

491 The coordinates of point P are $(7,1)$. What are the coordinates of the image of P after R_{90° about the origin?
1 $(1,7)$
2 $(-7,-1)$
3 $(1,-7)$
4 $(-1,7)$

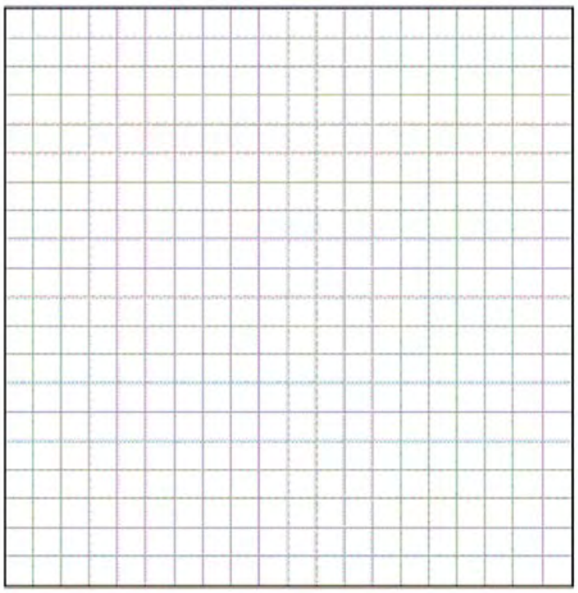
G.G.54: REFLECTIONS

492 Point A is located at $(4,-7)$. The point is reflected in the x-axis. Its image is located at
1 $(-4,7)$
2 $(-4,-7)$
3 $(4,7)$
4 $(7,-4)$

493 Triangle XYZ, shown in the diagram below, is reflected over the line $x=2$. State the coordinates of $\triangle X'Y'Z'$, the image of $\triangle XYZ$.



494 Triangle *ABC* has vertices $A(-2,2)$, $B(-1,-3)$, and $C(4,0)$. Find the coordinates of the vertices of $\Delta A'B'C'$, the image of ΔABC after the transformation $r_{x\text{-axis}}$. [The use of the grid is optional.]



495 What is the image of the point $(2,-3)$ after the transformation $r_{y-\text{axis}}$?
1 $(2,3)$
2 $(-2,-3)$
3 $(-2,3)$
4 $(-3,2)$

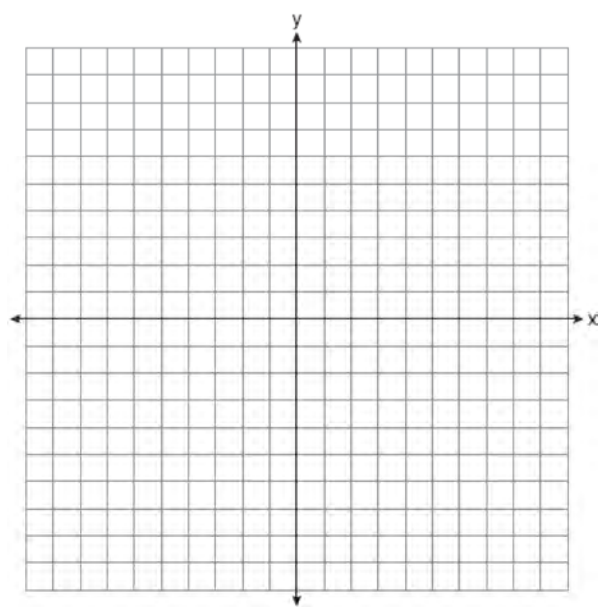
496 The coordinates of point *A* are $(-3a,4b)$. If point A' is the image of point *A* reflected over the line $y=x$, the coordinates of A' are
1 $(4b,-3a)$
2 $(3a,4b)$
3 $(-3a,-4b)$
4 $(-4b,-3a)$

G.G.54: TRANSLATIONS

497 Triangle *ABC* has vertices $A(1,3)$, $B(0,1)$, and $C(4,0)$. Under a translation, A', the image point of *A*, is located at $(4,4)$. Under this same translation, point C' is located at
1 $(7,1)$
2 $(5,3)$
3 $(3,2)$
4 $(1,-1)$

498 What is the image of the point $(-5,2)$ under the translation $T_{3,-4}$?
1 $(-9,5)$
2 $(-8,6)$
3 $(-2,-2)$
4 $(-15,-8)$

499 Triangle *TAP* has coordinates $T(-1,4)$, $A(2,4)$, and $P(2,0)$. On the set of axes below, graph and label $\Delta T'A'P'$, the image of ΔTAP after the translation $(x,y)\rightarrow(x-5,y-1)$.

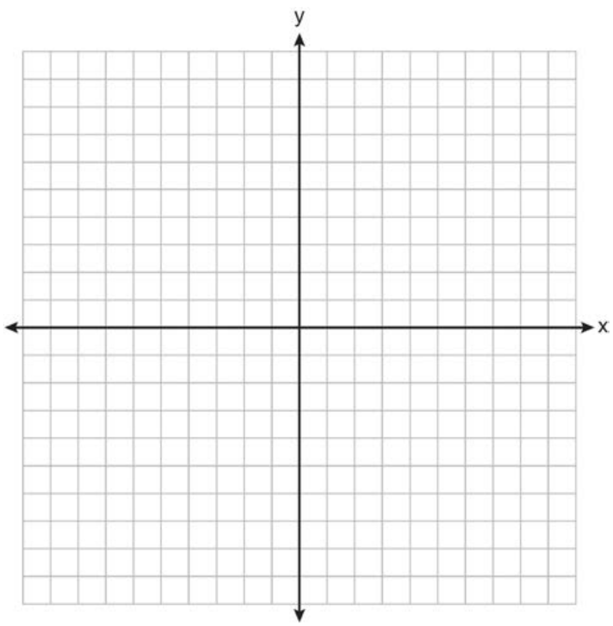


G.G.58: DILATIONS

500 Triangle ABC has vertices $A(6,6)$, $B(9,0)$, and $C(3,-3)$. State and label the coordinates of $\triangle A'B'C'$, the image of $\triangle ABC$ after a dilation of $D_{\frac{1}{3}}$.

G.G.54: COMPOSITIONS OF TRANSFORMATIONS

501 The coordinates of the vertices of parallelogram $ABCD$ are $A(-2,2)$, $B(3,5)$, $C(4,2)$, and $D(-1,-1)$. State the coordinates of the vertices of parallelogram $A''B''C''D''$ that result from the transformation $r_{y-\text{axis}} \circ T_{2,-3}$. [The use of the set of axes below is optional.]



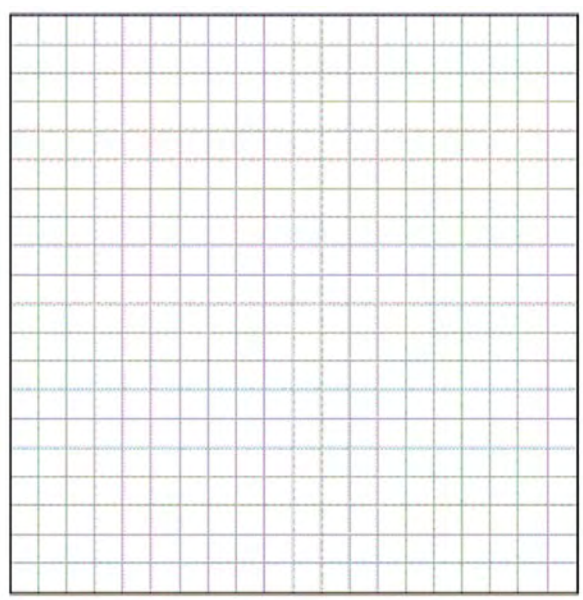
502 What is the image of point $A(4,2)$ after the composition of transformations defined by $R_{90^\circ} \circ r_{y=x}$?
1 $(-4,2)$
2 $(4,-2)$
3 $(-4,-2)$
4 $(2,-4)$

503 The point $(3,-2)$ is rotated 90º about the origin and then dilated by a scale factor of 4. What are the coordinates of the resulting image?
1 $(-12,8)$
2 (12,-8)
3 $(8,12)$
4 $(-8,-12)$

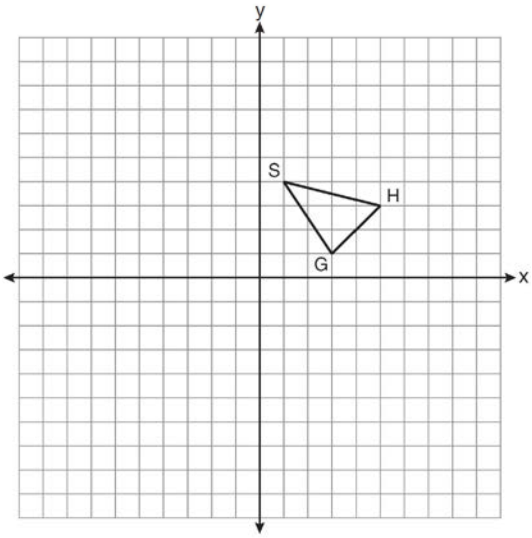
G.G.58: COMPOSITIONS OF TRANSFORMATIONS

504 The endpoints of $\overline{AB}$ are $A(3,2)$ and $B(7,1)$. If $\overline{A''B''}$ is the result of the transformation of $\overline{AB}$ under $D_2 \circ T_{-4,3}$ what are the coordinates of A'' and B''?
1 $A''(-2,10)$ and $B''(6,8)$
2 $A''(-1,5)$ and $B''(3,4)$
3 $A''(2,7)$ and $B''(10,5)$
4 $A''(14,-2)$ and $B''(22,-4)$

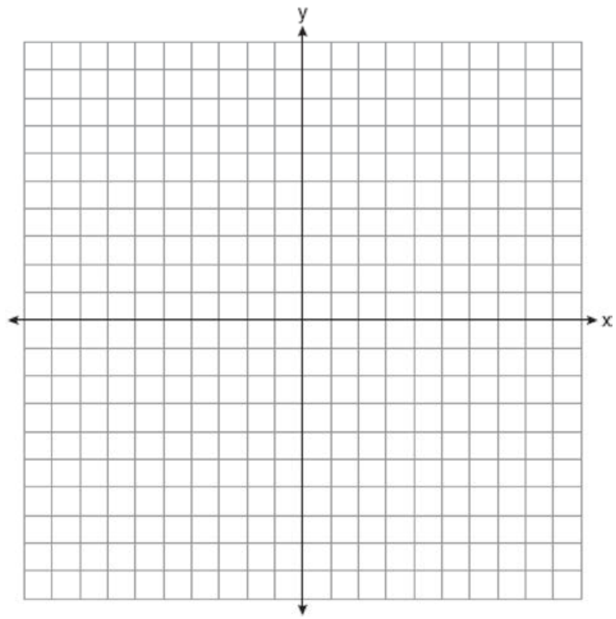
505 The coordinates of the vertices of $\triangle ABC$ $A(1,3)$, $B(-2,2)$ and $C(0,-2)$. On the grid below, graph and label $\triangle A''B''C''$, the result of the composite transformation $D_2 \circ T_{3,-2}$. State the coordinates of A'', B'', and C''.



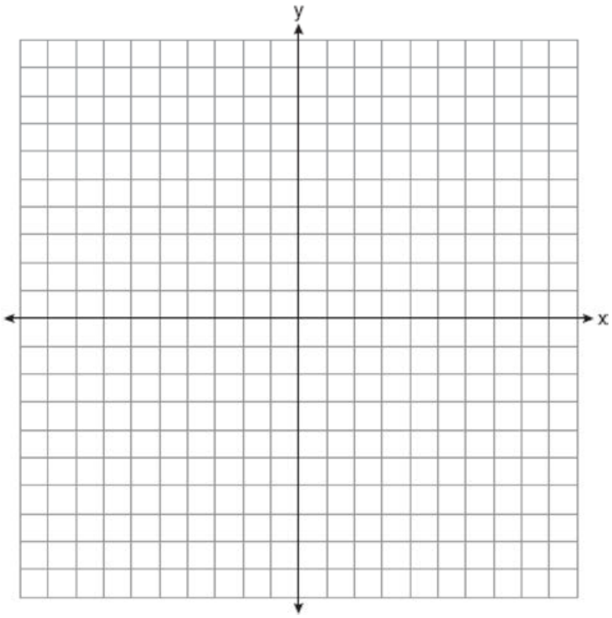
506 As shown on the set of axes below, $\triangle GHS$ has vertices $G(3,1)$, $H(5,3)$, and $S(1,4)$. Graph and state the coordinates of $\triangle G''H''S''$, the image of $\triangle GHS$ after the transformation $T_{-3,1} \circ D_2$.



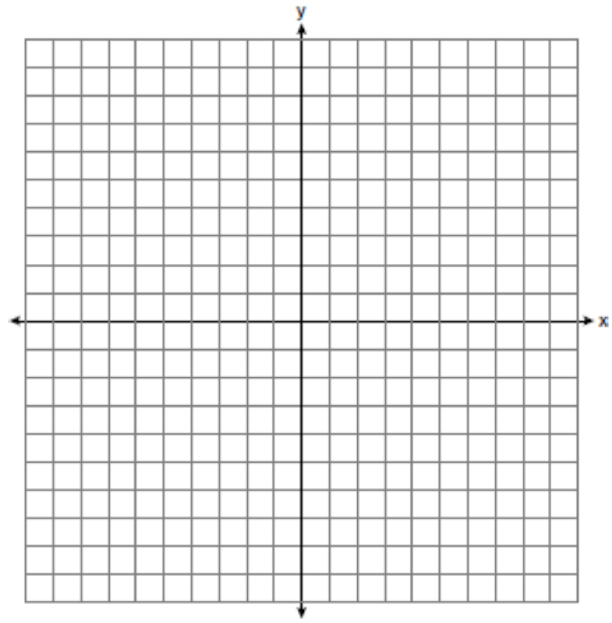
507 The coordinates of trapezoid $ABCD$ are $A(-4,5)$, $B(1,5)$, $C(1,2)$, and $D(-6,2)$. Trapezoid $A''B''C''D''$ is the image after the composition $r_{x-\text{axis}} \circ r_{y=x}$ is performed on trapezoid $ABCD$. State the coordinates of trapezoid $A''B''C''D''$. [The use of the set of axes below is optional.]



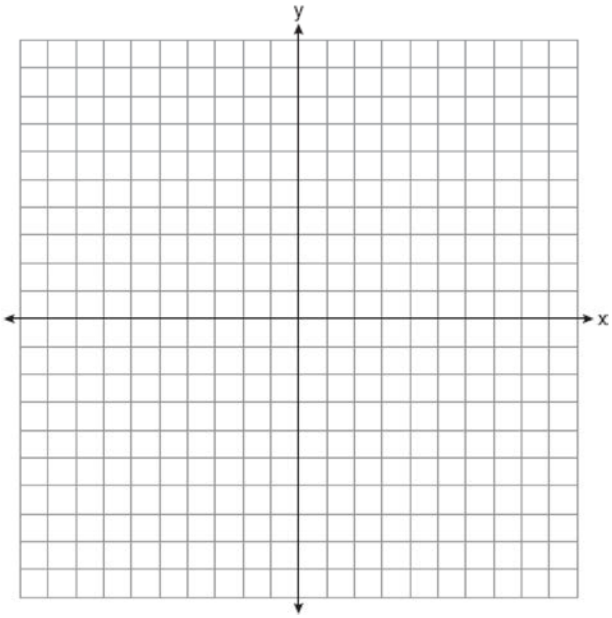
508 The vertices of $\triangle RST$ are $R(-6,5)$, $S(-7,-2)$, and $T(1,4)$. The image of $\triangle RST$ after the composition $T_{-2,3} \circ r_{y=x}$ is $\triangle R''S''T''$. State the coordinates of $\triangle R''S''T''$. [The use of the set of axes below is optional.]



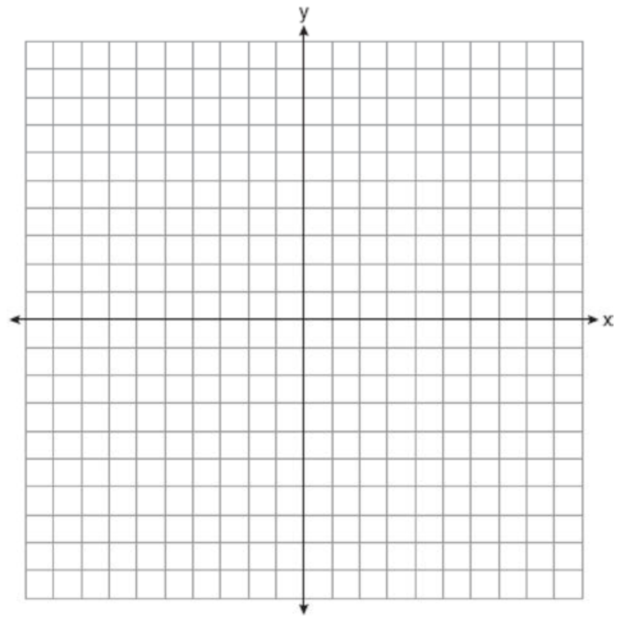
509 Triangle ABC has vertices $A(5,1)$, $B(1,4)$ and $C(1,1)$. State and label the coordinates of the vertices of $\triangle A''B''C''$, the image of $\triangle ABC$, following the composite transformation $T_{1,-1} \circ D_2$. [The use of the set of axes below is optional.]



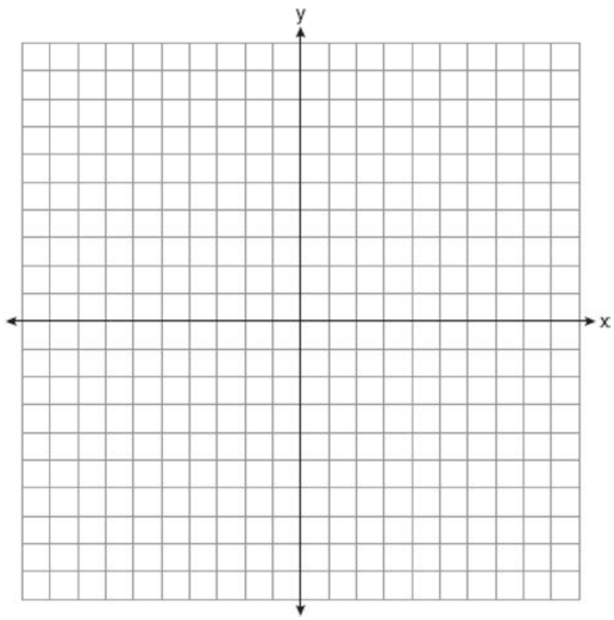
510 The coordinates of the vertices of parallelogram *SWAN* are $S(2,-2)$, $W(-2,-4)$, $A(-4,6)$, and $N(0,8)$. State and label the coordinates of parallelogram $S''W''A''N''$, the image of *SWAN* after the transformation $T_{4,-2} \circ D_{\frac{1}{2}}$. [The use of the set of axes below is optional.]



511 Quadrilateral *MATH* has coordinates $M(-6,-3)$, $A(-1,-3)$, $T(-2,-1)$, and $H(-4,-1)$. The image of quadrilateral *MATH* after the composition $r_{x\text{-axis}} \circ T_{7,5}$ is quadrilateral $M''A''T''H''$. State and label the coordinates of $M''A''T''H''$. [The use of the set of axes below is optional.]

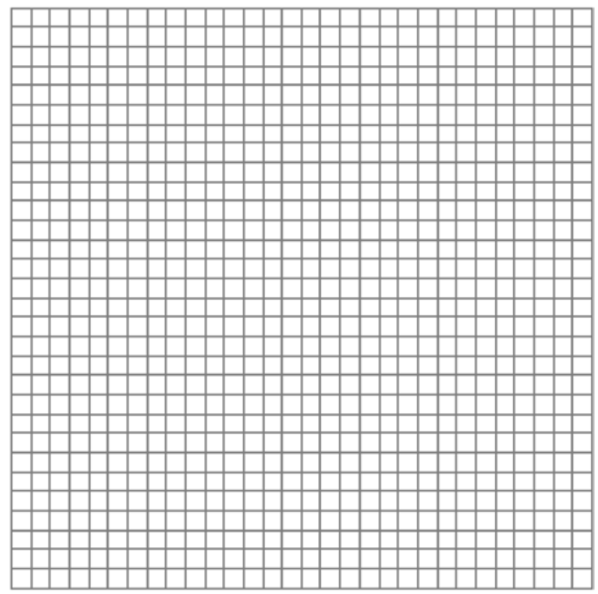


512 The coordinates of the vertices of $\triangle ABC$ are $A(-6,5)$, $B(-4,8)$, and $C(1,6)$. State and label the coordinates of the vertices of $\triangle A''B''C''$, the image of $\triangle ABC$ after the composition of transformations $T_{(-4,5)} \circ r_{y\text{-axis}}$. [The use of the set of axes below is optional.]

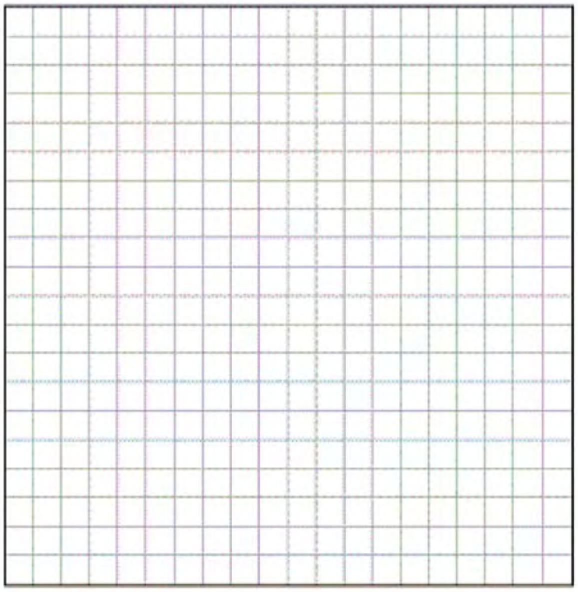


G.G.55: PROPERTIES OF TRANSFORMATIONS

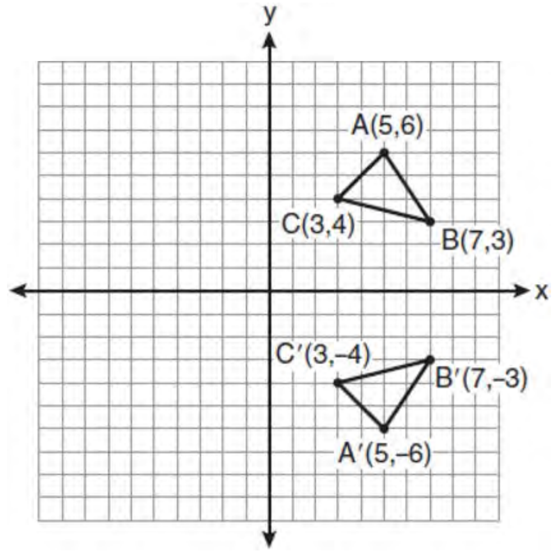
513 The vertices of $\triangle ABC$ are $A(3,2)$, $B(6,1)$, and $C(4,6)$. Identify and graph a transformation of $\triangle ABC$ such that its image, $\triangle A'B'C'$, results in $\overline{AB} \parallel \overline{A'B'}$.



514 Triangle *DEG* has the coordinates $D(1,1)$, $E(5,1)$, and $G(5,4)$. Triangle *DEG* is rotated 90° about the origin to form $\triangle D'E'G'$. On the grid below, graph and label $\triangle DEG$ and $\triangle D'E'G'$. State the coordinates of the vertices D', E', and G'. Justify that this transformation preserves distance.

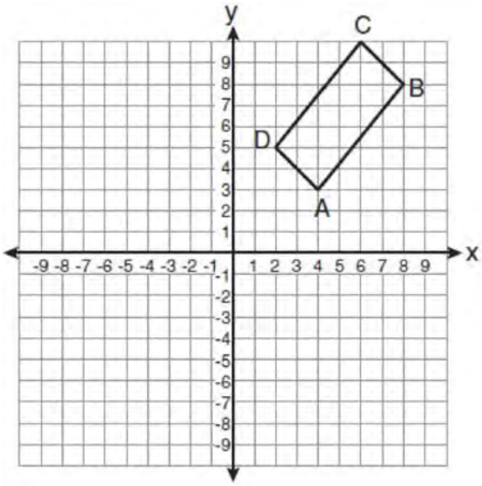


515 Which expression best describes the transformation shown in the diagram below?



1 same orientation; reflection
2 opposite orientation; reflection
3 same orientation; translation
4 opposite orientation; translation

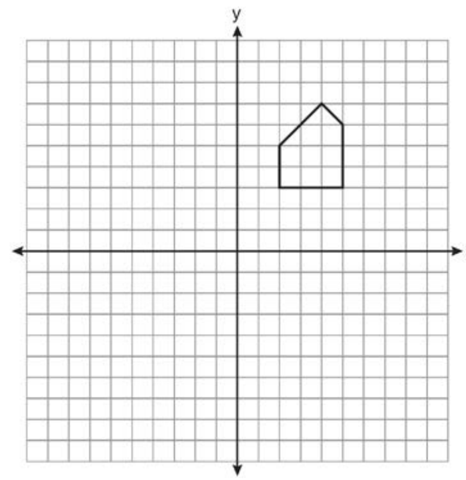
516 The rectangle $ABCD$ shown in the diagram below will be reflected across the x-axis.



What will *not* be preserved?
1 slope of $\overline{AB}$
2 parallelism of $\overline{AB}$ and $\overline{CD}$
3 length of $\overline{AB}$
4 measure of $\angle A$

517 Quadrilateral $MNOP$ is a trapezoid with $\overline{MN} \parallel \overline{OP}$. If $M'N'O'P'$ is the image of $MNOP$ after a reflection over the x-axis, which two sides of quadrilateral $M'N'O'P'$ are parallel?
1 $\overline{M'N'}$ and $\overline{O'P'}$
2 $\overline{M'N'}$ and $\overline{N'O'}$
3 $\overline{P'M'}$ and $\overline{O'P'}$
4 $\overline{P'M'}$ and $\overline{N'O'}$

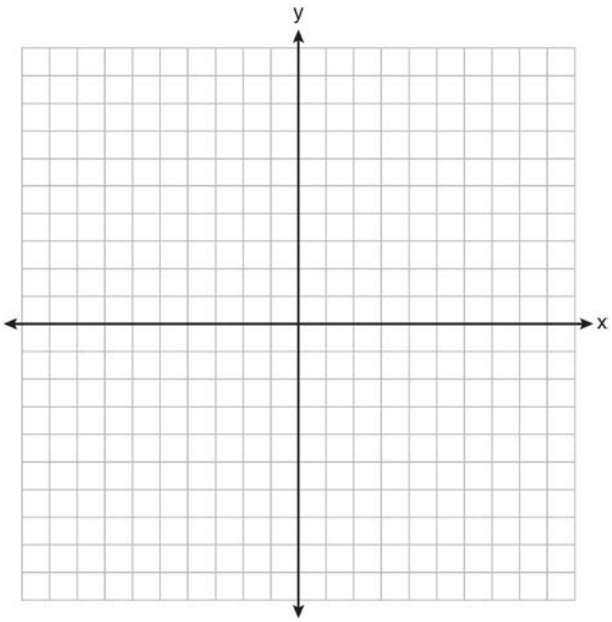
518 A pentagon is drawn on the set of axes below. If the pentagon is reflected over the y-axis, determine if this transformation is an isometry. Justify your answer. [The use of the set of axes is optional.]



519 Pentagon $PQRST$ has $\overline{PQ}$ parallel to $\overline{TS}$. After a translation of $T_{2,-5}$, which line segment is parallel to $\overline{P'Q'}$?
1 $\overline{R'Q'}$
2 $\overline{R'S'}$
3 $\overline{T'S'}$
4 $\overline{T'P'}$

520 When a quadrilateral is reflected over the line $y = x$, which geometric relationship is *not* preserved?
1 congruence
2 orientation
3 parallelism
4 perpendicularity

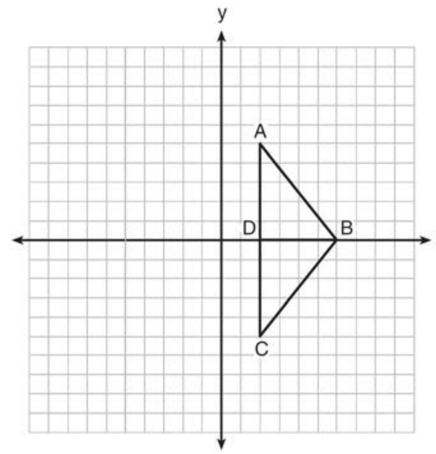
521 Triangle ABC has coordinates $A(2,-2)$, $B(2,1)$, and $C(4,-2)$. Triangle $A'B'C'$ is the image of $\triangle ABC$ under $T_{5,-2}$. On the set of axes below, graph and label $\triangle ABC$ and its image, $\triangle A'B'C'$. Determine the relationship between the area of $\triangle ABC$ and the area of $\triangle A'B'C'$. Justify your response.



522 The vertices of parallelogram $ABCD$ are $A(2,0)$, $B(0,-3)$, $C(3,-3)$, and $D(5,0)$. If $ABCD$ is reflected over the x-axis, how many vertices remain invariant?
1 1
2 2
3 3
4 0

523 After the transformation $r_{y=x}$, the image of $\triangle ABC$ is $\triangle A'B'C'$. If $AB = 2x + 13$ and $A'B' = 9x - 8$, find the value of x.

524 As shown in the diagram below, when right triangle DAB is reflected over the x-axis, its image is triangle DCB.



Which statement justifies why $\overline{AB} \cong \overline{CB}$?
1 Distance is preserved under reflection.
2 Orientation is preserved under reflection.
3 Points on the line of reflection remain invariant.
4 Right angles remain congruent under reflection.

525 Triangle ABC has the coordinates $A(1,2)$, $B(5,2)$, and $C(5,5)$. Triangle ABC is rotated 180° about the origin to form triangle $A'B'C'$. Triangle $A'B'C'$ is
1 acute
2 isosceles
3 obtuse
4 right

G.G.57: PROPERTIES OF TRANSFORMATIONS

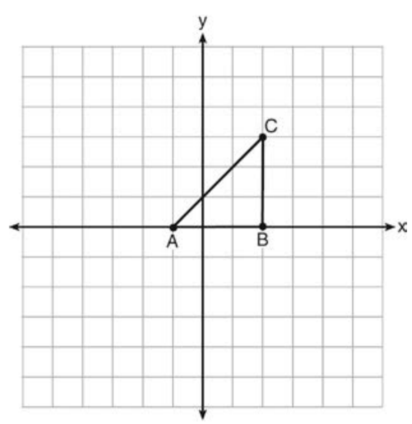
526 Which transformation of the line $x = 3$ results in an image that is perpendicular to the given line?
1 $r_{x\text{-axis}}$
2 $r_{y\text{-axis}}$
3 $r_{y=x}$
4 $r_{x=1}$

G.G.59: PROPERTIES OF TRANSFORMATIONS

527 In ΔKLM, $m\angle K = 36$ and $KM = 5$. The transformation D_2 is performed on ΔKLM to form $\Delta K'L'M'$. Find $m\angle K'$. Justify your answer. Find the length of $\overline{K'M'}$. Justify your answer.

528 When ΔABC is dilated by a scale factor of 2, its image is $\Delta A'B'C'$. Which statement is true?
1 $\overline{AC} \cong \overline{A'C'}$
2 $\angle A \cong \angle A'$
3 perimeter of ΔABC = perimeter of $\Delta A'B'C'$
4 2(area of ΔABC) = area of $\Delta A'B'C'$

529 Triangle ABC is graphed on the set of axes below.



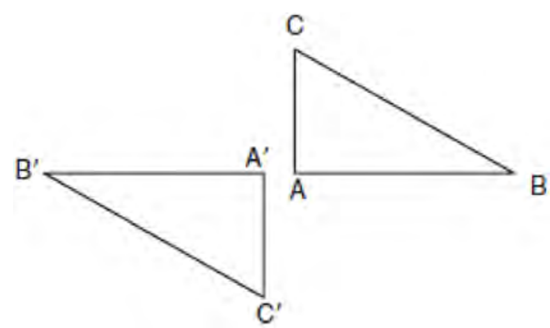
Which transformation produces an image that is similar to, but *not* congruent to, ΔABC?
1 $T_{2,3}$
2 D_2
3 $r_{y=x}$
4 R_{90}

530 When a dilation is performed on a hexagon, which property of the hexagon will *not* be preserved in its image?
1 parallelism
2 orientation
3 length of sides
4 measure of angles

531 If ΔABC and its image, $\Delta A'B'C'$, are graphed on a set of axes, $\Delta ABC \cong \Delta A'B'C'$ under each transformation *except*
1 D_2
2 R_{90°
3 $r_{y=x}$
4 $T_{(-2,3)}$

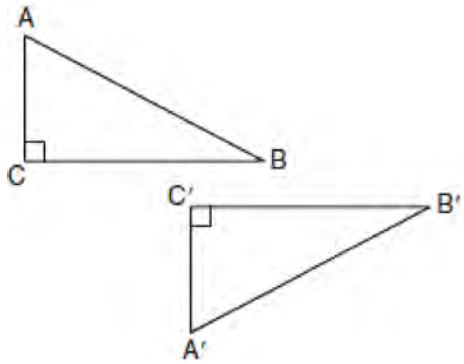
G.G.56: IDENTIFYING TRANSFORMATIONS

532 In the diagram below, under which transformation will $\Delta A'B'C'$ be the image of ΔABC?



1 rotation
2 dilation
3 translation
4 glide reflection

533 In the diagram below, which transformation was used to map $\triangle ABC$ to $\triangle A'B'C'$?

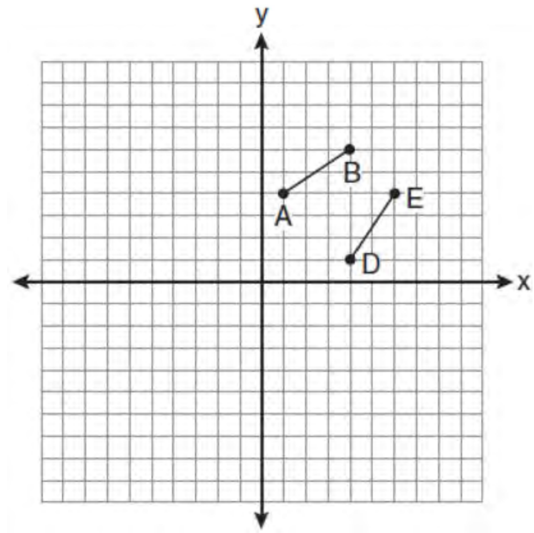


1 dilation
2 rotation
3 reflection
4 glide reflection

534 Which transformation is *not* always an isometry?
1 rotation
2 dilation
3 reflection
4 translation

535 Which transformation can map the letter S onto itself?
1 glide reflection
2 translation
3 line reflection
4 rotation

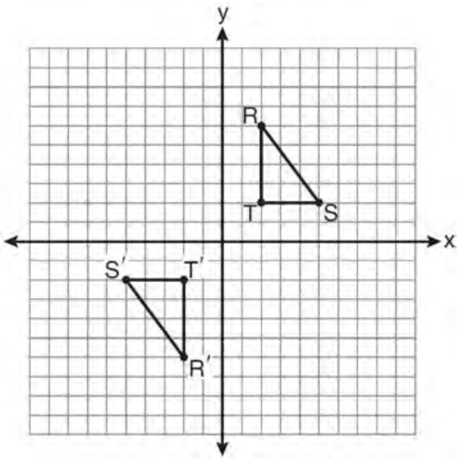
536 The diagram below shows $\overline{AB}$ and $\overline{DE}$.



Which transformation will move $\overline{AB}$ onto $\overline{DE}$ such that point D is the image of point A and point E is the image of point B?
1 $T_{3,-3}$
2 $D_{\frac{1}{2}}$
3 R_{90°
4 $r_{y=x}$

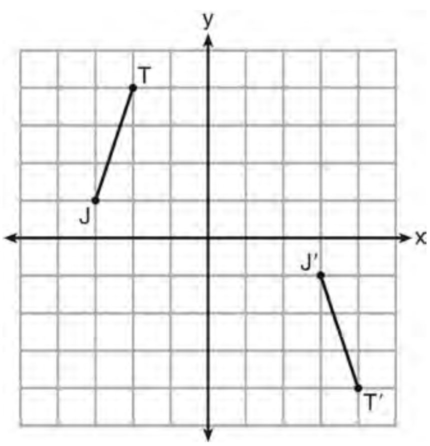
537 A transformation of a polygon that always preserves both length and orientation is
1 dilation
2 translation
3 line reflection
4 glide reflection

538 As shown on the graph below, $\Delta R'S'T'$ is the image of ΔRST under a single transformation.



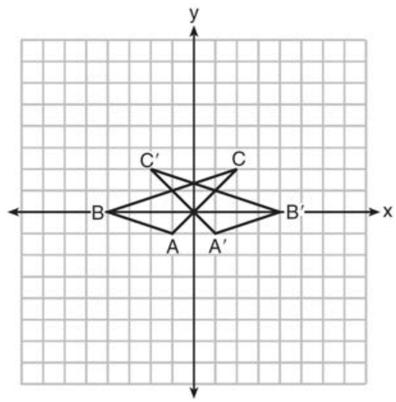
Which transformation does this graph represent?
1 glide reflection
2 line reflection
3 rotation
4 translation

539 The graph below shows $\overline{JT}$ and its image, $\overline{J'T'}$, after a transformation.



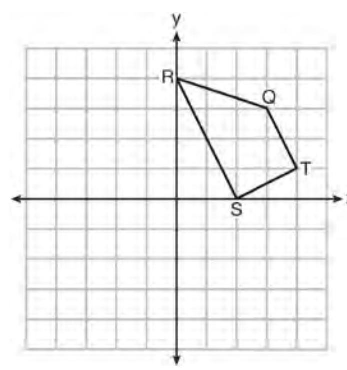
Which transformation would map $\overline{JT}$ onto $\overline{J'T'}$?
1 translation
2 glide reflection
3 rotation centered at the origin
4 reflection through the origin

540 In the diagram below, under which transformation is $\Delta A'B'C'$ the image of ΔABC?



1 D_2
2 $r_{x\text{-axis}}$
3 $r_{y\text{-axis}}$
4 $(x,y) \to (x-2,y)$

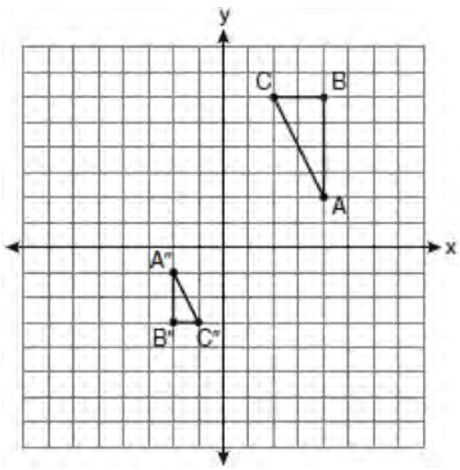
541 Trapezoid *QRST* is graphed on the set of axes below.



Under which transformation will there be *no* invariant points?
1 $r_{y=0}$
2 $r_{x=0}$
3 $r_{(0,0)}$
4 $r_{y=x}$

G.G.60: IDENTIFYING TRANSFORMATIONS

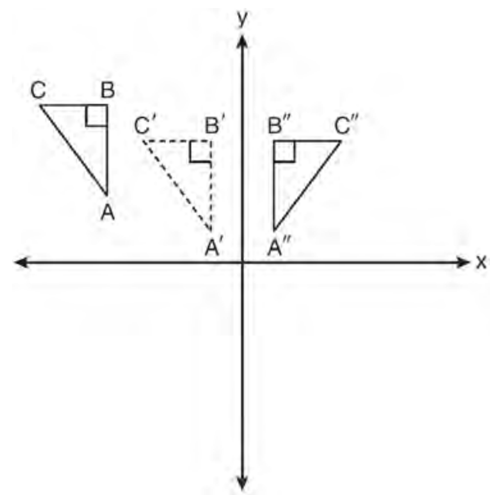
542 After a composition of transformations, the coordinates $A(4,2)$, $B(4,6)$, and $C(2,6)$ become $A''(-2,-1)$, $B''(-2,-3)$, and $C''(-1,-3)$, as shown on the set of axes below.



Which composition of transformations was used?
1 $R_{180^\circ} \circ D_2$
2 $R_{90^\circ} \circ D_2$
3 $D_{\frac{1}{2}} \circ R_{180^\circ}$
4 $D_{\frac{1}{2}} \circ R_{90^\circ}$

543 Which transformation produces a figure similar but not congruent to the original figure?
1 $T_{1,3}$
2 $D_{\frac{1}{2}}$
3 R_{90°
4 $r_{y=x}$

544 In the diagram below, $\triangle A'B'C'$ is a transformation of $\triangle ABC$, and $\triangle A''B''C''$ is a transformation of $\triangle A'B'C'$.

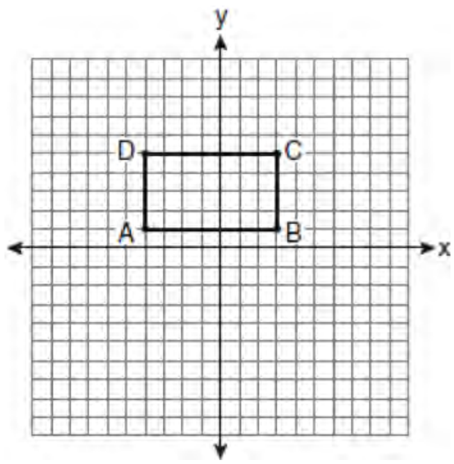


The composite transformation of $\triangle ABC$ to $\triangle A''B''C''$ is an example of a
1 reflection followed by a rotation
2 reflection followed by a translation
3 translation followed by a rotation
4 translation followed by a reflection

G.G.61: ANALYTICAL REPRESENTATIONS OF TRANSFORMATIONS

545 A polygon is transformed according to the rule: $(x,y) \rightarrow (x+2,y)$. Every point of the polygon moves two units in which direction?
1 up
2 down
3 left
4 right

546 On the set of axes below, Geoff drew rectangle *ABCD*. He will transform the rectangle by using the translation $(x,y) \to (x+2,y+1)$ and then will reflect the translated rectangle over the *x*-axis.



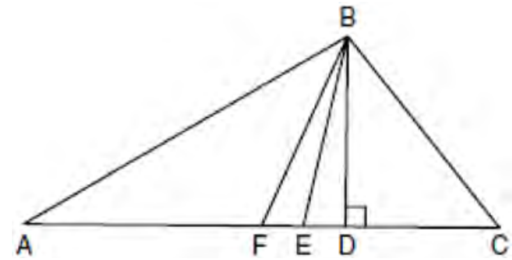
What will be the area of the rectangle after these transformations?
1 exactly 28 square units
2 less than 28 square units
3 greater than 28 square units
4 It cannot be determined from the information given.

LOGIC

G.G.24: STATEMENTS AND NEGATIONS

547 What is the negation of the statement “The Sun is shining”?
1 It is cloudy.
2 It is daytime.
3 It is not raining.
4 The Sun is not shining.

548 Given $\triangle ABC$ with base $\overline{AFEDC}$, median $\overline{BF}$, altitude $\overline{BD}$, and $\overline{BE}$ bisects $\angle ABC$, which conclusion is valid?



1 $\angle FAB \cong \angle ABF$
2 $\angle ABF \cong \angle CBD$
3 $\overline{CE} \cong \overline{EA}$
4 $\overline{CF} \cong \overline{FA}$

549 What is the negation of the statement “Squares are parallelograms”?
1 Parallelograms are squares.
2 Parallelograms are not squares.
3 It is not the case that squares are parallelograms.
4 It is not the case that parallelograms are squares.

550 What is the negation of the statement “I am not going to eat ice cream”?
1 I like ice cream.
2 I am going to eat ice cream.
3 If I eat ice cream, then I like ice cream.
4 If I don’t like ice cream, then I don’t eat ice cream.

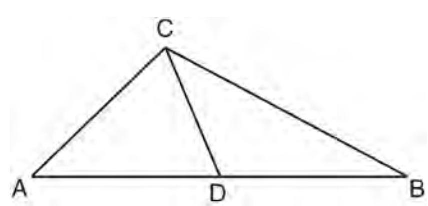
551 Given the true statement, "The medians of a triangle are concurrent," write the negation of the statement and give the truth value for the negation.

552 Which statement is the negation of "Two is a prime number" and what is the truth value of the negation?
1 Two is not a prime number; false
2 Two is not a prime number; true
3 A prime number is two; false
4 A prime number is two; true

553 A student wrote the sentence "4 is an odd integer." What is the negation of this sentence and the truth value of the negation?
1 3 is an odd integer; true
2 4 is not an odd integer; true
3 4 is not an even integer; false
4 4 is an even integer; false

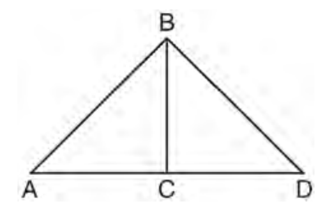
554 Write the negation of the statement "2 is a prime number," and determine the truth value of the negation.

555 As shown in the diagram below, $\overline{CD}$ is a median of $\triangle ABC$.



Which statement is *always* true?
1 $\overline{AD} \cong \overline{DB}$
2 $\overline{AC} \cong \overline{AD}$
3 $\angle ACD \cong \angle CDB$
4 $\angle BCD \cong \angle ACD$

556 Given: $\triangle ABD$, $\overline{BC}$ is the perpendicular bisector of $\overline{AD}$



Which statement can *not* always be proven?
1 $\overline{AC} \cong \overline{DC}$
2 $\overline{BC} \cong \overline{CD}$
3 $\angle ACB \cong \angle DCB$
4 $\triangle ABC \cong \triangle DBC$

557 Given the statement: One is a prime number. What is the negation and the truth value of the negation?
1 One is not a prime number; true
2 One is not a prime number; false
3 One is a composite number; true
4 One is a composite number; false

G.G.25: COMPOUND STATEMENTS

558 Given: Two is an even integer or three is an even integer.
Determine the truth value of this disjunction.
Justify your answer.

559 Which compound statement is true?
1 A triangle has three sides and a quadrilateral has five sides.
2 A triangle has three sides if and only if a quadrilateral has five sides.
3 If a triangle has three sides, then a quadrilateral has five sides.
4 A triangle has three sides or a quadrilateral has five sides.

560 The statement "x is a multiple of 3, and x is an even integer" is true when x is equal to
1 9
2 8
3 3
4 6

G.G.26: CONDITIONAL STATEMENTS

561 Write a statement that is logically equivalent to the statement “If two sides of a triangle are congruent, the angles opposite those sides are congruent.” Identify the new statement as the converse, inverse, or contrapositive of the original statement.

562 What is the contrapositive of the statement, “If I am tall, then I will bump my head”?
1 If I bump my head, then I am tall.
2 If I do not bump my head, then I am tall.
3 If I am tall, then I will not bump my head.
4 If I do not bump my head, then I am not tall.

563 What is the inverse of the statement “If two triangles are not similar, their corresponding angles are not congruent”?
1 If two triangles are similar, their corresponding angles are not congruent.
2 If corresponding angles of two triangles are not congruent, the triangles are not similar.
3 If two triangles are similar, their corresponding angles are congruent.
4 If corresponding angles of two triangles are congruent, the triangles are similar.

564 What is the converse of the statement "If Bob does his homework, then George gets candy"?
1 If George gets candy, then Bob does his homework.
2 Bob does his homework if and only if George gets candy.
3 If George does not get candy, then Bob does not do his homework.
4 If Bob does not do his homework, then George does not get candy.

565 Which statement is logically equivalent to "If it is warm, then I go swimming"
1 If I go swimming, then it is warm.
2 If it is warm, then I do not go swimming.
3 If I do not go swimming, then it is not warm.
4 If it is not warm, then I do not go swimming.

566 Consider the relationship between the two statements below.

If $\sqrt{16+9} \neq 4+3$, then $5 \neq 4+3$

If $\sqrt{16+9} = 4+3$, then $5 = 4+3$

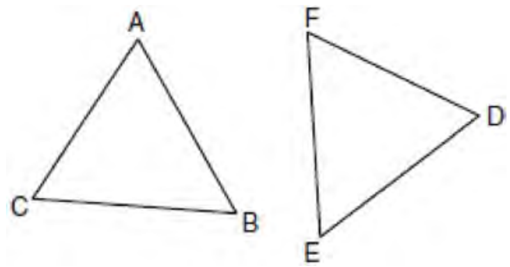
These statements are
1 inverses
2 converses
3 contrapositives
4 biconditionals

567 What is the converse of “If an angle measures 90 degrees, then it is a right angle”?
1 If an angle is a right angle, then it measures 90 degrees.
2 An angle is a right angle if it measures 90 degrees.
3 If an angle is not a right angle, then it does not measure 90 degrees.
4 If an angle does not measure 90 degrees, then it is not a right angle.

568 Lines m and n are in plane $\mathcal{A}$. What is the converse of the statement “If lines m and n are parallel, then lines m and n do not intersect”?
1 If lines m and n are not parallel, then lines m and n intersect.
2 If lines m and n are not parallel, then lines m and n do not intersect
3 If lines m and n intersect, then lines m and n are not parallel.
4 If lines m and n do not intersect, then lines m and n are parallel.

G.G.28: TRIANGLE CONGRUENCY

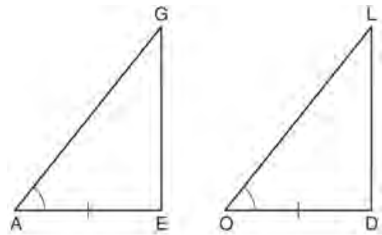
569 In the diagram of $\triangle ABC$ and $\triangle DEF$ below, $\overline{AB} \cong \overline{DE}$, $\angle A \cong \angle D$, and $\angle B \cong \angle E$.



Which method can be used to prove $\triangle ABC \cong \triangle DEF$?
1 SSS
2 SAS
3 ASA
4 HL

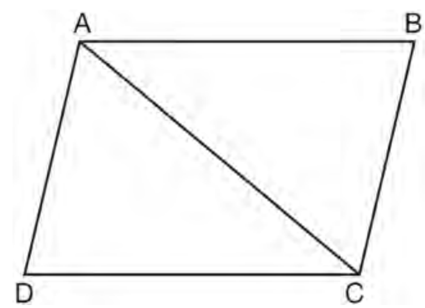
570 The diagonal $\overline{AC}$ is drawn in parallelogram *ABCD*. Which method can *not* be used to prove that $\triangle ABC \cong \triangle CDA$?
1 SSS
2 SAS
3 SSA
4 ASA

571 In the diagram below of $\triangle AGE$ and $\triangle OLD$, $\angle GAE \cong \angle LOD$, and $\overline{AE} \cong \overline{OD}$.



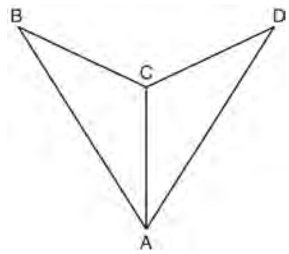
To prove that $\triangle AGE$ and $\triangle OLD$ are congruent by SAS, what other information is needed?
1 $\overline{GE} \cong \overline{LD}$
2 $\overline{AG} \cong \overline{OL}$
3 $\angle AGE \cong \angle OLD$
4 $\angle AEG \cong \angle ODL$

572 In the diagram of quadrilateral *ABCD*, $\overline{AB} \parallel \overline{CD}$, $\angle ABC \cong \angle CDA$, and diagonal $\overline{AC}$ is drawn.



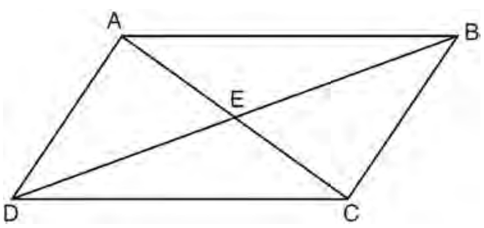
Which method can be used to prove $\triangle ABC$ is congruent to $\triangle CDA$?
1 AAS
2 SSA
3 SAS
4 SSS

573 As shown in the diagram below, $\overline{AC}$ bisects $\angle BAD$ and $\angle B \cong \angle D$.



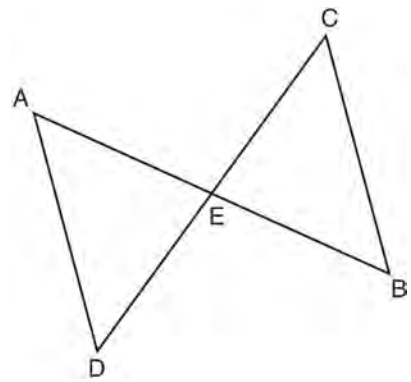
Which method could be used to prove $\triangle ABC \cong \triangle ADC$?
1 SSS
2 AAA
3 SAS
4 AAS

574 In parallelogram *ABCD* shown below, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at *E*.



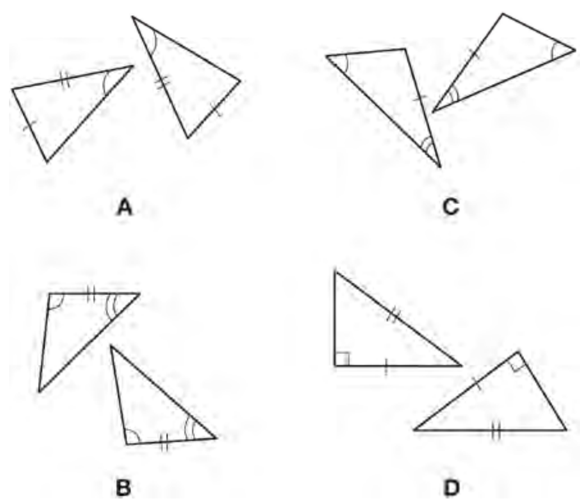
Which statement must be true?
1 $\overline{AC} \cong \overline{DB}$
2 $\angle ABD \cong \angle CBD$
3 $\triangle AED \cong \triangle CEB$
4 $\triangle DCE \cong \triangle BCE$

575 In the diagram below of $\triangle DAE$ and $\triangle BCE$, $\overline{AB}$ and $\overline{CD}$ intersect at *E*, such that $\overline{AE} \cong \overline{CE}$ and $\angle BCE \cong \angle DAE$.



Triangle *DAE* can be proved congruent to triangle *BCE* by
1 ASA
2 SAS
3 SSS
4 HL

576 In the diagram below, four pairs of triangles are shown. Congruent corresponding parts are labeled in each pair.

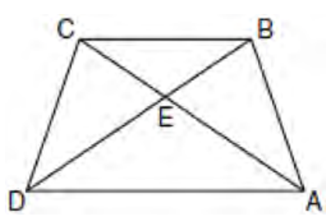


Using only the information given in the diagrams, which pair of triangles can *not* be proven congruent?

1 *A*
2 *B*
3 *C*
4 *D*

G.G.29: TRIANGLE CONGRUENCY

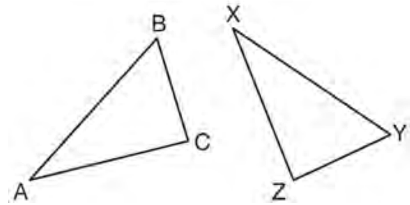
577 In the diagram of trapezoid *ABCD* below, diagonals $\overline{AC}$ and $\overline{BD}$ intersect at *E* and $\triangle ABC \cong \triangle DCB$.



Which statement is true based on the given information?

1 $\overline{AC} \cong \overline{BC}$
2 $\overline{CD} \cong \overline{AD}$
3 $\angle CDE \cong \angle BAD$
4 $\angle CDB \cong \angle BAC$

578 In the diagram below, $\triangle ABC \cong \triangle XYZ$.



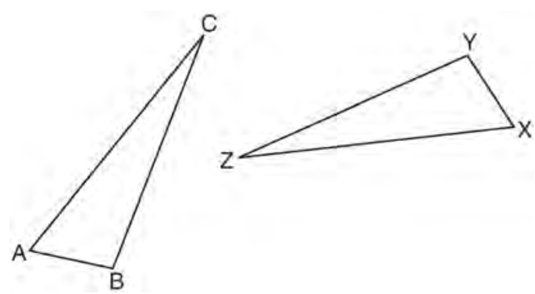
Which two statements identify corresponding congruent parts for these triangles?

1 $\overline{AB} \cong \overline{XY}$ and $\angle C \cong \angle Y$
2 $\overline{AB} \cong \overline{YZ}$ and $\angle C \cong \angle X$
3 $\overline{BC} \cong \overline{XY}$ and $\angle A \cong \angle Y$
4 $\overline{BC} \cong \overline{YZ}$ and $\angle A \cong \angle X$

579 If $\triangle JKL \cong \triangle MNO$, which statement is always true?

1 $\angle KLJ \cong \angle NMO$
2 $\angle KJL \cong \angle MON$
3 $\overline{JL} \cong \overline{MO}$
4 $\overline{JK} \cong \overline{ON}$

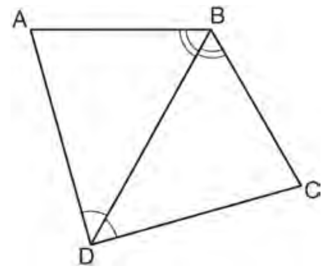
580 In the diagram below, $\triangle ABC \cong \triangle XYZ$.



Which statement must be true?

1 $\angle C \cong \angle Y$
2 $\angle A \cong \angle X$
3 $\overline{AC} \cong \overline{YZ}$
4 $\overline{CB} \cong \overline{XZ}$

581 The diagram below shows a pair of congruent triangles, with $\angle ADB \cong \angle CDB$ and $\angle ABD \cong \angle CBD$.



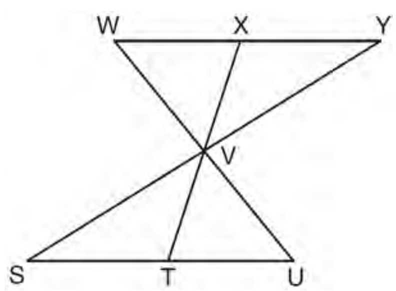
Which statement must be true?

1 $\angle ADB \cong \angle CBD$
2 $\angle ABC \cong \angle ADC$
3 $\overline{AB} \cong \overline{CD}$
4 $\overline{AD} \cong \overline{CD}$

582 If $\triangle MNP \cong \triangle VWX$ and $\overline{PM}$ is the shortest side of $\triangle MNP$, what is the shortest side of $\triangle VWX$?

1 $\overline{XV}$
2 $\overline{WX}$
3 $\overline{VW}$
4 $\overline{NP}$

583 In the diagram below, $\triangle XYV \cong \triangle TSV$.



Which statement can *not* be proven?

1 $\angle XVY \cong \angle TVS$
2 $\angle VYX \cong \angle VUT$
3 $\overline{XY} \cong \overline{TS}$
4 $\overline{YV} \cong \overline{SV}$

584 If $\triangle ABC \cong \triangle JKL \cong \triangle RST$, then $\overline{BC}$ must be congruent to

1 $\overline{JL}$
2 $\overline{JK}$
3 $\overline{ST}$
4 $\overline{RS}$

G.G.27: LINE PROOFS

585 In the diagram below of $\overline{ABCD}$, $\overline{AC} \cong \overline{BD}$.

Using this information, it could be proven that

1 $BC = AB$
2 $AB = CD$
3 $AD - BC = CD$
4 $AB + CD = AD$

G.G.27: ANGLE PROOFS

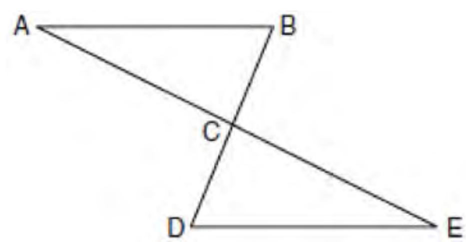
586 When writing a geometric proof, which angle relationship could be used alone to justify that two angles are congruent?

1 supplementary angles
2 linear pair of angles
3 adjacent angles
4 vertical angles

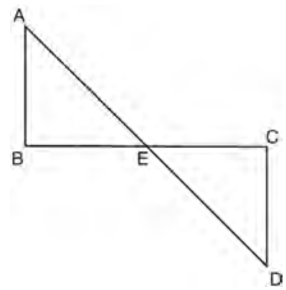
G.G.27: TRIANGLE PROOFS

587 Given: $\triangle ABC$ and $\triangle EDC$, C is the midpoint of $\overline{BD}$ and $\overline{AE}$

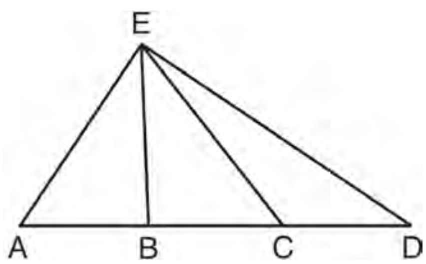
Prove: $\overline{AB} \parallel \overline{DE}$



588 Given: $\overline{AD}$ bisects $\overline{BC}$ at E.
$\overline{AB} \perp \overline{BC}$
$\overline{DC} \perp \overline{BC}$
Prove: $\overline{AB} \cong \overline{DC}$

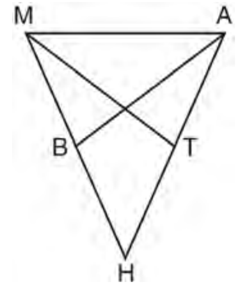


589 In $\triangle AED$ with $\overline{ABCD}$ shown in the diagram below, $\overline{EB}$ and $\overline{EC}$ are drawn.

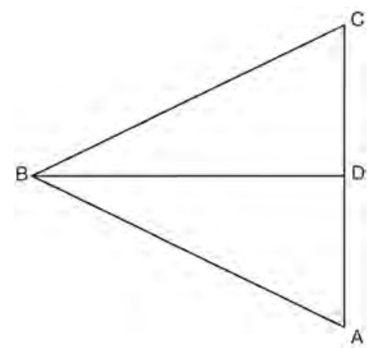


If $\overline{AB} \cong \overline{CD}$, which statement could always be proven?
1 $\overline{AC} \cong \overline{DB}$
2 $\overline{AE} \cong \overline{ED}$
3 $\overline{AB} \cong \overline{BC}$
4 $\overline{EC} \cong \overline{EA}$

590 In the diagram of $\triangle MAH$ below, $\overline{MH} \cong \overline{AH}$ and medians $\overline{AB}$ and $\overline{MT}$ are drawn.
Prove: $\angle MBA \cong \angle ATM$

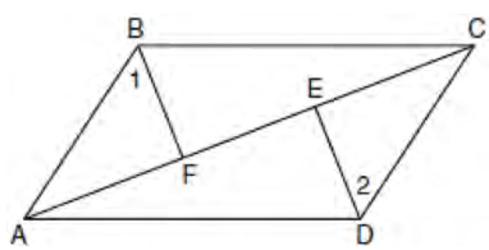


591 Given: $\triangle ABC$, $\overline{BD}$ bisects $\angle ABC$, $\overline{BD} \perp \overline{AC}$
Prove: $\overline{AB} \cong \overline{CB}$

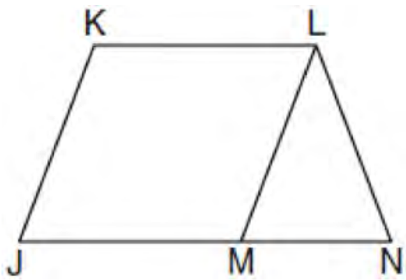


G.G.27: QUADRILATERAL PROOFS

592 Given: Quadrilateral $ABCD$, diagonal $\overline{AFEC}$, $\overline{AE} \cong \overline{FC}$, $\overline{BF} \perp \overline{AC}$, $\overline{DE} \perp \overline{AC}$, $\angle 1 \cong \angle 2$
Prove: $ABCD$ is a parallelogram.

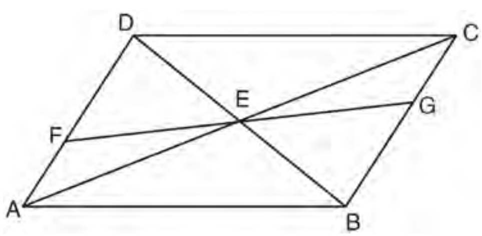


593 Given: *JKLM* is a parallelogram.
$\overline{JM} \cong \overline{LN}$
$\angle LMN \cong \angle LNM$
Prove: *JKLM* is a rhombus.

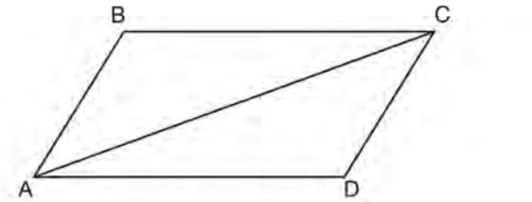


594 Given: Quadrilateral *ABCD* with $\overline{AB} \cong \overline{CD}$, $\overline{AD} \cong \overline{BC}$, and diagonal $\overline{BD}$ is drawn
Prove: $\angle BDC \cong \angle ABD$

595 In the diagram below of quadrilateral *ABCD*, $\overline{AD} \cong \overline{BC}$ and $\angle DAE \cong \angle BCE$. Line segments *AC*, *DB*, and *FG* intersect at *E*.
Prove: $\triangle AEF \cong \triangle CEG$



596 Given that *ABCD* is a parallelogram, a student wrote the proof below to show that a pair of its opposite angles are congruent.

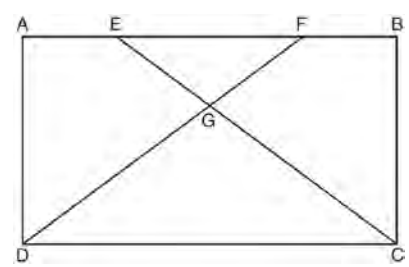


Statement	Reason
1. ABCD is a parallelogram.	1. Given
2. $\overline{BC} \cong \overline{AD}$ $\overline{AB} \cong \overline{DC}$	2. Opposite sides of a parallelogram are congruent.
3. $\overline{AC} \cong \overline{CA}$	3. Reflexive Postulate of Congruency
4. $\triangle ABC \cong \triangle CDA$	4. Side-Side-Side
5. $\angle B \cong \angle D$	5. ______________

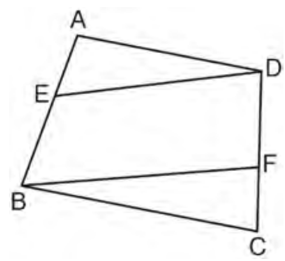
What is the reason justifying that $\angle B \cong \angle D$?

1 Opposite angles in a quadrilateral are congruent.
2 Parallel lines have congruent corresponding angles.
3 Corresponding parts of congruent triangles are congruent.
4 Alternate interior angles in congruent triangles are congruent.

597 The diagram below shows rectangle *ABCD* with points *E* and *F* on side $\overline{AB}$. Segments *CE* and *DF* intersect at *G*, and $\angle ADG \cong \angle BCG$. Prove: $\overline{AE} \cong \overline{BF}$



598 In the diagram below of quadrilateral $ABCD$, E and F are points on $\overline{AB}$ and $\overline{CD}$, respectively, $\overline{BE} \cong \overline{DF}$, and $\overline{AE} \cong \overline{CF}$.

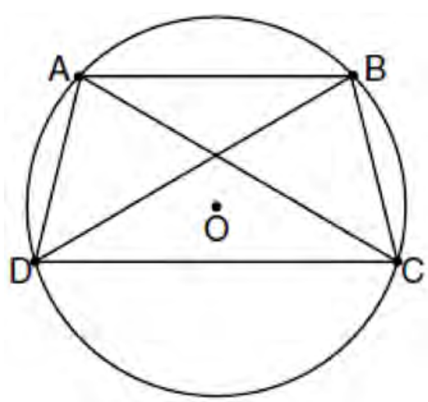


Which conclusion can be proven?

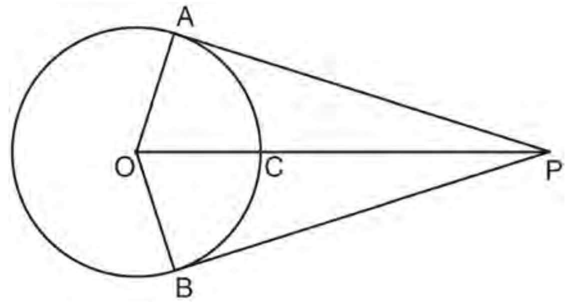
1 $\overline{ED} \cong \overline{FB}$
2 $\overline{AB} \cong \overline{CD}$
3 $\angle A \cong \angle C$
4 $\angle AED \cong \angle CFB$

G.G.27: CIRCLE PROOFS

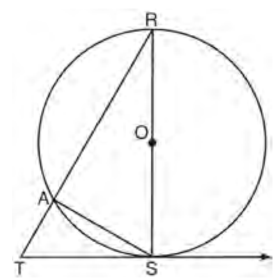
599 In the diagram below, quadrilateral $ABCD$ is inscribed in circle O, $\overline{AB} \parallel \overline{DC}$, and diagonals $\overline{AC}$ and $\overline{BD}$ are drawn. Prove that $\triangle ACD \cong \triangle BDC$.



600 In the diagram below, $\overline{PA}$ and $\overline{PB}$ are tangent to circle O, $\overline{OA}$ and $\overline{OB}$ are radii, and $\overline{OP}$ intersects the circle at C. Prove: $\angle AOP \cong \angle BOP$



601 In the diagram of circle O below, diameter $\overline{RS}$, chord $\overline{AS}$, tangent $\overrightarrow{TS}$, and secant $\overline{TAR}$ are drawn.

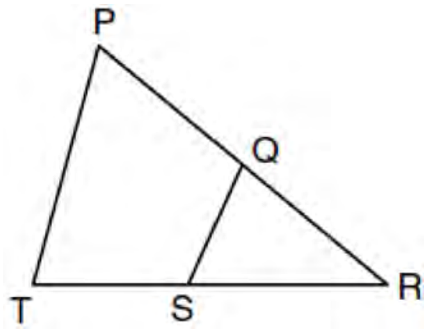


Complete the following proof to show $(RS)^2 = RA \cdot RT$

Statements	Reasons
1. circle O, diameter $\overline{RS}$, chord $\overline{AS}$, tangent $\overrightarrow{TS}$, and secant $\overline{TAR}$	1. Given
2. $\overline{RS} \perp \overrightarrow{TS}$	2. ______
3. $\angle RST$ is a right angle	3. $\perp$ lines form right angles
4. $\angle RAS$ is a right angle	4. ______
5. $\angle RST \cong \angle RAS$	5. ______
6. $\angle R \cong \angle R$	6. Reflexive property
7. $\triangle RST \sim \triangle RAS$	7. ______
8. $\frac{RS}{RA} = \frac{RT}{RS}$	8. ______
9. $(RS)^2 = RA \bullet RT$	9. ______

G.G.44: SIMILARITY PROOFS

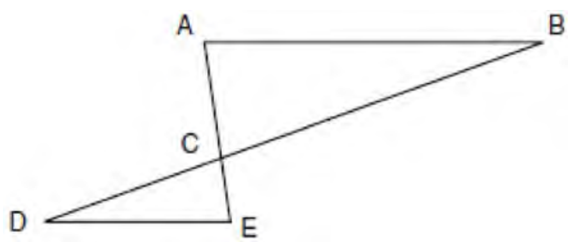
602 In the diagram below of $\triangle PRT$, Q is a point on $\overline{PR}$, S is a point on $\overline{TR}$, $\overline{QS}$ is drawn, and $\angle RPT \cong \angle RSQ$.



Which reason justifies the conclusion that $\triangle PRT \sim \triangle SRQ$?

1 AA
2 ASA
3 SAS
4 SSS

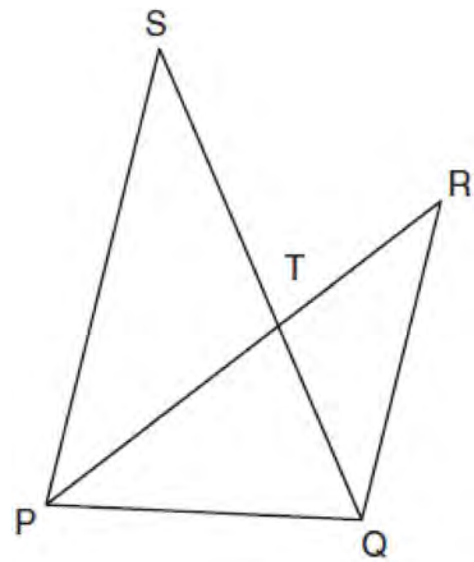
603 In the diagram of $\triangle ABC$ and $\triangle EDC$ below, $\overline{AE}$ and $\overline{BD}$ intersect at C, and $\angle CAB \cong \angle CED$.



Which method can be used to show that $\triangle ABC$ must be similar to $\triangle EDC$?

1 SAS
2 AA
3 SSS
4 HL

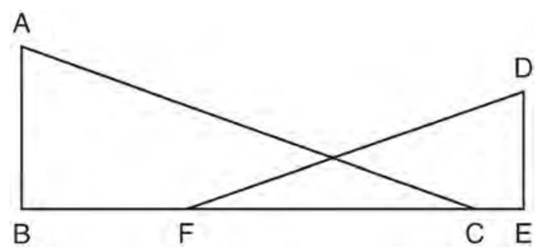
604 In the diagram below, $\overline{SQ}$ and $\overline{PR}$ intersect at T, $\overline{PQ}$ is drawn, and $\overline{PS} \parallel \overline{QR}$.



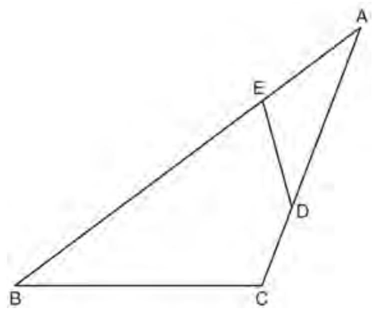
What technique can be used to prove that $\triangle PST \sim \triangle RQT$?

1 SAS
2 SSS
3 ASA
4 AA

605 In the diagram below, $\overline{BFCE}$, $\overline{AB} \perp \overline{BE}$, $\overline{DE} \perp \overline{BE}$, and $\angle BFD \cong \angle ECA$. Prove that $\triangle ABC \sim \triangle DEF$.



606 The diagram below shows $\triangle ABC$, with $\overline{AEB}$, $\overline{ADC}$, and $\angle ACB \cong \angle AED$. Prove that $\triangle ABC$ is similar to $\triangle ADE$.



607 In $\triangle ABC$ and $\triangle DEF$, $\frac{AC}{DF} = \frac{CB}{FE}$. Which additional information would prove $\triangle ABC \sim \triangle DEF$?
1 $AC = DF$
2 $CB = FE$
3 $\angle ACB \cong \angle DFE$
4 $\angle BAC \cong \angle EDF$

608 In triangles ABC and DEF, $AB = 4$, $AC = 5$, $DE = 8$, $DF = 10$, and $\angle A \cong \angle D$. Which method could be used to prove $\triangle ABC \sim \triangle DEF$?
1 AA
2 SAS
3 SSS
4 ASA

Geometry Regents Exam Questions by Performance Indicator: Topic
Answer Section

1 ANS: 2

The slope of a line in standard form is $-\frac{A}{B}$ so the slope of this line is $-\frac{5}{3}$ Perpendicular lines have slope that are the opposite and reciprocal of each other.

PTS: 2 REF: fall0828ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

2 ANS: 4

The slope of $y = -\frac{2}{3}x - 5$ is $-\frac{2}{3}$. Perpendicular lines have slope that are opposite reciprocals.

PTS: 2 REF: 080917ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

3 ANS: 3

$m = \frac{-A}{B} = -\frac{3}{4}$

PTS: 2 REF: 011025ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

4 ANS: 2 PTS: 2 REF: 061022ge STA: G.G.62
TOP: Parallel and Perpendicular Lines

5 ANS: 3

$2y = -6x + 8$ Perpendicular lines have slope the opposite and reciprocal of each other.

$y = -3x + 4$

$m = -3$

$m_{\perp} = \frac{1}{3}$

PTS: 2 REF: 081024ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

6 ANS:

$m = \frac{-A}{B} = \frac{6}{2} = 3$. $m_{\perp} = -\frac{1}{3}$.

PTS: 2 REF: 011134ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

7 ANS: 4

The slope of $3x + 5y = 4$ is $m = \frac{-A}{B} = \frac{-3}{5}$. $m_{\perp} = \frac{5}{3}$.

PTS: 2 REF: 061127ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

8 ANS: 2

The slope of $x + 2y = 3$ is $m = \frac{-A}{B} = \frac{-1}{2}$. $m_{\perp} = 2$.

PTS: 2 REF: 081122ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

9 ANS: 2

$m = \frac{-A}{B} = \frac{-20}{-2} = 10$. $m_{\perp} = -\frac{1}{10}$

PTS: 2 REF: 061219ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

10 ANS: 3

The slope of $9x - 3y = 27$ is $m = \frac{-A}{B} = \frac{-9}{-3} = 3$, which is the opposite reciprocal of $-\frac{1}{3}$.

PTS: 2 REF: 081225ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

11 ANS: 2

The slope of $2x + 4y = 12$ is $m = \frac{-A}{B} = \frac{-2}{4} = -\frac{1}{2}$. $m_{\perp} = 2$.

PTS: 2 REF: 011310ge STA: G.G.62 TOP: Parallel and Perpendicular Lines

12 ANS: 4

$3y + 1 = 6x + 4$. $2y + 1 = x - 9$

$3y = 6x + 3 \qquad 2y = x - 10$

$y = 2x + 1 \qquad y = \frac{1}{2}x - 5$

PTS: 2 REF: fall0822ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

13 ANS: 2

The slope of $2x + 3y = 12$ is $-\frac{A}{B} = -\frac{2}{3}$. The slope of a perpendicular line is $\frac{3}{2}$. Rewritten in slope intercept form, (2) becomes $y = \frac{3}{2}x + 3$.

PTS: 2 REF: 060926ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

14 ANS: 3

The slope of $y = x + 2$ is 1. The slope of $y - x = -1$ is $\frac{-A}{B} = \frac{-(-1)}{1} = 1$.

PTS: 2 REF: 080909ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

15 ANS: 3

$m = \frac{-A}{B} = \frac{5}{2}$. $m = \frac{-A}{B} = \frac{10}{4} = \frac{5}{2}$

PTS: 2 REF: 011014ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

16 ANS: 1

$-2\left(-\frac{1}{2}y = 6x + 10\right)$

$y = -12x - 20$

PTS: 2 REF: 061027ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

17 ANS: 2

$y+\frac{1}{2}x=4$ $\quad 3x+6y=12$

$y=-\frac{1}{2}x+4$ $\quad 6y=-3x+12$

$m=-\frac{1}{2}$ $\quad y=-\frac{3}{6}x+2$

$y=-\frac{1}{2}x+2$

PTS: 2 REF: 081014ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

18 ANS: 4

$x+6y=12$ $\quad 3(x-2)=-y-4$

$6y=-x+12$ $\quad -3(x-2)=y+4$

$y=-\frac{1}{6}x+2$ $\quad m=-3$

$m=-\frac{1}{6}$

PTS: 2 REF: 011119ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

19 ANS: 1 PTS: 2 REF: 061113ge STA: G.G.63
TOP: Parallel and Perpendicular Lines

20 ANS:

The slope of $y=2x+3$ is 2. The slope of $2y+x=6$ is $\frac{-A}{B}=\frac{-1}{2}$. Since the slopes are opposite reciprocals, the lines are perpendicular.

PTS: 2 REF: 011231ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

21 ANS:

The slope of $x+2y=4$ is $m=\frac{-A}{B}=\frac{-1}{2}$. The slope of $4y-2x=12$ is $\frac{-A}{B}=\frac{2}{4}=\frac{1}{2}$. Since the slopes are neither equal nor opposite reciprocals, the lines are neither parallel nor perpendicular.

PTS: 2 REF: 061231ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

22 ANS: 3

$m=\frac{-A}{B}=\frac{-3}{-2}=\frac{3}{2}$

PTS: 2 REF: 011324ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

23 ANS: 4

$m_{\overleftrightarrow{AB}}=\frac{6-3}{7-5}=\frac{3}{2}$. $m_{\overleftrightarrow{CD}}=\frac{4-0}{6-9}=\frac{4}{-3}$

PTS: 2 REF: 061318ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

24 ANS: 4

$$3y + 6 = 2x \qquad 2y - 3x = 6$$
$$3y = 2x - 6 \qquad 2y = 3x + 6$$
$$y = \frac{2}{3}x - 2 \qquad y = \frac{3}{2}x + 3$$
$$m = \frac{2}{3} \qquad m = \frac{3}{2}$$

PTS: 2 REF: 081315ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

25 ANS:

Neither. The slope of $y = \frac{1}{2}x - 1$ is $\frac{1}{2}$. The slope of $y + 4 = -\frac{1}{2}(x - 2)$ is $-\frac{1}{2}$. The slopes are neither the same nor opposite reciprocals.

PTS: 2 REF: 011433ge STA: G.G.63 TOP: Parallel and Perpendicular Lines

26 ANS: 2

The slope of $y = \frac{1}{2}x + 5$ is $\frac{1}{2}$. The slope of a perpendicular line is -2. $y = mx + b$.

$$5 = (-2)(-2) + b$$
$$b = 1$$

PTS: 2 REF: 060907ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

27 ANS: 4

The slope of $y = -3x + 2$ is -3. The perpendicular slope is $\frac{1}{3}$. $-1 = \frac{1}{3}(3) + b$

$$-1 = 1 + b$$
$$b = -2$$

PTS: 2 REF: 011018ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

28 ANS:

$y = \frac{2}{3}x + 1$. $2y + 3x = 6$. $y = mx + b$

$$2y = -3x + 6 \qquad 5 = \frac{2}{3}(6) + b$$
$$y = -\frac{3}{2}x + 3 \qquad 5 = 4 + b$$
$$m = -\frac{3}{2} \qquad 1 = b$$
$$m_{\perp} = \frac{2}{3} \qquad y = \frac{2}{3}x + 1$$

PTS: 4 REF: 061036ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

29 ANS: 3 PTS: 2 REF: 011217ge STA: G.G.64
TOP: Parallel and Perpendicular Lines

30 ANS: 4

$m_\perp = -\frac{1}{3}$. $y = mx + b$

$6 = -\frac{1}{3}(-9) + b$

$6 = 3 + b$

$3 = b$

PTS: 2 REF: 061215ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

31 ANS: 3

The slope of $2y = x + 2$ is $\frac{1}{2}$, which is the opposite reciprocal of -2. $3 = -2(4) + b$

$11 = b$

PTS: 2 REF: 081228ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

32 ANS: 4

$m = \frac{2}{3}$. $2 = -\frac{3}{2}(4) + b$

$m_\perp = -\frac{3}{2}$ $2 = -6 + b$

$8 = b$

PTS: 2 REF: 011319ge STA: G.G.64 TOP: Parallel and Perpendicular Lines

33 ANS: 2

The slope of a line in standard form is $-\frac{A}{B}$, so the slope of this line is $\frac{-2}{-1} = 2$. A parallel line would also have a slope of 2. Since the answers are in slope intercept form, find the y-intercept: $y = mx + b$

$-11 = 2(-3) + b$

$-5 = b$

PTS: 2 REF: fall0812ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

34 ANS:

$y = -2x + 14$. The slope of $2x + y = 3$ is $\frac{-A}{B} = \frac{-2}{1} = -2$. $y = mx + b$.

$4 = (-2)(5) + b$

$b = 14$

PTS: 2 REF: 060931ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

35 ANS:

$y = \frac{2}{3}x - 9$. The slope of $2x - 3y = 11$ is $-\frac{A}{B} = \frac{-2}{-3} = \frac{2}{3}$. $-5 = \left(\frac{2}{3}\right)(6) + b$

$-5 = 4 + b$

$b = -9$

PTS: 2 REF: 080931ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

36 ANS: 4

The slope of a line in standard form is $-\frac{A}{B}$, so the slope of this line is $\frac{-4}{2} = -2$. A parallel line would also have a slope of −2. Since the answers are in slope intercept form, find the y-intercept:

$$\begin{aligned} y &= mx + b \\ 3 &= -2(7) + b \\ 17 &= b \end{aligned}$$

PTS: 2 REF: 081010ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

37 ANS: 4

$$\begin{aligned} y &= mx + b \\ 3 &= \frac{3}{2}(-2) + b \\ 3 &= -3 + b \\ 6 &= b \end{aligned}$$

PTS: 2 REF: 011114ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

38 ANS: 2

The slope of a line in standard form is $\frac{-A}{B}$, so the slope of this line is $\frac{-4}{3}$. A parallel line would also have a slope of $\frac{-4}{3}$. Since the answers are in standard form, use the point-slope formula.

$$\begin{aligned} y - 2 &= -\frac{4}{3}(x + 5) \\ 3y - 6 &= -4x - 20 \\ 4x + 3y &= -14 \end{aligned}$$

PTS: 2 REF: 061123ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

39 ANS: 2

$m = \frac{-A}{B} = \frac{-4}{2} = -2$

$$\begin{aligned} y &= mx + b \\ 2 &= -2(2) + b \\ 6 &= b \end{aligned}$$

PTS: 2 REF: 081112ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

40 ANS: 3

$$\begin{aligned} y &= mx + b \\ -1 &= 2(2) + b \\ -5 &= b \end{aligned}$$

PTS: 2 REF: 011224ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

41 ANS: 4

$m = \frac{-A}{B} = \frac{-3}{2}$. $y = mx + b$

$-1 = \left(\frac{-3}{2}\right)(2) + b$

$-1 = -3 + b$

$2 = b$

PTS: 2 REF: 061226ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

42 ANS: 1

$m = \frac{3}{2}$ $y = mx + b$

$2 = \frac{3}{2}(1) + b$

$\frac{1}{2} = b$

PTS: 2 REF: 081217ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

43 ANS: 3

$2y = 3x - 4$. $1 = \frac{3}{2}(6) + b$

$y = \frac{3}{2}x - 2$ $1 = 9 + b$

$-8 = b$

PTS: 2 REF: 061316ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

44 ANS: 2

$m = \frac{-A}{B} = \frac{-5}{1} = -5$ $y = mx + b$

$3 = -5(5) + b$

$28 = b$

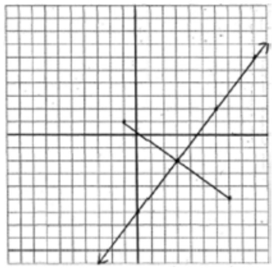
PTS: 2 REF: 011410ge STA: G.G.65 TOP: Parallel and Perpendicular Lines

45 ANS:

$y = \frac{4}{3}x - 6$. $M_x = \frac{-1+7}{2} = 3$ The perpendicular bisector goes through $(3, -2)$ and has a slope of $\frac{4}{3}$.

$M_y = \frac{1+(-5)}{2} = -2$

$m = \frac{1-(-5)}{-1-7} = -\frac{3}{4}$



$y - y_M = m(x - x_M)$.

$y - 1 = \frac{4}{3}(x - 2)$

PTS: 4 REF: 080935ge STA: G.G.68 TOP: Perpendicular Bisector

46 ANS: 1

$m = \left(\frac{8+0}{2}, \frac{2+6}{2}\right) = (4,4)$ $m = \frac{6-2}{0-8} = \frac{4}{-8} = -\frac{1}{2}$ $m_\perp = 2$ $y = mx + b$

$4 = 2(4) + b$

$-4 = b$

PTS: 2 REF: 081126ge STA: G.G.68 TOP: Perpendicular Bisector

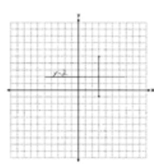
47 ANS: 4

$\overline{AB}$ is a vertical line, so its perpendicular bisector is a horizontal line through the midpoint of $\overline{AB}$, which is $(0, 3)$.

PTS: 2 REF: 011225ge STA: G.G.68 TOP: Perpendicular Bisector

48 ANS:

$M = \left(\frac{3+3}{2}, \frac{-1+5}{2}\right) = (3,2)$. $y = 2$.



PTS: 2 REF: 011334ge STA: G.G.68 TOP: Perpendicular Bisector

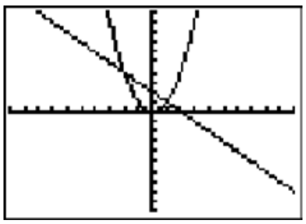
49 ANS: 3

midpoint: $\left(\frac{6+8}{2}, \frac{8+4}{2}\right) = (7,6)$. slope: $\frac{8-4}{6-8} = \frac{4}{-2} = -2$; $m_{\perp} = \frac{1}{2}$.

$$6 = \frac{1}{2}(7) + b$$
$$\frac{12}{2} = \frac{7}{2} + b$$
$$\frac{5}{12} = b$$

PTS: 2 REF: 081327ge STA: G.G.68 TOP: Perpendicular Bisector

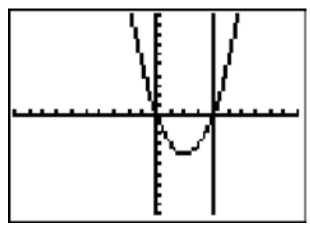
50 ANS: 3



PTS: 2 REF: fall0805ge STA: G.G.70 TOP: Quadratic-Linear Systems

51 ANS: 1

$y = x^2 - 4x = (4)^2 - 4(4) = 0$. $(4,0)$ is the only intersection.



PTS: 2 REF: 060923ge STA: G.G.70 TOP: Quadratic-Linear Systems

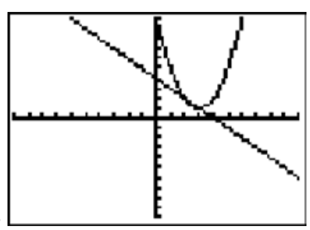
52 ANS: 4

$y + x = 4$. $x^2 - 6x + 10 = -x + 4$. $y + x = 4$. $y + 2 = 4$

$y = -x + 4$ $\quad x^2 - 5x + 6 = 0$ $\quad y + 3 = 4$ $\quad y = 2$

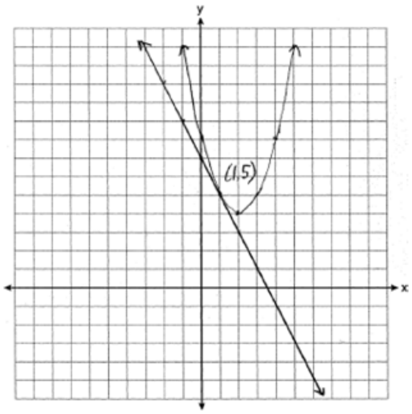
$(x-3)(x-2) = 0$ $\quad y = 1$

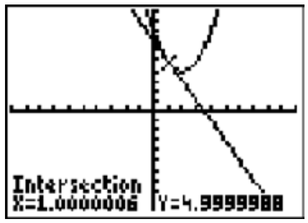
$x = 3$ or 2



PTS: 2 REF: 080912ge STA: G.G.70 TOP: Quadratic-Linear Systems

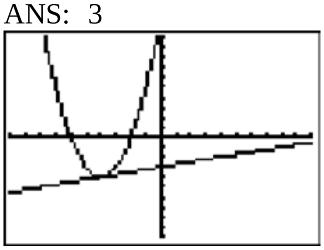
53 ANS:





PTS: 6 REF: 011038ge STA: G.G.70 TOP: Quadratic-Linear Systems

54 ANS: 3



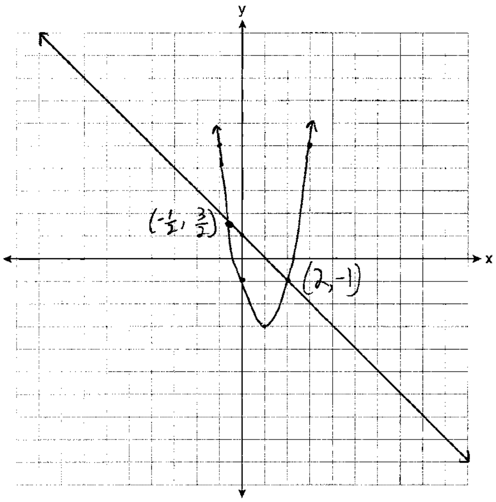
PTS: 2 REF: 061011ge STA: G.G.70 TOP: Quadratic-Linear Systems

55 ANS: 3

$$(x+3)^2 - 4 = 2x + 5$$
$$x^2 + 6x + 9 - 4 = 2x + 5$$
$$x^2 + 4x = 0$$
$$x(x+4) = 0$$
$$x = 0, -4$$

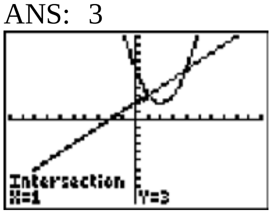
PTS: 2 REF: 081004ge STA: G.G.70 TOP: Quadratic-Linear Systems

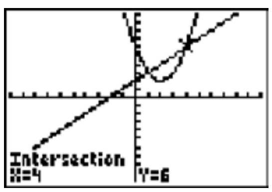
56 ANS:



PTS: 4 REF: 061137ge STA: G.G.70 TOP: Quadratic-Linear Systems

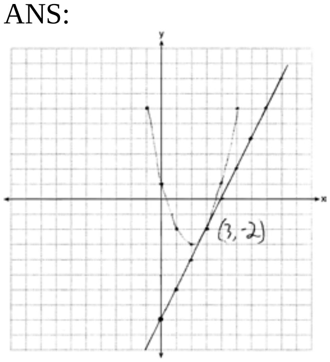
57 ANS: 3





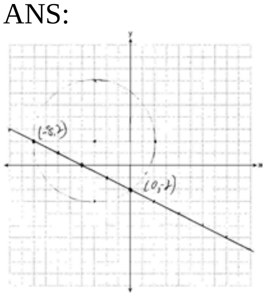
PTS: 2 REF: 081118ge STA: G.G.70 TOP: Quadratic-Linear Systems

58 ANS:



PTS: 6 REF: 061238ge STA: G.G.70 TOP: Quadratic-Linear Systems

59 ANS:



PTS: 4 REF: 081237ge STA: G.G.70 TOP: Quadratic-Linear Systems

60 ANS: 3

$$x^2 + 5^2 = 25$$
$$x = 0$$

PTS: 2 REF: 011312ge STA: G.G.70 TOP: Quadratic-Linear Systems

61 ANS: 2 PTS: 2 REF: 061313ge STA: G.G.70
TOP: Quadratic-Linear Systems

62 ANS: 2

$$(x-4)^2 - 2 = -2x + 6. \quad y = -2(4) + 6 = -2$$
$$x^2 - 8x + 16 - 2 = -2x + 6 \quad y = -2(2) + 6 = 2$$
$$x^2 - 6x + 8 = 0$$
$$(x-4)(x-2) = 0$$
$$x = 4, 2$$

PTS: 2 REF: 081319ge STA: G.G.70 TOP: Quadratic-Linear Systems

63 ANS: 2

$$x^2 - 2 = x$$
$$x^2 - x - 2 = 0$$
$$(x-2)(x+1) = 0$$
$$x = 2, -1$$

PTS: 2 REF: 011409ge STA: G.G.70 TOP: Quadratic-Linear Systems

64 ANS: 2

$$M_x = \frac{2 + (-4)}{2} = -1. \quad M_Y = \frac{-3 + 6}{2} = \frac{3}{2}.$$

PTS: 2 REF: fall0813ge STA: G.G.66 TOP: Midpoint
KEY: general

65 ANS: 4

$$M_x = \frac{-6 + 1}{2} = -\frac{5}{2}. \quad M_y = \frac{1 + 8}{2} = \frac{9}{2}.$$

PTS: 2 REF: 060919ge STA: G.G.66 TOP: Midpoint
KEY: graph

66 ANS: 2

$$M_x = \frac{-2 + 6}{2} = 2. \quad M_y = \frac{-4 + 2}{2} = -1$$

PTS: 2 REF: 080910ge STA: G.G.66 TOP: Midpoint
KEY: general

67 ANS:

(6, −4). $C_x = \dfrac{Q_x + R_x}{2}$. $C_y = \dfrac{Q_y + R_y}{2}$.

$$3.5 = \frac{1 + R_x}{2} \qquad 2 = \frac{8 + R_y}{2}$$
$$7 = 1 + R_x \qquad 4 = 8 + R_y$$
$$6 = R_x \qquad -4 = R_y$$

PTS: 2 REF: 011031ge STA: G.G.66 TOP: Midpoint
KEY: graph

68 ANS: 2

$M_x = \dfrac{3x + 5 + x - 1}{2} = \dfrac{4x + 4}{2} = 2x + 2$. $M_Y = \dfrac{3y + (-y)}{2} = \dfrac{2y}{2} = y$.

PTS: 2 REF: 081019ge STA: G.G.66 TOP: Midpoint
KEY: general

69 ANS: 2

$M_x = \dfrac{7 + (-3)}{2} = 2$. $M_Y = \dfrac{-1 + 3}{2} = 1$.

PTS: 2 REF: 011106ge STA: G.G.66 TOP: Midpoint

70 ANS:

$(2a - 3, 3b + 2)$. $\left(\dfrac{3a + a - 6}{2}, \dfrac{2b - 1 + 4b + 5}{2}\right) = \left(\dfrac{4a - 6}{2}, \dfrac{6b + 4}{2}\right) = (2a - 3, 3b + 2)$

PTS: 2 REF: 061134ge STA: G.G.66 TOP: Midpoint

71 ANS: 1

$$1 = \frac{-4 + x}{2}. \qquad 5 = \frac{3 + y}{2}.$$
$$-4 + x = 2 \qquad 3 + y = 10$$
$$x = 6 \qquad y = 7$$

PTS: 2 REF: 081115ge STA: G.G.66 TOP: Midpoint

72 ANS: 4

$$-5 = \frac{-3 + x}{2}. \qquad 2 = \frac{6 + y}{2}$$
$$-10 = -3 + x \qquad 4 = 6 + y$$
$$-7 = x \qquad -2 = y$$

PTS: 2 REF: 081203ge STA: G.G.66 TOP: Midpoint

73 ANS: 3

$6 = \frac{4+x}{2}$. $8 = \frac{2+y}{2}$.

$4 + x = 12$ $2 + y = 16$

$x = 8$ $y = 14$

PTS: 2 REF: 011305ge STA: G.G.66 TOP: Midpoint

74 ANS: 2

$M_x = \frac{8+(-3)}{2} = 2.5$. $M_Y = \frac{-4+2}{2} = -1$.

PTS: 2 REF: 061312ge STA: G.G.66 TOP: Midpoint

75 ANS: 2

$\frac{6+x}{2} = 4$. $\frac{-4+y}{2} = 2$

$x = 2$ $y = 8$

PTS: 2 REF: 011401ge STA: G.G.66 TOP: Midpoint

76 ANS:

25. $d = \sqrt{(-3-4)^2 + (1-25)^2} = \sqrt{49+576} = \sqrt{625} = 25$.

PTS: 2 REF: fall0831ge STA: G.G.67 TOP: Distance
KEY: general

77 ANS: 1

$d = \sqrt{(-4-2)^2 + (5-(-5))^2} = \sqrt{36+100} = \sqrt{136} = \sqrt{4} \cdot \sqrt{34} = 2\sqrt{34}$.

PTS: 2 REF: 080919ge STA: G.G.67 TOP: Distance
KEY: general

78 ANS: 4

$d = \sqrt{(-3-1)^2 + (2-0)^2} = \sqrt{16+4} = \sqrt{20} = \sqrt{4} \cdot \sqrt{5} = 2\sqrt{5}$

PTS: 2 REF: 011017ge STA: G.G.67 TOP: Distance
KEY: general

79 ANS: 4

$d = \sqrt{(146-(-4))^2 + (52-2)^2} = \sqrt{25,000} \approx 158.1$

PTS: 2 REF: 061021ge STA: G.G.67 TOP: Distance
KEY: general

80 ANS: 4

$d = \sqrt{(-6-2)^2 + (4-(-5))^2} = \sqrt{64+81} = \sqrt{145}$

PTS: 2 REF: 081013ge STA: G.G.67 TOP: Distance
KEY: general

81 ANS: 4

$d = \sqrt{(-5-3)^2 + (4-(-6))^2} = \sqrt{64+100} = \sqrt{164} = \sqrt{4}\sqrt{41} = 2\sqrt{41}$

PTS: 2 REF: 011121ge STA: G.G.67 TOP: Distance
KEY: general

82 ANS: 2

$d = \sqrt{(-1-7)^2 + (9-4)^2} = \sqrt{64+25} = \sqrt{89}$

PTS: 2 REF: 061109ge STA: G.G.67 TOP: Distance
KEY: general

83 ANS: 3

$d = \sqrt{(1-9)^2 + (-4-2)^2} = \sqrt{64+36} = \sqrt{100} = 10$

PTS: 2 REF: 081107ge STA: G.G.67 TOP: Distance
KEY: general

84 ANS: 1

$d = \sqrt{(4-1)^2 + (7-11)^2} = \sqrt{9+16} = \sqrt{25} = 5$

PTS: 2 REF: 011205ge STA: G.G.67 TOP: Distance
KEY: general

85 ANS: 3

$d = \sqrt{(-1-4)^2 + (0-(-3))^2} = \sqrt{25+9} = \sqrt{34}$

PTS: 2 REF: 061217ge STA: G.G.67 TOP: Distance
KEY: general

86 ANS:

$\sqrt{(-4-2)^2 + (3-5)^2} = \sqrt{36+4} = \sqrt{40} = \sqrt{4}\sqrt{10} = 2\sqrt{10}$.

PTS: 2 REF: 081232ge STA: G.G.67 TOP: Distance

87 ANS:

$\sqrt{(-1-3)^2 + (4-(-2))^2} = \sqrt{16+36} = \sqrt{52} = \sqrt{4}\sqrt{13} = 2\sqrt{13}$

PTS: 2 REF: 081331ge STA: G.G.67 TOP: Distance

88 ANS:

$\sqrt{(3-7)^2 + (-4-2)^2} = \sqrt{16+36} = \sqrt{52} = \sqrt{4}\sqrt{13} = 2\sqrt{13}$.

PTS: 2 REF: 011431ge STA: G.G.67 TOP: Distance

89 ANS: 3 PTS: 2 REF: fall0816ge STA: G.G.1
TOP: Planes

90 ANS: 4 PTS: 2 REF: 011012ge STA: G.G.1
TOP: Planes

91 ANS: 3 PTS: 2 REF: 061017ge STA: G.G.1
TOP: Planes

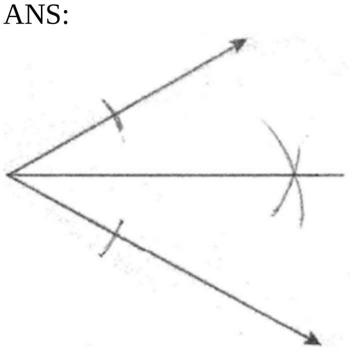
92 ANS: 4 PTS: 2 REF: 061118ge STA: G.G.1
TOP: Planes
93 ANS: 3 PTS: 2 REF: 081218ge STA: G.G.1
TOP: Planes
94 ANS: 4 PTS: 2 REF: 011315ge STA: G.G.1
TOP: Planes
95 ANS: 1 PTS: 2 REF: 060918ge STA: G.G.2
TOP: Planes
96 ANS: 1 PTS: 2 REF: 011128ge STA: G.G.2
TOP: Planes
97 ANS: 1 PTS: 2 REF: 061310ge STA: G.G.2
TOP: Planes
98 ANS: 1 PTS: 2 REF: 011024ge STA: G.G.3
TOP: Planes
99 ANS: 1 PTS: 2 REF: 081008ge STA: G.G.3
TOP: Planes
100 ANS: 1 PTS: 2 REF: 011218ge STA: G.G.3
TOP: Planes
101 ANS: 2 PTS: 2 REF: 080927ge STA: G.G.4
TOP: Planes
102 ANS: 4 PTS: 2 REF: 061213ge STA: G.G.5
TOP: Planes
103 ANS: 3

As originally administered, this question read, “Which fact is *not* sufficient to show that planes $\mathcal{R}$ and $\mathcal{S}$ are perpendicular?” The State Education Department stated that since a correct solution was not provided for Question 11, all students shall be awarded credit for this question.

PTS: 2 REF: 081211ge STA: G.G.5 TOP: Planes
104 ANS: 4 PTS: 2 REF: 080914ge STA: G.G.7
TOP: Planes
105 ANS: 1 PTS: 2 REF: 081116ge STA: G.G.7
TOP: Planes
106 ANS: 3 PTS: 2 REF: 060928ge STA: G.G.8
TOP: Planes
107 ANS: 2 PTS: 2 REF: 081120ge STA: G.G.8
TOP: Planes
108 ANS: 2 PTS: 2 REF: fall0806ge STA: G.G.9
TOP: Planes
109 ANS: 3 PTS: 2 REF: 081002ge STA: G.G.9
TOP: Planes
110 ANS: 2 PTS: 2 REF: 011109ge STA: G.G.9
TOP: Planes
111 ANS: 1 PTS: 2 REF: 061108ge STA: G.G.9
TOP: Planes
112 ANS: 4 PTS: 2 REF: 061203ge STA: G.G.9
TOP: Planes

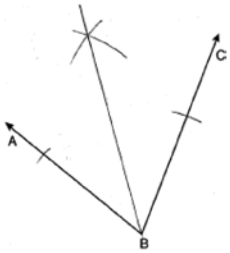
113 ANS: 4 PTS: 2 REF: 011306ge STA: G.G.9
TOP: Planes
114 ANS: 1 PTS: 2 REF: 081323ge STA: G.G.9
TOP: Planes
115 ANS: 1 PTS: 2 REF: 011404ge STA: G.G.9
TOP: Planes
116 ANS: 3
The lateral edges of a prism are parallel.

PTS: 2 REF: fall0808ge STA: G.G.10 TOP: Solids
117 ANS: 4 PTS: 2 REF: 061003ge STA: G.G.10
TOP: Solids
118 ANS: 3 PTS: 2 REF: 011105ge STA: G.G.10
TOP: Solids
119 ANS: 1 PTS: 2 REF: 011221ge STA: G.G.10
TOP: Solids
120 ANS: 2 PTS: 2 REF: 081311ge STA: G.G.10
TOP: Solids
121 ANS: 4 PTS: 2 REF: 011406ge STA: G.G.10
TOP: Solids
122 ANS: 4 PTS: 2 REF: 060904ge STA: G.G.13
TOP: Solids
123 ANS: 2 PTS: 2 REF: 061315ge STA: G.G.13
TOP: Solids
124 ANS:



PTS: 2 REF: fall0832ge STA: G.G.17 TOP: Constructions
125 ANS: 3 PTS: 2 REF: 060925ge STA: G.G.17
TOP: Constructions
126 ANS: 3 PTS: 2 REF: 080902ge STA: G.G.17
TOP: Constructions

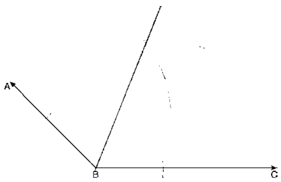
127 ANS:



PTS: 2 REF: 080932ge STA: G.G.17 TOP: Constructions

128 ANS: 2 PTS: 2 REF: 011004ge STA: G.G.17
TOP: Constructions

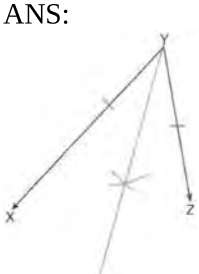
129 ANS:



PTS: 2 REF: 011133ge STA: G.G.17 TOP: Constructions

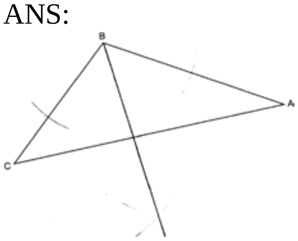
130 ANS: 4 PTS: 2 REF: 081106ge STA: G.G.17
TOP: Constructions

131 ANS:



PTS: 2 REF: 011233ge STA: G.G.17 TOP: Constructions

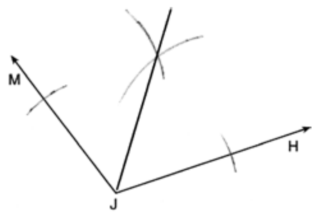
132 ANS:



PTS: 2 REF: 061232ge STA: G.G.17 TOP: Constructions

133 ANS: 2 PTS: 2 REF: 081205ge STA: G.G.17
TOP: Constructions

134 ANS:



PTS: 2 REF: 081330ge STA: G.G.17 TOP: Constructions

135 ANS: 3 PTS: 2 REF: 011402ge STA: G.G.17
TOP: Constructions

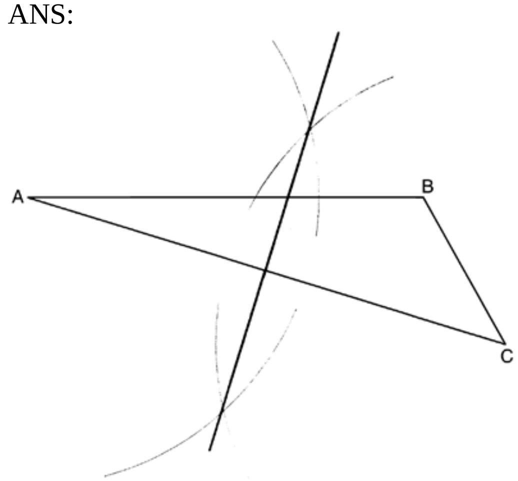
136 ANS: 3 PTS: 2 REF: fall0804ge STA: G.G.18
TOP: Constructions

137 ANS: 4 PTS: 2 REF: 081005ge STA: G.G.18
TOP: Constructions

138 ANS: 1 PTS: 2 REF: 011120ge STA: G.G.18
TOP: Constructions

139 ANS: 2 PTS: 2 REF: 061101ge STA: G.G.18
TOP: Constructions

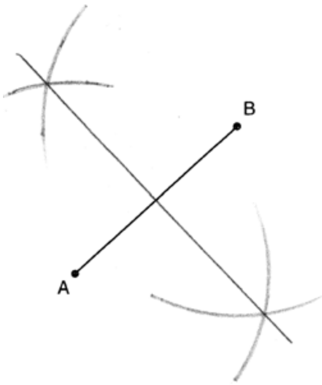
140 ANS:



PTS: 2 REF: 081130ge STA: G.G.18 TOP: Constructions

141 ANS: 2 PTS: 2 REF: 061305ge STA: G.G.18
TOP: Constructions

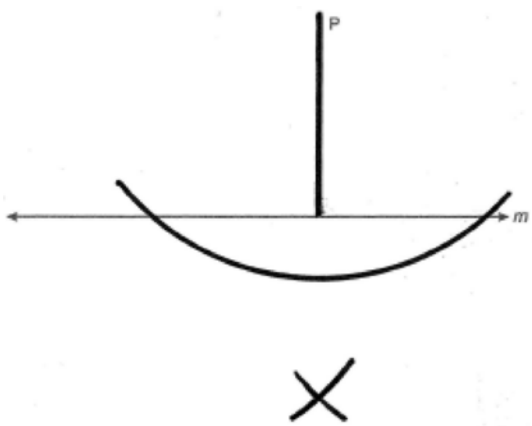
142 ANS:



PTS: 2 REF: 011430ge STA: G.G.18 TOP: Constructions

143 ANS: 1 PTS: 2 REF: fall0807ge STA: G.G.19
TOP: Constructions

144 ANS:



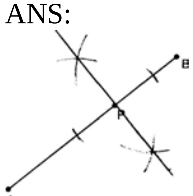
PTS: 2 REF: 060930ge STA: G.G.19 TOP: Constructions

145 ANS: 4 PTS: 2 REF: 011009ge STA: G.G.19
TOP: Constructions

146 ANS: 2 PTS: 2 REF: 061020ge STA: G.G.19
TOP: Constructions

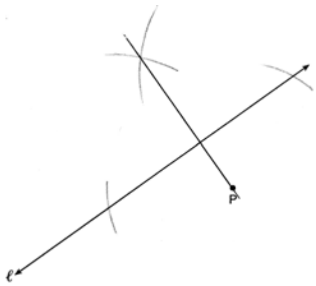
147 ANS: 2 PTS: 2 REF: 061208ge STA: G.G.19
TOP: Constructions

148 ANS:



PTS: 2 REF: 081233ge STA: G.G.19 TOP: Constructions

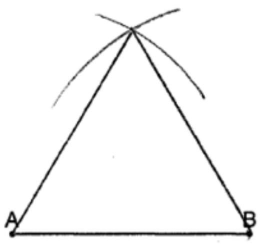
149 ANS:



PTS: 2 REF: 011333ge STA: G.G.19 TOP: Constructions

150 ANS: 4 PTS: 2 REF: 081313ge STA: G.G.19
TOP: Constructions

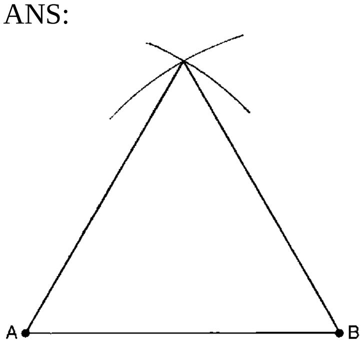
151 ANS:



PTS: 2 REF: 011032ge STA: G.G.20 TOP: Constructions

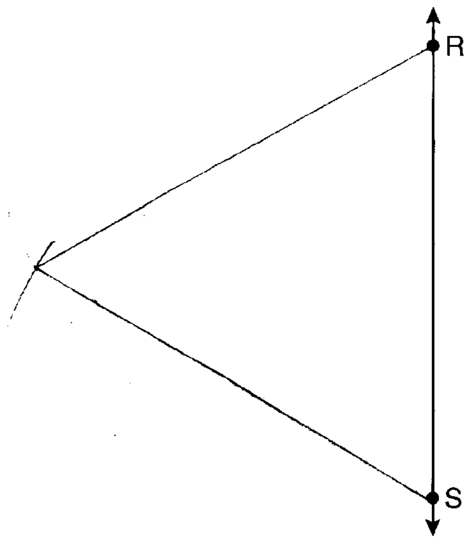
152 ANS: 1 PTS: 2 REF: 061012ge STA: G.G.20
TOP: Constructions

153 ANS:



PTS: 2 REF: 081032ge STA: G.G.20 TOP: Constructions

154 ANS:

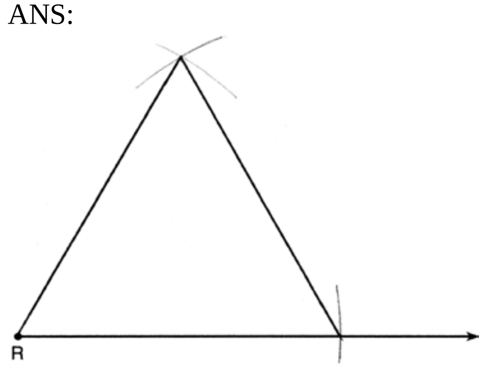


PTS: 2 REF: 061130ge STA: G.G.20 TOP: Constructions

155 ANS: 1 PTS: 2 REF: 011207ge STA: G.G.20
TOP: Constructions

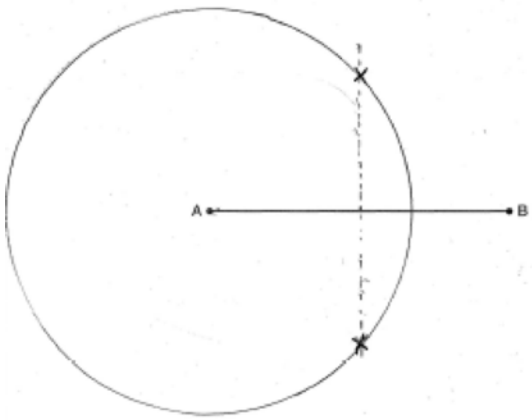
156 ANS: 3 PTS: 2 REF: 011309ge STA: G.G.20
TOP: Constructions

157 ANS:



PTS: 2 REF: 061332ge STA: G.G.20 TOP: Constructions

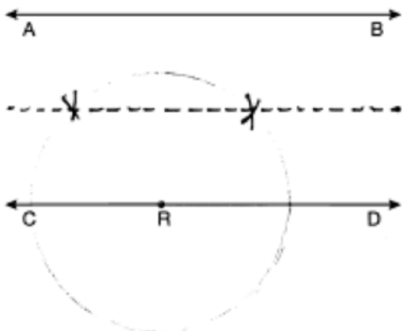
158 ANS:



PTS: 2 REF: 060932ge STA: G.G.22 TOP: Locus

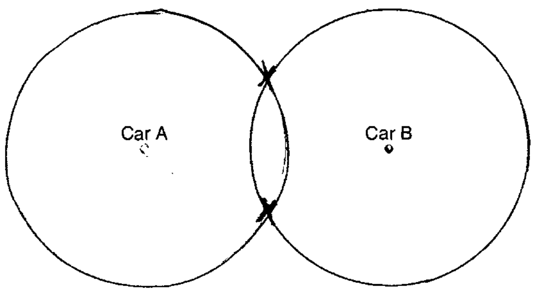
159 ANS: 2 PTS: 2 REF: 011011ge STA: G.G.22
TOP: Locus

160 ANS:



PTS: 2 REF: 061033ge STA: G.G.22 TOP: Locus

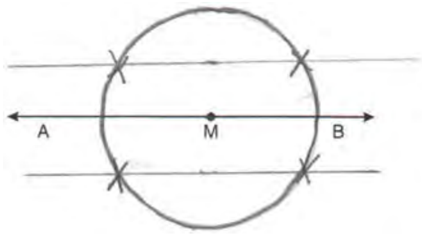
161 ANS:



PTS: 2 REF: 081033ge STA: G.G.22 TOP: Locus

162 ANS: 2 PTS: 2 REF: 061121ge STA: G.G.22
TOP: Locus

163 ANS:

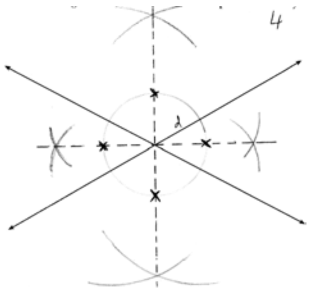


PTS: 2 REF: 011230ge STA: G.G.22 TOP: Locus

164 ANS: 2 PTS: 2 REF: 011317ge STA: G.G.22
TOP: Locus

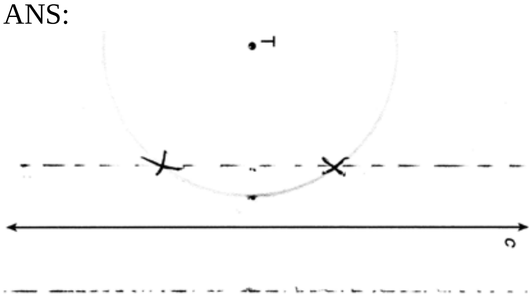
165 ANS: 4 PTS: 2 REF: 061303ge STA: G.G.22
TOP: Locus

166 ANS:



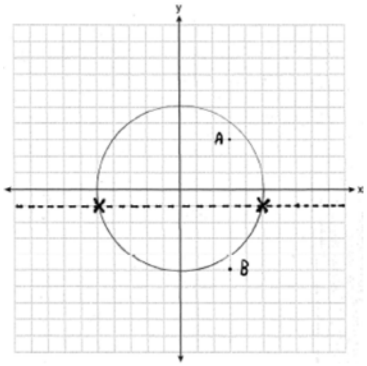
PTS: 2 REF: 081334ge STA: G.G.22 TOP: Locus

167 ANS:



PTS: 2 REF: 011434ge STA: G.G.22 TOP: Locus

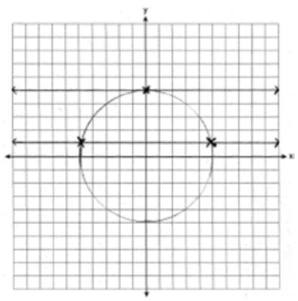
168 ANS:



PTS: 4 REF: fall0837ge STA: G.G.23 TOP: Locus

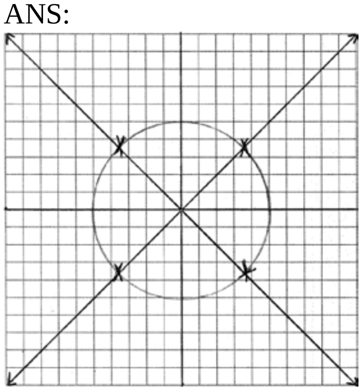
169 ANS: 4 PTS: 2 REF: 060912ge STA: G.G.23
TOP: Locus

170 ANS:



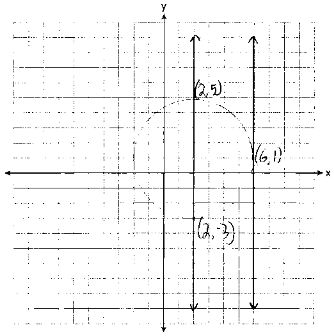
PTS: 4 REF: 080936ge STA: G.G.23 TOP: Locus

171 ANS:



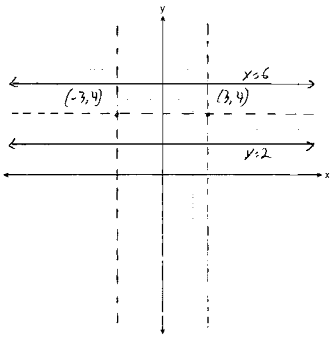
PTS: 4 REF: 011037ge STA: G.G.23 TOP: Locus

172 ANS:



PTS: 4 REF: 011135ge STA: G.G.23 TOP: Locus

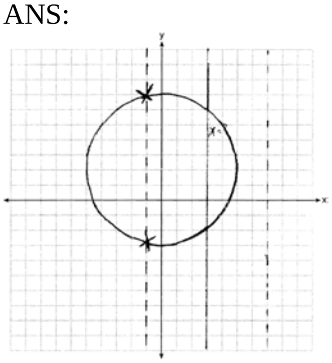
173 ANS:



PTS: 4 REF: 061135ge STA: G.G.23 TOP: Locus

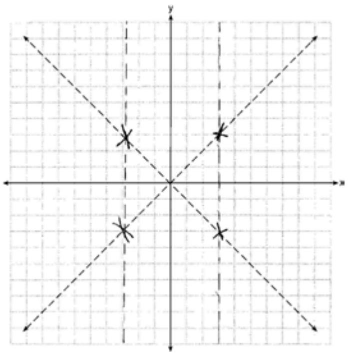
174 ANS: 2 PTS: 2 REF: 081117ge STA: G.G.23
TOP: Locus

175 ANS:



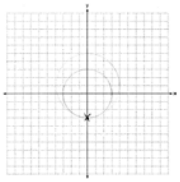
PTS: 2 REF: 061234ge STA: G.G.23 TOP: Locus

176 ANS:



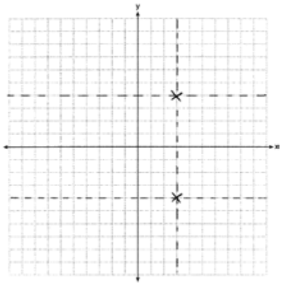
PTS: 2 REF: 081234ge STA: G.G.23 TOP: Locus

177 ANS:



PTS: 2 REF: 011331ge STA: G.G.23 TOP: Locus

178 ANS:



PTS: 2 REF: 061333ge STA: G.G.23 TOP: Locus

179 ANS: 2 PTS: 2 REF: 081316ge STA: G.G.23
TOP: Locus

180 ANS: 4 PTS: 2 REF: 011407ge STA: G.G.23
TOP: Locus

181 ANS: 4
The marked 60º angle and the angle above it are on the same straight line and supplementary. This unmarked supplementary angle is 120º. Because the unmarked 120º angle and the marked 120º angle are alternate exterior angles and congruent, $d \parallel e$.

PTS: 2 REF: 080901ge STA: G.G.35 TOP: Parallel Lines and Transversals

182 ANS: 2 PTS: 2 REF: 061007ge STA: G.G.35
TOP: Parallel Lines and Transversals

183 ANS:
Yes, $m\angle ABD = m\angle BDC = 44$ $180 - (93 + 43) = 44$ $x + 19 + 2x + 6 + 3x + 5 = 180$. Because alternate interior

$$6x + 30 = 180$$
$$6x = 150$$
$$x = 25$$
$$x + 19 = 44$$

angles $\angle ABD$ and $\angle CDB$ are congruent, $\overline{AB}$ is parallel to $\overline{DC}$.

PTS: 4 REF: 081035ge STA: G.G.35 TOP: Parallel Lines and Transversals

184 ANS: 2

$$7x = 5x + 30$$
$$2x = 30$$
$$x = 15$$

PTS: 2 REF: 061106ge STA: G.G.35 TOP: Parallel Lines and Transversals

185 ANS: 3

$$7x = 5x + 30$$
$$2x = 30$$
$$x = 15$$

PTS: 2 REF: 081109ge STA: G.G.35 TOP: Parallel Lines and Transversals

186 ANS: 2

$$6x + 42 = 18x - 12$$
$$54 = 12x$$
$$x = \frac{54}{12} = 4.5$$

PTS: 2 REF: 011201ge STA: G.G.35 TOP: Parallel Lines and Transversals

187 ANS:
$180 - (90 + 63) = 27$

PTS: 2 REF: 061230ge STA: G.G.35 TOP: Parallel Lines and Transversals

188 ANS: 3

$$4x + 14 + 8x + 10 = 180$$
$$12x = 156$$
$$x = 13$$

PTS: 2 REF: 081213ge STA: G.G.35 TOP: Parallel Lines and Transversals

189 ANS: 3 PTS: 2 REF: 061320ge STA: G.G.35
TOP: Parallel Lines and Transversals

190 ANS: 1

$$7x - 36 + 5x + 12 = 180$$
$$12x - 24 = 180$$
$$12x = 204$$
$$x = 17$$

PTS: 2 REF: 011422ge STA: G.G.35 TOP: Parallel Lines and Transversals

191 ANS: 1

$$a^2 + (5\sqrt{2})^2 = (2\sqrt{15})^2$$
$$a^2 + (25 \times 2) = 4 \times 15$$
$$a^2 + 50 = 60$$
$$a^2 = 10$$
$$a = \sqrt{10}$$

PTS: 2 REF: 011016ge STA: G.G.48 TOP: Pythagorean Theorem

192 ANS: 2

$$x^2 + (x+7)^2 = 13^2$$
$$x^2 + x^2 + 7x + 7x + 49 = 169$$
$$2x^2 + 14x - 120 = 0$$
$$x^2 + 7x - 60 = 0$$
$$(x+12)(x-5) = 0$$
$$x = 5$$
$$2x = 10$$

PTS: 2 REF: 061024ge STA: G.G.48 TOP: Pythagorean Theorem

193 ANS: 3

$$8^2 + 24^2 \neq 25^2$$

PTS: 2 REF: 011111ge STA: G.G.48 TOP: Pythagorean Theorem

194 ANS: 3

$$x^2 + 7^2 = (x+1)^2 \qquad x + 1 = 25$$
$$x^2 + 49 = x^2 + 2x + 1$$
$$48 = 2x$$
$$24 = x$$

PTS: 2 REF: 081127ge STA: G.G.48 TOP: Pythagorean Theorem

195 ANS: 2

$2^2 + 3^2 \neq 4^2$

PTS: 2 REF: 011316ge STA: G.G.48 TOP: Pythagorean Theorem

196 ANS: 1

If $\angle A$ is at minimum (50°) and $\angle B$ is at minimum (90°), $\angle C$ is at maximum of 40° (180° - (50° + 90°)). If $\angle A$ is at maximum (60°) and $\angle B$ is at maximum (100°), $\angle C$ is at minimum of 20° (180° - (60° + 100°)).

PTS: 2 REF: 060901ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

197 ANS: 1

In an equilateral triangle, each interior angle is 60° and each exterior angle is 120° (180° - 120°). The sum of the three interior angles is 180° and the sum of the three exterior angles is 360°.

PTS: 2 REF: 060909ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

198 ANS:

26. $$\begin{aligned} x + 3x + 5x - 54 &= 180 \\ 9x &= 234 \\ x &= 26 \end{aligned}$$

PTS: 2 REF: 080933ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

199 ANS: 1

$$\begin{aligned} x + 2x + 2 + 3x + 4 &= 180 \\ 6x + 6 &= 180 \\ x &= 29 \end{aligned}$$

PTS: 2 REF: 011002ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

200 ANS:

34. $$\begin{aligned} 2x - 12 + x + 90 &= 180 \\ 3x + 78 &= 90 \\ 3x &= 102 \\ x &= 34 \end{aligned}$$

PTS: 2 REF: 061031ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

201 ANS: 1

$$\begin{aligned} 3x + 5 + 4x - 15 + 2x + 10 &= 180 \\ 9x &= 180 \\ x &= 20 \end{aligned}$$ $m\angle D = 3(20) + 5 = 65$. $m\angle E = 4(20) - 15 = 65$.

PTS: 2 REF: 061119ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

202 ANS: 4

$$\frac{5}{2+3+5} \times 180 = 90$$

PTS: 2 REF: 081119ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

203 ANS: 3

$$\frac{3}{8+3+4} \times 180 = 36$$

PTS: 2 REF: 011210ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

204 ANS: 4 PTS: 2 REF: 081206ge STA: G.G.30
TOP: Interior and Exterior Angles of Triangles

205 ANS: 1

$$\frac{180-52}{2} = 64.\ \ 180-(90+64) = 26$$

PTS: 2 REF: 011314ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

206 ANS: 3

$$\begin{aligned} 3x+1+4x-17+5x-20 &= 180. \quad 3(18)+1 = 55 \\ 12x-36 &= 180 \quad 4(18)-17 = 55 \\ 12x &= 216 \quad 5(18)-20 = 70 \\ x &= 18 \end{aligned}$$

PTS: 2 REF: 061308ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

207 ANS:

$$\begin{aligned} A &= 2B-15 \quad . \quad 2B-15+B+2B-15+B = 180 \\ C &= A+B \qquad 6B-30 = 180 \\ C &= 2B-15+B \qquad 6B = 210 \\ & \qquad B = 35 \end{aligned}$$

PTS: 2 REF: 081332ge STA: G.G.30 TOP: Interior and Exterior Angles of Triangles

208 ANS: 4

$180-(40+40) = 100$

PTS: 2 REF: 080903ge STA: G.G.31 TOP: Isosceles Triangle Theorem

209 ANS: 3 PTS: 2 REF: 011007ge STA: G.G.31
TOP: Isosceles Triangle Theorem

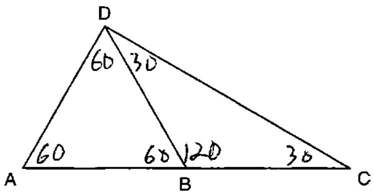
210 ANS:

67. $\frac{180-46}{2} = 67$

PTS: 2 REF: 011029ge STA: G.G.31 TOP: Isosceles Triangle Theorem

211 ANS: 3 PTS: 2 REF: 061004ge STA: G.G.31
TOP: Isosceles Triangle Theorem

212 ANS:

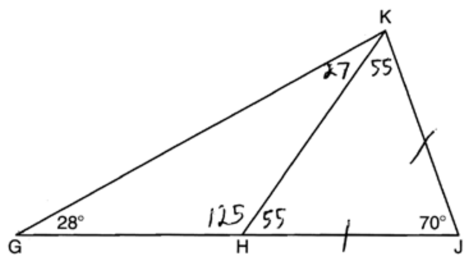


30.

PTS: 2 REF: 011129ge STA: G.G.31 TOP: Isosceles Triangle Theorem

213 ANS: 4 PTS: 2 REF: 061124ge STA: G.G.31
TOP: Isosceles Triangle Theorem

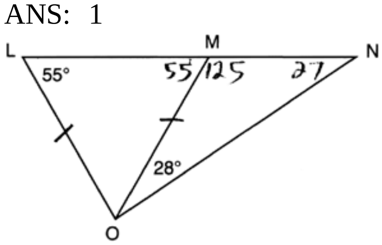
214 ANS:



No, $\angle KGH$ is not congruent to $\angle GKH$.

PTS: 2 REF: 081135ge STA: G.G.31 TOP: Isosceles Triangle Theorem

215 ANS: 1



PTS: 2 REF: 061211ge STA: G.G.31 TOP: Isosceles Triangle Theorem

216 ANS: 2

$$3x + x + 20 + x + 20 = 180$$
$$5x = 40$$
$$x = 28$$

PTS: 2 REF: 081222ge STA: G.G.31 TOP: Isosceles Triangle Theorem

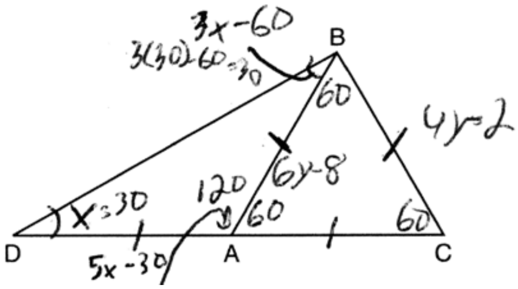
217 ANS:

$x + 3x - 60 + 5x - 30 = 180$ $5(30) - 30 = 120$ $6y - 8 = 4y - 2$ $\overline{DC} = 10 + 10 = 20$

$9x - 90 = 180$ $m\angle BAC = 180 - 120 = 60$ $2y = 6$

$9x = 270$ $y = 3$

$x = 30 = m\angle D$ $4(3) - 2 = 10 = \overline{BC}$



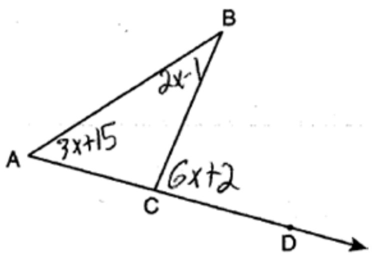
PTS: 3 REF: 011435ge STA: G.G.31 TOP: Isosceles Triangle Theorem

218 ANS: 4

(4) is not true if $\angle PQR$ is obtuse.

PTS: 2 REF: 060924ge STA: G.G.32 TOP: Exterior Angle Theorem

219 ANS: 1



$3x + 15 + 2x - 1 = 6x + 2$

$5x + 14 = 6x + 2$

$x = 12$

PTS: 2 REF: 011021ge STA: G.G.32 TOP: Exterior Angle Theorem

220 ANS:

110. $6x + 20 = x + 40 + 4x - 5$

$6x + 20 = 5x + 35$

$x = 15$

$6((15) + 20 = 110$

PTS: 2 REF: 081031ge STA: G.G.32 TOP: Exterior Angle Theorem

221 ANS: 3

$x + 2x + 15 = 5x + 15$ $2(5) + 15 = 25$

$3x + 15 = 5x + 5$

$10 = 2x$

$5 = x$

PTS: 2 REF: 011127ge STA: G.G.32 TOP: Exterior Angle Theorem

222 ANS: 2 PTS: 2 REF: 061107ge STA: G.G.32
TOP: Exterior Angle Theorem

223 ANS: 3 PTS: 2 REF: 081111ge STA: G.G.32
TOP: Exterior Angle Theorem

224 ANS: 2 PTS: 2 REF: 011206ge STA: G.G.32
TOP: Exterior Angle Theorem

225 ANS: 4

$x^2 - 6x + 2x - 3 = 9x + 27$

$x^2 - 4x - 3 = 9x + 27$

$x^2 - 13x - 30 = 0$

$(x - 15)(x + 2) = 0$

$x = 15, -2$

PTS: 2 REF: 061225ge STA: G.G.32 TOP: Exterior Angle Theorem

226 ANS: 4

$6x = x + 40 + 3x + 10$. $m\angle CAB = 25 + 40 = 65$

$6x = 4x + 50$

$2x = 50$

$x = 25$

PTS: 2 REF: 081310ge STA: G.G.32 TOP: Exterior Angle Theorem

227 ANS: 2

$m\angle ABC = 55$, so $m\angle ACR = 60 + 55 = 115$

PTS: 2 REF: 011414ge STA: G.G.32 TOP: Exterior Angle Theorem

228 ANS: 2

$7 + 18 > 6 + 12$

PTS: 2 REF: fall0819ge STA: G.G.33 TOP: Triangle Inequality Theorem

229 ANS: 2

$6 + 17 > 22$

PTS: 2 REF: 080916ge STA: G.G.33 TOP: Triangle Inequality Theorem

230 ANS: 2

$5 - 3 = 2, 5 + 3 = 8$

PTS: 2 REF: 011228ge STA: G.G.33 TOP: Triangle Inequality Theorem

231 ANS: 2
Longest side of a triangle is opposite the largest angle. Shortest side is opposite the smallest angle.

PTS: 2 REF: 060911ge STA: G.G.34 TOP: Angle Side Relationship

232 ANS:
$\overline{AC}$. m$\angle BCA = 63$ and m$\angle ABC = 80$. $\overline{AC}$ is the longest side as it is opposite the largest angle.

PTS: 2 REF: 080934ge STA: G.G.34 TOP: Angle Side Relationship

233 ANS: 1 PTS: 2 REF: 061010ge STA: G.G.34
TOP: Angle Side Relationship

234 ANS: 4
Longest side of a triangle is opposite the largest angle. Shortest side is opposite the smallest angle.

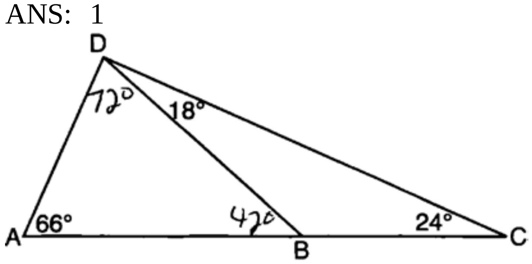
PTS: 2 REF: 081011ge STA: G.G.34 TOP: Angle Side Relationship

235 ANS: 4
m$\angle A = 80$

PTS: 2 REF: 011115ge STA: G.G.34 TOP: Angle Side Relationship

236 ANS: 4 PTS: 2 REF: 011222ge STA: G.G.34
TOP: Angle Side Relationship

237 ANS: 1



PTS: 2 REF: 081219ge STA: G.G.34 TOP: Angle Side Relationship

238 ANS:

$x^2 + 12 + 11x + 5 + 13x - 17 = 180$. m$\angle A = 6^2 + 12 = 48$. $\angle B$ is the largest angle, so $\overline{AC}$ in the longest side.

$$x^2 + 24x - 180 = 0 \quad \text{m}\angle B = 11(6) + 5 = 71$$

$$(x + 30)(x - 6) = 0 \quad \text{m}\angle C = 13(6) - 7 = 61$$

$$x = 6$$

PTS: 4 REF: 011337ge STA: G.G.34 TOP: Angle Side Relationship

239 ANS: 2 PTS: 2 REF: 061321ge STA: G.G.34
TOP: Angle Side Relationship

240 ANS: 2 PTS: 2 REF: 081306ge STA: G.G.34
TOP: Angle Side Relationship

241 ANS: 1 PTS: 2 REF: 011416ge STA: G.G.34
TOP: Angle Side Relationship

242 ANS: 4

$\Delta ABC \sim \Delta DBE$. $\dfrac{\overline{AB}}{\overline{DB}} = \dfrac{\overline{AC}}{\overline{DE}}$

$$\frac{9}{2} = \frac{x}{3}$$

$$x = 13.5$$

PTS: 2 REF: 060927ge STA: G.G.46 TOP: Side Splitter Theorem

243 ANS:

5. $\dfrac{3}{x} = \dfrac{6+3}{15}$

$9x = 45$

$x = 5$

PTS: 2 REF: 011033ge STA: G.G.46 TOP: Side Splitter Theorem

244 ANS: 2

$\dfrac{3}{7} = \dfrac{6}{x}$

$3x = 42$

$x = 14$

PTS: 2 REF: 081027ge STA: G.G.46 TOP: Side Splitter Theorem

245 ANS:

32. $\dfrac{16}{20} = \dfrac{x-3}{x+5}$. $\overline{AC} = x - 3 = 35 - 3 = 32$

$16x + 80 = 20x - 60$

$140 = 4x$

$35 = x$

PTS: 4 REF: 011137ge STA: G.G.46 TOP: Side Splitter Theorem

246 ANS:

16.7. $\dfrac{x}{25} = \dfrac{12}{18}$

$18x = 300$

$x \approx 16.7$

PTS: 2 REF: 061133ge STA: G.G.46 TOP: Side Splitter Theorem

247 ANS: 3

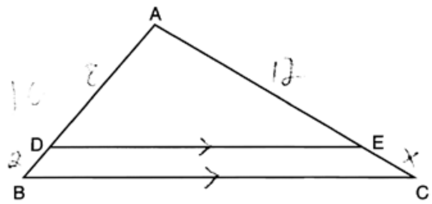
$\frac{5}{7} = \frac{10}{x}$

$5x = 70$

$x = 14$

PTS: 2 REF: 081103ge STA: G.G.46 TOP: Side Splitter Theorem

248 ANS: 3



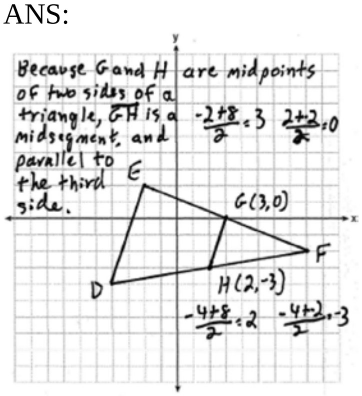
$\frac{8}{2} = \frac{12}{x}$.

$8x = 24$

$x = 3$

PTS: 2 REF: 061216ge STA: G.G.46 TOP: Side Splitter Theorem

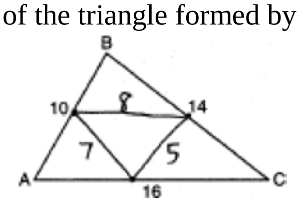
249 ANS:



PTS: 4 REF: fall0835ge STA: G.G.42 TOP: Midsegments

250 ANS:

20. The sides of the triangle formed by connecting the midpoints are half the sides of the original triangle.

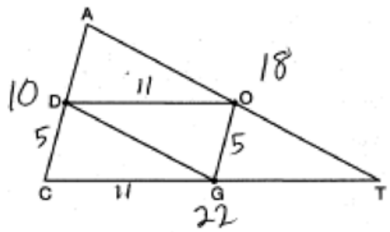


$5 + 7 + 8 = 20$.

PTS: 2 REF: 060929ge STA: G.G.42 TOP: Midsegments

Geometry Regents Exam Questions by Performance Indicator: Topic
Answer Section

251 ANS: 3



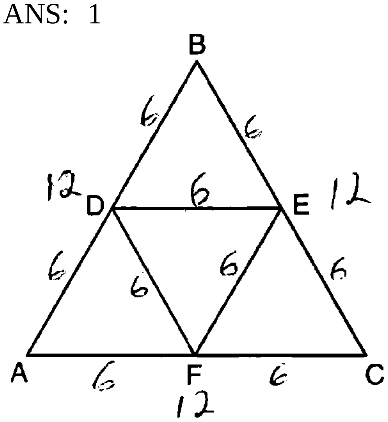
PTS: 2 REF: 080920ge STA: G.G.42 TOP: Midsegments

252 ANS:

37. Since $\overline{DE}$ is a midsegment, $AC = 14$. $10 + 13 + 14 = 37$

PTS: 2 REF: 061030ge STA: G.G.42 TOP: Midsegments

253 ANS: 1



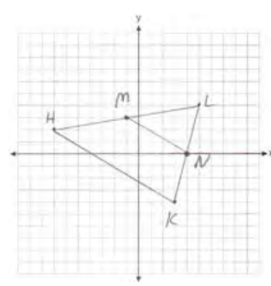
PTS: 2 REF: 081003ge STA: G.G.42 TOP: Midsegments

254 ANS: 2

$\frac{4x + 10}{2} = 2x + 5$

PTS: 2 REF: 011103ge STA: G.G.42 TOP: Midsegments

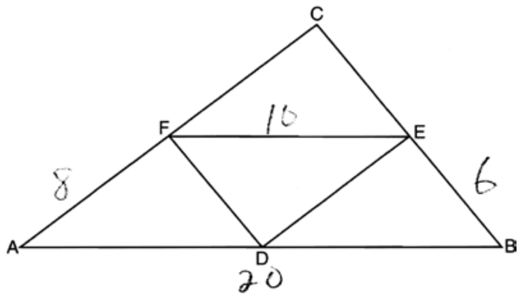
255 ANS:



$M\left(\frac{-7+5}{2}, \frac{2+4}{2}\right) = M(-1, 3)$. $N\left(\frac{3+5}{2}, \frac{-4+4}{2}\right) = N(4, 0)$. $\overline{MN}$ is a midsegment.

PTS: 4 REF: 011237ge STA: G.G.42 TOP: Midsegments

256 ANS: 4



$20 + 8 + 10 + 6 = 44.$

PTS: 2 REF: 061211ge STA: G.G.42 TOP: Midsegments

257 ANS: 3 PTS: 2 REF: 081227ge STA: G.G.42
TOP: Midsegments

258 ANS: 3 PTS: 2 REF: 011311ge STA: G.G.42
TOP: Midsegments

259 ANS: 3

$3x - 15 = 2(6)$

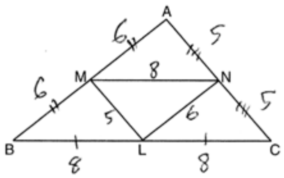
$3x = 27$

$x = 9$

PTS: 2 REF: 061311ge STA: G.G.42 TOP: Midsegments

260 ANS: 3 PTS: 2 REF: 081320ge STA: G.G.42
TOP: Midsegments

261 ANS: 1



PTS: 2 REF: 011413ge STA: G.G.42 TOP: Midsegments

262 ANS: 3 PTS: 2 REF: fall0825ge STA: G.G.21
TOP: Centroid, Orthocenter, Incenter and Circumcenter

263 ANS: 4 PTS: 2 REF: 080925ge STA: G.G.21
TOP: Centroid, Orthocenter, Incenter and Circumcenter

264 ANS: 4

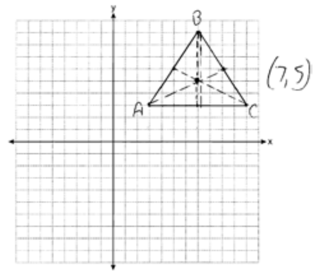
$\overline{BG}$ is also an angle bisector since it intersects the concurrence of $\overline{CD}$ and $\overline{AE}$

PTS: 2 REF: 061025ge STA: G.G.21
KEY: Centroid, Orthocenter, Incenter and Circumcenter

265 ANS: 1 PTS: 2 REF: 081028ge STA: G.G.21
TOP: Centroid, Orthocenter, Incenter and Circumcenter

266 ANS: 3 PTS: 2 REF: 011110ge STA: G.G.21
KEY: Centroid, Orthocenter, Incenter and Circumcenter

267 ANS:



$(7, 5)$ $m_{\overline{AB}} = \left(\frac{3+7}{2}, \frac{3+9}{2} \right) = (5, 6)$ $m_{\overline{BC}} = \left(\frac{7+11}{2}, \frac{9+3}{2} \right) = (9, 6)$

PTS: 2 REF: 081134ge STA: G.G.21
TOP: Centroid, Orthocenter, Incenter and Circumcenter

268 ANS: 3 PTS: 2 REF: 011202ge STA: G.G.21
TOP: Centroid, Orthocenter, Incenter and Circumcenter

269 ANS: 1 PTS: 2 REF: 061214ge STA: G.G.21
TOP: Centroid, Orthocenter, Incenter and Circumcenter

270 ANS: 4 PTS: 2 REF: 081224ge STA: G.G.21
TOP: Centroid, Orthocenter, Incenter and Circumcenter

271 ANS: 2
The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

PTS: 2 REF: 060914ge STA: G.G.43 TOP: Centroid

272 ANS:
6. The centroid divides each median into segments whose lengths are in the ratio 2 : 1. $\overline{TD} = 6$ and $\overline{DB} = 3$

PTS: 2 REF: 011034ge STA: G.G.43 TOP: Centroid

273 ANS: 1
The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

$$\begin{aligned} \overline{GC} &= 2\overline{FG} \\ \overline{GC} + \overline{FG} &= 24 \\ 2\overline{FG} + \overline{FG} &= 24 \\ 3\overline{FG} &= 24 \\ \overline{FG} &= 8 \end{aligned}$$

PTS: 2 REF: 081018ge STA: G.G.43 TOP: Centroid

274 ANS: 1 PTS: 2 REF: 061104ge STA: G.G.43
TOP: Centroid

275 ANS: 1
$7x + 4 = 2(2x + 5)$. $PM = 2(2) + 5 = 9$

$$\begin{aligned} 7x + 4 &= 4x + 10 \\ 3x &= 6 \\ x &= 2 \end{aligned}$$

PTS: 2 REF: 011226ge STA: G.G.43 TOP: Centroid

276 ANS: 4
The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

PTS: 2 REF: 081220ge STA: G.G.43 TOP: Centroid

277 ANS: 3
The centroid divides each median into segments whose lengths are in the ratio 2 : 1.

PTS: 2 REF: 081307ge STA: G.G.43 TOP: Centroid

278 ANS: 1

$2x + x = 12.$ $\overline{BD} = 2(4) = 8$

$3x = 12$

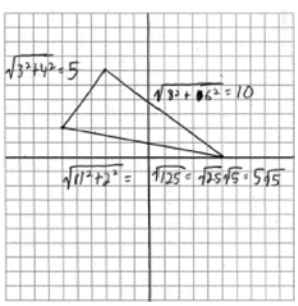
$x = 4$

PTS: 2 REF: 011408ge STA: G.G.43 TOP: Centroid

279 ANS: 1
Since $\overline{AC} \cong \overline{BC}$, m$\angle A$ = m$\angle B$ under the Isosceles Triangle Theorem.

PTS: 2 REF: fall0809ge STA: G.G.69 TOP: Triangles in the Coordinate Plane

280 ANS:



$15 + 5\sqrt{5}$.

PTS: 4 REF: 060936ge STA: G.G.69 TOP: Triangles in the Coordinate Plane

281 ANS: 2 PTS: 2 REF: 061115ge STA: G.G.69
TOP: Triangles in the Coordinate Plane

282 ANS: 2 PTS: 2 REF: 081226ge STA: G.G.69
TOP: Triangles in the Coordinate Plane

283 ANS: 3

$AB = 8 - 4 = 4$. $BC = \sqrt{(-2-(-5))^2 + (8-6)^2} = \sqrt{13}$. $AC = \sqrt{(-2-(-5))^2 + (4-6)^2} = \sqrt{13}$

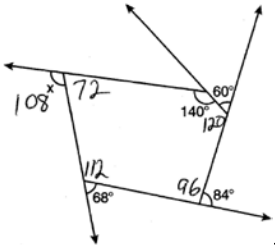
PTS: 2 REF: 011328ge STA: G.G.69 TOP: Triangles in the Coordinate Plane

284 ANS:

$\sqrt{(7-3)^2 + (-8-0)^2} = \sqrt{16+64} = \sqrt{80} = 4\sqrt{5}$

PTS: 2 REF: 061331ge STA: G.G.69 TOP: Triangles in the Coordinate Plane

285 ANS: 3



. The sum of the interior angles of a pentagon is $(5-2)180 = 540$.

PTS: 2 REF: 011023ge STA: G.G.36 TOP: Interior and Exterior Angles of Polygons

286 ANS: 4

sum of interior $\angle$s = sum of exterior $\angle$s

$$(n-2)180 = n\left(180 - \frac{(n-2)180}{n}\right)$$

$$180n - 360 = 180n - 180n + 360$$

$$180n = 720$$

$$n = 4$$

PTS: 2 REF: 081016ge STA: G.G.36 TOP: Interior and Exterior Angles of Polygons

287 ANS: 3

$(n-2)180 = (5-2)180 = 540$

PTS: 2 REF: 011223ge STA: G.G.36 TOP: Interior and Exterior Angles of Polygons

288 ANS: 3 PTS: 2 REF: 061218ge STA: G.G.36
TOP: Interior and Exterior Angles of Polygons

289 ANS: 3

$$180(n-2) = n\left(180 - \frac{180(n-2)}{n}\right)$$

$$180n - 360 = 180n - 180n + 360$$

$$180n = 720$$

$$n = 4$$

PTS: 2 REF: 081223ge STA: G.G.36 TOP: Interior and Exterior Angles of Polygons

290 ANS: 4

$(n-2)180 = (8-2)180 = 1080$. $\frac{1080}{8} = 135$.

PTS: 2 REF: fall0827ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

291 ANS: 1

$\angle A = \frac{(n-2)180}{n} = \frac{(5-2)180}{5} = 108$ $\angle AEB = \frac{180-108}{2} = 36$

PTS: 2 REF: 081022ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

292 ANS:

$(5-2)180 = 540.\ \frac{540}{5} = 108$ interior. $180 - 108 = 72$ exterior

PTS: 2 REF: 011131ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

293 ANS: 2

$(n-2)180 = (6-2)180 = 720.\ \frac{720}{6} = 120.$

PTS: 2 REF: 081125ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

294 ANS: 2

$$\frac{(n-2)180}{n} = 120 \ .$$

$$180n - 360 = 120n$$

$$60n = 360$$

$$n = 6$$

PTS: 2 REF: 011326ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

295 ANS:

$(n-2)180 = (8-2)180 = 1080.\ \frac{1080}{8} = 135.$

PTS: 2 REF: 061330ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

296 ANS: 4

$$(n-2)180 - n\left(\frac{(n-2)180}{n}\right) = 180n - 360 - 180n + 180n - 360 = 180n - 720.$$

$$180(5) - 720 = 180$$

PTS: 2 REF: 081322ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

297 ANS: 3

The regular polygon with the smallest interior angle is an equilateral triangle, with 60º. 180° – 60° = 120°

PTS: 2 REF: 011417ge STA: G.G.37 TOP: Interior and Exterior Angles of Polygons

298 ANS: 1

$\angle DCB$ and $\angle ADC$ are supplementary adjacent angles of a parallelogram. $180 - 120 = 60$. $\angle 2 = 60 - 45 = 15$.

PTS: 2 REF: 080907ge STA: G.G.38 TOP: Parallelograms

299 ANS: 1

Opposite sides of a parallelogram are congruent. $4x - 3 = x + 3$. $SV = (2) + 3 = 5$.

$$3x = 6$$

$$x = 2$$

PTS: 2 REF: 011013ge STA: G.G.38 TOP: Parallelograms

300 ANS: 3 PTS: 2 REF: 011104ge STA: G.G.38

TOP: Parallelograms

301 ANS: 3 PTS: 2 REF: 061111ge STA: G.G.38
TOP: Parallelograms

302 ANS:

11. $x^2 + 6x = x + 14$. $6(2) - 1 = 11$

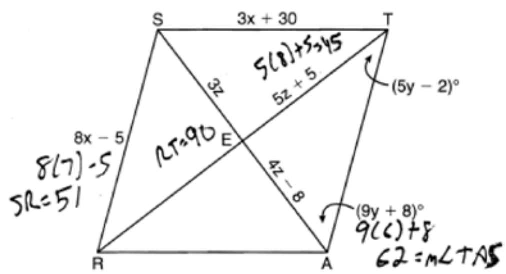
$x^2 + 5x - 14 = 0$

$(x + 7)(x - 2) = 0$

$x = 2$

PTS: 2 REF: 081235ge STA: G.G.38 TOP: Parallelograms

303 ANS:



$8x - 5 = 3x + 30$. $4z - 8 = 3z$. $9y + 8 + 5y - 2 = 90$.

$5x = 35$ $z = 8$ $14y + 6 = 90$

$x = 7$ $14y = 84$

$y = 6$

PTS: 6 REF: 061038ge STA: G.G.39 TOP: Special Parallelograms

304 ANS: 1 PTS: 2 REF: 011112ge STA: G.G.39
TOP: Special Parallelograms

305 ANS: 3

$\sqrt{5^2 + 12^2} = 13$

PTS: 2 REF: 061116ge STA: G.G.39 TOP: Special Parallelograms

306 ANS: 1 PTS: 2 REF: 061125ge STA: G.G.39
TOP: Special Parallelograms

307 ANS: 1 PTS: 2 REF: 081121ge STA: G.G.39
TOP: Special Parallelograms

308 ANS: 3 PTS: 2 REF: 081128ge STA: G.G.39
TOP: Special Parallelograms

309 ANS: 2

The diagonals of a rhombus are perpendicular. $180 - (90 + 12) = 78$

PTS: 2 REF: 011204ge STA: G.G.39 TOP: Special Parallelograms

310 ANS: 3 PTS: 2 REF: 061228ge STA: G.G.39
TOP: Special Parallelograms

311 ANS: 4

$2x - 8 = x + 2$. $AE = 10 + 2 = 12$. $AC = 2(AE) = 2(12) = 24$

$x = 10$

PTS: 2 REF: 011327ge STA: G.G.39 TOP: Special Parallelograms

312 ANS: 2

$\sqrt{8^2 + 15^2} = 17$

PTS: 2 REF: 061326ge STA: G.G.39 TOP: Special Parallelograms

313 ANS: 2

$s^2 + s^2 = (3\sqrt{2})^2$

$2s^2 = 18$

$s^2 = 9$

$s = 3$

PTS: 2 REF: 011420ge STA: G.G.39 TOP: Special Parallelograms

314 ANS: 3 PTS: 2 REF: 011425ge STA: G.G.39
TOP: Special Parallelograms

315 ANS: 3

The diagonals of an isosceles trapezoid are congruent. $5x + 3 = 11x - 5$.

$6x = 18$

$x = 3$

PTS: 2 REF: fall0801ge STA: G.G.40 TOP: Trapezoids

316 ANS:

3. The non-parallel sides of an isosceles trapezoid are congruent. $2x + 5 = 3x + 2$

$x = 3$

PTS: 2 REF: 080929ge STA: G.G.40 TOP: Trapezoids

317 ANS: 2

The length of the midsegment of a trapezoid is the average of the lengths of its bases. $\frac{x + 30}{2} = 44$.

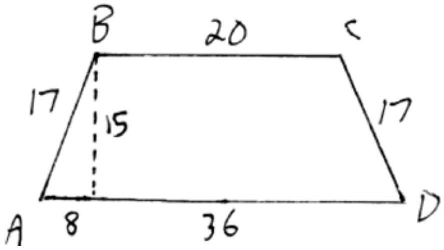
$x + 30 = 88$

$x = 58$

PTS: 2 REF: 011001ge STA: G.G.40 TOP: Trapezoids

318 ANS: 4 PTS: 2 REF: 061008ge STA: G.G.40
TOP: Trapezoids

319 ANS: 3



$\frac{36-20}{2}=8$. $\sqrt{17^2-8^2}=15$

PTS: 2 REF: 061016ge STA: G.G.40 TOP: Trapezoids

320 ANS:

70. $3x+5+3x+5+2x+2x=180$

$$10x+10=360$$
$$10x=350$$
$$x=35$$
$$2x=70$$

PTS: 2 REF: 081029ge STA: G.G.40 TOP: Trapezoids

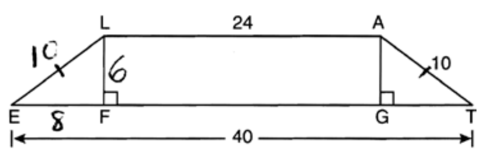
321 ANS: 4

$$\sqrt{25^2-\left(\frac{26-12}{2}\right)^2}=24$$

PTS: 2 REF: 011219ge STA: G.G.40 TOP: Trapezoids

322 ANS: 1

$\frac{40-24}{2}=8$. $\sqrt{10^2-8^2}=6$.



PTS: 2 REF: 061204ge STA: G.G.40 TOP: Trapezoids

323 ANS: 1

The length of the midsegment of a trapezoid is the average of the lengths of its bases. $\frac{x+3+5x-9}{2}=2x+2$.

$$6x-6=4x+4$$
$$2x=10$$
$$x=5$$

PTS: 2 REF: 081221ge STA: G.G.40 TOP: Trapezoids

324 ANS: 3

$2(4x + 20) + 2(3x - 15) = 360$. $\angle D = 3(25) - 15 = 60$

$$\begin{aligned} 8x + 40 + 6x - 30 &= 360 \\ 14x + 10 &= 360 \\ 14x &= 350 \\ x &= 25 \end{aligned}$$

PTS: 2 REF: 011321ge STA: G.G.40 TOP: Trapezoids

325 ANS: 2

Isosceles or not, $\triangle RSV$ and $\triangle RST$ have a common base, and since $\overline{RS}$ and $\overline{VT}$ are bases, congruent altitudes.

PTS: 2 REF: 061301ge STA: G.G.40 TOP: Trapezoids

326 ANS:

$12x - 4 + 180 - 6x + 6x + 7x + 13 = 360$. $16y + 1 = \dfrac{12y + 1 + 18y + 6}{2}$

$$\begin{aligned} 19x + 189 &= 360 \\ 19x &= 171 \\ x &= 9 \end{aligned} \qquad \begin{aligned} 32y + 2 &= 30y + 7 \\ 2y &= 5 \\ y &= \frac{5}{2} \end{aligned}$$

PTS: 4 REF: 081337ge STA: G.G.40 TOP: Trapezoids

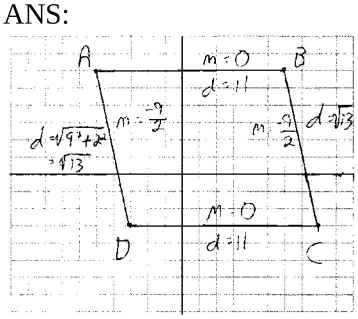
327 ANS: 1 PTS: 2 REF: 080918ge STA: G.G.41
TOP: Special Quadrilaterals

328 ANS: 2

Adjacent sides of a rectangle are perpendicular and have opposite and reciprocal slopes.

PTS: 2 REF: 061028ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

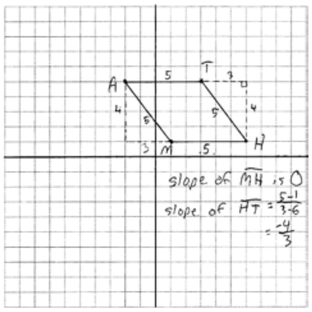
329 ANS:



$\overline{AB} \parallel \overline{CD}$ and $\overline{AD} \parallel \overline{CB}$ because their slopes are equal. *ABCD* is a parallelogram because opposite side are parallel. $\overline{AB} \neq \overline{BC}$. *ABCD* is not a rhombus because all sides are not equal. $\overline{AB} \sim \perp \overline{BC}$ because their slopes are not opposite reciprocals. *ABCD* is not a rectangle because $\angle ABC$ is not a right angle.

PTS: 4 REF: 081038ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

330 ANS:



The length of each side of quadrilateral is 5. Since each side is congruent, quadrilateral *MATH* is a rhombus. The slope of $\overline{MH}$ is 0 and the slope of $\overline{HT}$ is $-\frac{4}{3}$. Since the slopes are not negative reciprocals, the sides are not perpendicular and do not form rights angles. Since adjacent sides are not perpendicular, quadrilateral *MATH* is not a square.

PTS: 6 REF: 011138ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

331 ANS:

$m_{\overline{AB}} = \left(\frac{-6+2}{2}, \frac{-2+8}{2}\right) = D(2,3)$ $m_{\overline{BC}} = \left(\frac{2+6}{2}, \frac{8+-2}{2}\right) = E(4,3)$ $F(0,-2)$. To prove that *ADEF* is a parallelogram, show that both pairs of opposite sides of the parallelogram are parallel by showing the opposite sides have the same slope: $m_{\overline{AD}} = \frac{3--2}{-2--6} = \frac{5}{4}$ $\overline{AF} \parallel \overline{DE}$ because all horizontal lines have the same slope. *ADEF*

$$m_{\overline{FE}} = \frac{3--2}{4-0} = \frac{5}{4}$$

is not a rhombus because not all sides are congruent. $AD = \sqrt{5^2+4^2} = \sqrt{41}$ $AF = 6$

PTS: 6 REF: 081138ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

332 ANS: 1

The diagonals of a parallelogram intersect at their midpoints. $M_{\overline{AC}}\left(\frac{1+3}{2}, \frac{5+(-1)}{2}\right) = (2,2)$

PTS: 2 REF: 061209ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

333 ANS: 2

$\sqrt{(-2-4)^2+(-3-(-1))^2} = \sqrt{40} = \sqrt{4}\sqrt{10} = 2\sqrt{10}$

PTS: 2 REF: 011313ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

334 ANS:

$m_{\overline{AB}} = \frac{4-1}{4-2} = \frac{3}{2}$. $m_{\overline{BC}} = -\frac{2}{3}$

PTS: 4 REF: 061334ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

335 ANS:

$M\left(\frac{-7+-3}{2},\frac{4+6}{2}\right)=M(-5,5)$. $m_{\overline{MN}}=\frac{5-3}{-5-0}=\frac{2}{-5}$. Since both opposite sides have equal slopes and are

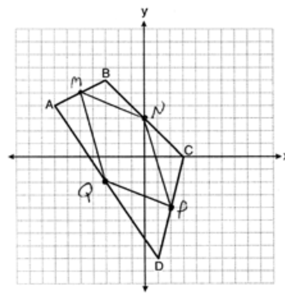
$N\left(\frac{-3+3}{2},\frac{6+0}{2}\right)=N(0,3)$ $\quad m_{\overline{PQ}}=\frac{-4--2}{2--3}=\frac{-2}{5}$

$P\left(\frac{3+1}{2},\frac{0+-8}{2}\right)=P(2,-4)$ $\quad m_{\overline{NA}}=\frac{3--4}{0-2}=\frac{7}{-2}$

$Q\left(\frac{-7+1}{2},\frac{4+-8}{2}\right)=Q(-3,-2)$ $\quad m_{\overline{QM}}=\frac{-2-5}{-3--5}=\frac{-7}{2}$

parallel, *MNPQ* is a parallelogram. $\overline{MN}=\sqrt{(-5-0)^2+(5-3)^2}=\sqrt{29}$. $\overline{MN}$ is not congruent to $\overline{NP}$, so *MNPQ*

$\overline{NA}=\sqrt{(0-2)^2+(3--4)^2}=\sqrt{53}$



is not a rhombus since not all sides are congruent.

PTS: 6 REF: 081338ge STA: G.G.69 TOP: Quadrilaterals in the Coordinate Plane

336 ANS: 3

Because $\overline{OC}$ is a radius, its length is 5. Since $CE = 2$ $OE = 3$. ΔEDO is a 3-4-5 triangle. If $ED = 4$, $BD = 8$.

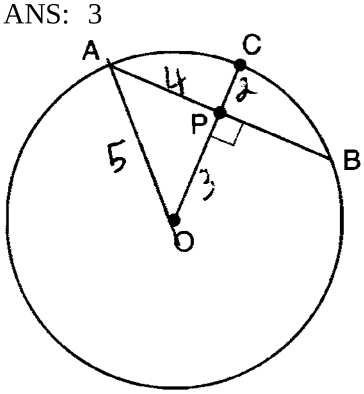
PTS: 2 REF: fall0811ge STA: G.G.49 TOP: Chords

337 ANS: 1

The closer a chord is to the center of a circle, the longer the chord.

PTS: 2 REF: 011005ge STA: G.G.49 TOP: Chords

338 ANS: 3



PTS: 2 REF: 011112ge STA: G.G.49 TOP: Chords

339 ANS: 4

$\sqrt{6^2 - 2^2} = \sqrt{32} = \sqrt{16}\sqrt{2} = 4\sqrt{2}$

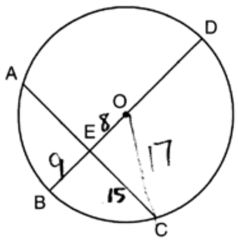
PTS: 2 REF: 081124ge STA: G.G.49 TOP: Chords

340 ANS:

$EO = 6$. $CE = \sqrt{10^2 - 6^2} = 8$

PTS: 2 REF: 011234ge STA: G.G.49 TOP: Chords

341 ANS: 2



$\sqrt{17^2 - 15^2} = 8$. $17 - 8 = 9$

PTS: 2 REF: 061221ge STA: G.G.49 TOP: Chords

342 ANS: 3 PTS: 2 REF: 011322ge STA: G.G.49 TOP: Chords

343 ANS:

$2(y + 10) = 4y - 20$. $\overline{DF} = y + 10 = 20 + 10 = 30$. $\overline{OA} = \overline{OD} = \sqrt{16^2 + 30^2} = 34$

$$\begin{aligned} 2y + 20 &= 4y - 20 \\ 40 &= 2y \\ 20 &= y \end{aligned}$$

PTS: 4 REF: 061336ge STA: G.G.49 TOP: Chords

344 ANS: 4 PTS: 2 REF: 081308ge STA: G.G.49 TOP: Chords

345 ANS: 2

$\sqrt{17^2 - 15^2} = \sqrt{289 - 225} = \sqrt{64} = 8$

PTS: 2 REF: 011424ge STA: G.G.49 TOP: Chords

346 ANS: 2

Parallel chords intercept congruent arcs. $m\overset{\frown}{AD} = m\overset{\frown}{BC} = 60$. $m\angle CDB = \frac{1}{2} m\overset{\frown}{BC} = 30$.

PTS: 2 REF: 060906ge STA: G.G.52 TOP: Chords

347 ANS: 2

Parallel chords intercept congruent arcs. $m\overset{\frown}{AC} = m\overset{\frown}{BD} = 30$. $180 - 30 - 30 = 120$.

PTS: 2 REF: 080904ge STA: G.G.52 TOP: Chords

348 ANS: 1
Parallel lines intercept congruent arcs.

PTS: 2 REF: 061001ge STA: G.G.52 TOP: Chords
349 ANS: 1
Parallel lines intercept congruent arcs.

PTS: 2 REF: 061105ge STA: G.G.52 TOP: Chords
350 ANS:
$\frac{180-80}{2}=50$

PTS: 2 REF: 081129ge STA: G.G.52 TOP: Chords
351 ANS:
$2x-20=x+20$. $\text{m}\overset{\frown}{AB}=x+20=40+20=60$
$x=40$

PTS: 2 REF: 011229ge STA: G.G.52 TOP: Chords
352 ANS: 3
$\frac{180-70}{2}=55$

PTS: 2 REF: 061205ge STA: G.G.52 TOP: Chords
353 ANS: 4
Parallel lines intercept congruent arcs.

PTS: 2 REF: 081201ge STA: G.G.52 TOP: Chords
354 ANS: 2
Parallel chords intercept congruent arcs. $\frac{360-(104+168)}{2}=44$

PTS: 2 REF: 011302ge STA: G.G.52 TOP: Chords
355 ANS: 1
Parallel chords intercept congruent arcs. $\text{m}\overset{\frown}{AC}=\text{m}\overset{\frown}{BD}$. $\frac{180-110}{2}=35$.

PTS: 2 REF: 081302ge STA: G.G.52 TOP: Chords
356 ANS: 4 PTS: 2 REF: fall0824ge STA: G.G.50
TOP: Tangents KEY: common tangency
357 ANS:
18. If the ratio of TA to AC is 1:3, the ratio of TE to ES is also 1:3. $x+3x=24$. $3(6)=18$.
$x=6$

PTS: 4 REF: 060935ge STA: G.G.50 TOP: Tangents
KEY: common tangency
358 ANS: 3 PTS: 2 REF: 080928ge STA: G.G.50
TOP: Tangents KEY: common tangency

359 ANS: 1 PTS: 2 REF: 061013ge STA: G.G.50
TOP: Tangents KEY: point of tangency

360 ANS: 1 PTS: 2 REF: 081012ge STA: G.G.50
TOP: Tangents KEY: two tangents

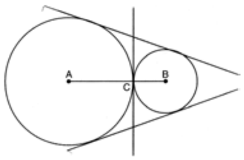
361 ANS: 4

$\sqrt{25^2 - 7^2} = 24$

PTS: 2 REF: 081105ge STA: G.G.50 TOP: Tangents
KEY: point of tangency

362 ANS: 2 PTS: 2 REF: 081214ge STA: G.G.50
TOP: Tangents KEY: point of tangency

363 ANS:



PTS: 2 REF: 011330ge STA: G.G.50 TOP: Tangents
KEY: common tangency

364 ANS: 2

$\sqrt{15^2 - 12^2} = 9$

PTS: 2 REF: 081325ge STA: G.G.50 TOP: Tangents
KEY: point of tangency

365 ANS: 3

$180 - 38 = 142$

PTS: 2 REF: 011419ge STA: G.G.50 TOP: Tangents
KEY: two tangents

366 ANS: 4 PTS: 2 REF: 011428ge STA: G.G.50
TOP: Tangents KEY: common tangency

367 ANS:

$\angle D$, $\angle G$ and 24° or $\angle E$, $\angle F$ and 84°. $m\overset{\frown}{FE} = \frac{2}{15} \times 360 = 48$. Since the chords forming $\angle D$ and $\angle G$ are intercepted by $\overset{\frown}{FE}$, their measure is 24°. $m\overset{\frown}{GD} = \frac{7}{15} \times 360 = 168$. Since the chords forming $\angle E$ and $\angle F$ are intercepted by $\overset{\frown}{GD}$, their measure is 84°.

PTS: 4 REF: fall0836ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: inscribed

368 ANS: 2

$\frac{87 + 35}{2} = \frac{122}{2} = 61$

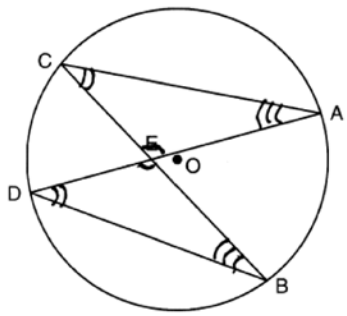
PTS: 2 REF: 011015ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: inside circle

369 ANS: 3

$$\frac{36+20}{2} = 28$$

PTS: 2 REF: 061019ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: inside circle

370 ANS: 2



PTS: 2 REF: 061026GE STA: G.G.51 TOP: Arcs Determined by Angles
KEY: inscribed

371 ANS: 2

$$\frac{140-\overline{RS}}{2} = 40$$

$$140-\overline{RS} = 80$$

$$\overline{RS} = 60$$

PTS: 2 REF: 081025ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: outside circle

372 ANS: 4 PTS: 2 REF: 011124ge STA: G.G.51
TOP: Arcs Determined by Angles KEY: inscribed

373 ANS:

30. $3x+4x+5x=360$. $m\overset{\frown}{LN} : m\overset{\frown}{NK} : m\overset{\frown}{KL} = 90:120:150$. $\frac{150-90}{2} = 30$

$x = 20$

PTS: 4 REF: 061136ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: outside circle

374 ANS: 2

$$\frac{50+x}{2} = 34$$

$$50+x = 68$$

$$x = 18$$

PTS: 2 REF: 011214ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: inside circle

375 ANS:

52, 40, 80. $360 - (56 + 112) = 192$. $\frac{192 - 112}{2} = 40$. $\frac{112 + 48}{2} = 80$

$$\frac{1}{4} \times 192 = 48$$

$$\frac{56 + 48}{2} = 52$$

PTS: 6 REF: 081238ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: mixed

376 ANS: 1

$$\frac{70 - 20}{2} = 25$$

PTS: 2 REF: 011325ge STA: G.G.51 TOP: Arcs Determined by Angles
KEY: outside circle

377 ANS: 2 PTS: 2 REF: 061322ge STA: G.G.51
TOP: Arcs Determined by Angles KEY: inscribed

378 ANS: 2

$$x^2 = 3(x + 18)$$
$$x^2 - 3x - 54 = 0$$
$$(x - 9)(x + 6) = 0$$
$$x = 9$$

PTS: 2 REF: fall0817ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

379 ANS: 3

$$4(x + 4) = 8^2$$
$$4x + 16 = 64$$
$$x = 12$$

PTS: 2 REF: 060916ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

380 ANS: 2

$$4(4x - 3) = 3(2x + 8)$$
$$16x - 12 = 6x + 24$$
$$10x = 36$$
$$x = 3.6$$

PTS: 2 REF: 080923ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two chords

381 ANS: 4

$x^2 = (4 + 5) \times 4$

$x^2 = 36$

$x = 6$

PTS: 2 REF: 011008ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

382 ANS: 2

$(d + 4)4 = 12(6)$

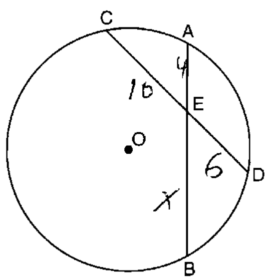
$4d + 16 = 72$

$d = 14$

$r = 7$

PTS: 2 REF: 061023ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two secants

383 ANS: 1

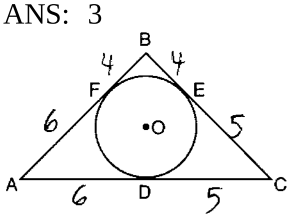


$4x = 6 \cdot 10$

$x = 15$

PTS: 2 REF: 081017ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two chords

384 ANS: 3



PTS: 2 REF: 011101ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two tangents

385 ANS:

$$x^2 = 9 \cdot 8$$
$$x = \sqrt{72}$$
$$x = \sqrt{36}\sqrt{2}$$
$$x = 6\sqrt{2}$$

PTS: 2 REF: 011132ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two chords

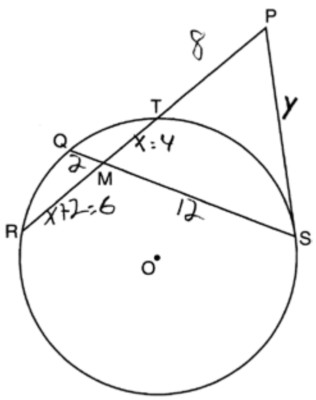
386 ANS: 4

$$4(x+4) = 8^2$$
$$4x + 16 = 64$$
$$4x = 48$$
$$x = 12$$

PTS: 2 REF: 061117ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

387 ANS: 4 PTS: 2 REF: 011208ge STA: G.G.53
TOP: Segments Intercepted by Circle KEY: two tangents

388 ANS:



$x(x+2) = 12 \cdot 2$. $\overline{RT} = 6 + 4 = 10$. $y \cdot y = 18 \cdot 8$

$$x^2 + 2x - 24 = 0 \qquad y^2 = 144$$
$$(x+6)(x-4) = 0 \qquad y = 12$$
$$x = 4$$

PTS: 4 REF: 061237ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: tangent and secant

389 ANS: 1

$12(8) = x(6)$

$96 = 6x$

$16 = x$

PTS: 2 REF: 061328ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two secants

390 ANS: 1

$8 \times 12 = 16x$

$6 = x$

PTS: 2 REF: 081328ge STA: G.G.53 TOP: Segments Intercepted by Circle
KEY: two chords

391 ANS: 1

$M_x = \frac{-2+6}{2} = 2$. $M_y = \frac{3+3}{2} = 3$. The center is $(2,3)$. $d = \sqrt{(-2-6)^2 + (3-3)^2} = \sqrt{64+0} = 8$. If the diameter is 8, the radius is 4 and $r^2 = 16$.

PTS: 2 REF: fall0820ge STA: G.G.71 TOP: Equations of Circles

392 ANS: 2 PTS: 2 REF: 060910ge STA: G.G.71
TOP: Equations of Circles

393 ANS: 3 PTS: 2 REF: 011010ge STA: G.G.71
TOP: Equations of Circles

394 ANS:

Midpoint: $\left(\frac{-4+4}{2}, \frac{2+(-4)}{2}\right) = (0,-1)$. Distance: $d = \sqrt{(-4-4)^2 + (2-(-4))^2} = \sqrt{100} = 10$

$r = 5$

$r^2 = 25$

$x^2 + (y+1)^2 = 25$

PTS: 4 REF: 061037ge STA: G.G.71 TOP: Equations of Circles

395 ANS: 3 PTS: 2 REF: 011116ge STA: G.G.71
TOP: Equations of Circles

396 ANS: 4 PTS: 2 REF: 081110ge STA: G.G.71
TOP: Equations of Circles

397 ANS: 4 PTS: 2 REF: 011212ge STA: G.G.71
TOP: Equations of Circles

398 ANS: 3 PTS: 2 REF: 061210ge STA: G.G.71
TOP: Equations of Circles

399 ANS: 3 PTS: 2 REF: 081209ge STA: G.G.71
TOP: Equations of Circles

400 ANS:

If $r = 5$, then $r^2 = 25$. $(x+3)^2 + (y-2)^2 = 25$

PTS: 2 REF: 011332ge STA: G.G.71 TOP: Equations of Circles

401 ANS: 3 PTS: 2 REF: 061306ge STA: G.G.71
TOP: Equations of Circles
402 ANS: 4 PTS: 2 REF: 081305ge STA: G.G.71
TOP: Equations of Circles
403 ANS: 1 PTS: 2 REF: 011423ge STA: G.G.71
TOP: Equations of Circles
404 ANS: 2 PTS: 2 REF: 080921ge STA: G.G.72
TOP: Equations of Circles
405 ANS: 4

The radius is 4. $r^2 = 16$.

PTS: 2 REF: 061014ge STA: G.G.72 TOP: Equations of Circles
406 ANS:

$(x+1)^2 + (y-2)^2 = 36$

PTS: 2 REF: 081034ge STA: G.G.72 TOP: Equations of Circles
407 ANS: 1 PTS: 2 REF: 061110ge STA: G.G.72
TOP: Equations of Circles
408 ANS:

$(x-5)^2 + (y+4)^2 = 36$

PTS: 2 REF: 081132ge STA: G.G.72 TOP: Equations of Circles
409 ANS: 1 PTS: 2 REF: 011220ge STA: G.G.72
TOP: Equations of Circles
410 ANS: 2 PTS: 2 REF: 081212ge STA: G.G.72
TOP: Equations of Circles
411 ANS: 4 PTS: 2 REF: 011323ge STA: G.G.72
TOP: Equations of Circles
412 ANS: 3 PTS: 2 REF: 061309ge STA: G.G.72
TOP: Equations of Circles
413 ANS: 3 PTS: 2 REF: 081312ge STA: G.G.72
TOP: Equations of Circles
414 ANS: 4 PTS: 2 REF: 011415ge STA: G.G.72
TOP: Equations of Circles
415 ANS: 3 PTS: 2 REF: fall0814ge STA: G.G.73
TOP: Equations of Circles
416 ANS: 4 PTS: 2 REF: 060922ge STA: G.G.73
TOP: Equations of Circles
417 ANS: 1 PTS: 2 REF: 080911ge STA: G.G.73
TOP: Equations of Circles
418 ANS: 1 PTS: 2 REF: 081009ge STA: G.G.73
TOP: Equations of Circles
419 ANS: 4 PTS: 2 REF: 061114ge STA: G.G.73
TOP: Equations of Circles
420 ANS: 2 PTS: 2 REF: 011203ge STA: G.G.73
TOP: Equations of Circles

421 ANS: 1 PTS: 2 REF: 061223ge STA: G.G.73
TOP: Equations of Circles
422 ANS: 4 PTS: 2 REF: 011318ge STA: G.G.73
TOP: Equations of Circles
423 ANS: 4 PTS: 2 REF: 061319ge STA: G.G.73
TOP: Equations of Circles
424 ANS:
center: $(3,-4)$; radius: $\sqrt{10}$

PTS: 2 REF: 081333ge STA: G.G.73 TOP: Equations of Circles
425 ANS: 4 PTS: 2 REF: 011403ge STA: G.G.73
TOP: Equations of Circles
426 ANS: 4 PTS: 2 REF: 011426ge STA: G.G.73
TOP: Equations of Circles
427 ANS: 1 PTS: 2 REF: 060920ge STA: G.G.74
TOP: Graphing Circles
428 ANS: 2 PTS: 2 REF: 011020ge STA: G.G.74
TOP: Graphing Circles
429 ANS: 2 PTS: 2 REF: 011125ge STA: G.G.74
TOP: Graphing Circles
430 ANS: 3 PTS: 2 REF: 061220ge STA: G.G.74
TOP: Graphing Circles
431 ANS: 1 PTS: 2 REF: 061325ge STA: G.G.74
TOP: Graphing Circles
432 ANS: 1 PTS: 2 REF: 081324ge STA: G.G.74
TOP: Graphing Circles
433 ANS:
4.

$$l_1w_1h_1 = l_2w_2h_2$$
$$10 \times 2 \times h = 5 \times w_2 \times h$$
$$20 = 5w_2$$
$$w_2 = 4$$

PTS: 2 REF: 011030ge STA: G.G.11 TOP: Volume
434 ANS: 3

$$25 \times 9 \times 12 = 15^2h$$
$$2700 = 15^2h$$
$$12 = h$$

PTS: 2 REF: 061323ge STA: G.G.11 TOP: Volume
435 ANS: 1
If two prisms have equal heights and volume, the area of their bases is equal.

PTS: 2 REF: 081321ge STA: G.G.11 TOP: Volume

436 ANS: 1

$3x^2 + 18x + 24$

$3(x^2 + 6x + 8)$

$3(x + 4)(x + 2)$

PTS: 2 REF: fall0815ge STA: G.G.12 TOP: Volume

437 ANS:

9.1. $(11)(8)h = 800$

$h \approx 9.1$

PTS: 2 REF: 061131ge STA: G.G.12 TOP: Volume

438 ANS: 3 PTS: 2 REF: 081123ge STA: G.G.12
TOP: Volume

439 ANS: 2 PTS: 2 REF: 011215ge STA: G.G.12
TOP: Volume

440 ANS:

$Bh = V$

$12h = 84$

$h = 7$

PTS: 2 REF: 011432ge STA: G.G.12 TOP: Volume

441 ANS:

2016. $V = \frac{1}{3}Bh = \frac{1}{3}s^2h = \frac{1}{3}12^2 \cdot 42 = 2016$

PTS: 2 REF: 080930ge STA: G.G.13 TOP: Volume

442 ANS:

18. $V = \frac{1}{3}Bh = \frac{1}{3}lwh$

$288 = \frac{1}{3} \cdot 8 \cdot 6 \cdot h$

$288 = 16h$

$18 = h$

PTS: 2 REF: 061034ge STA: G.G.13 TOP: Volume

443 ANS:

22.4. $V = \pi r^2 h$

$12566.4 = \pi r^2 \cdot 8$

$r^2 = \frac{12566.4}{8\pi}$

$r \approx 22.4$

PTS: 2 REF: fall0833ge STA: G.G.14 TOP: Volume and Lateral Area

444 ANS: 1

$V=\pi r^2h$

$1000=\pi r^2\cdot 8$

$r^2=\frac{1000}{8\pi}$

$r\approx 6.3$

PTS: 2 REF: 080926ge STA: G.G.14 TOP: Volume and Lateral Area

445 ANS: 3

$V=\pi r^2h=\pi\cdot 6^2\cdot 27=972\pi$

PTS: 2 REF: 011027ge STA: G.G.14 TOP: Volume and Lateral Area

446 ANS: 4

$L=2\pi rh=2\pi\cdot 5\cdot 11\approx 345.6$

PTS: 2 REF: 061006ge STA: G.G.14 TOP: Volume and Lateral Area

447 ANS: 2

$V=\pi r^2h=\pi\cdot 6^2\cdot 15=540\pi$

PTS: 2 REF: 011117ge STA: G.G.14 TOP: Volume and Lateral Area

448 ANS:

$V=\pi r^2h$. $L=2\pi rh=2\pi\cdot 5\sqrt{2}\cdot 12\approx 533.1$

$600\pi=\pi r^2\cdot 12$

$50=r^2$

$\sqrt{25}\sqrt{2}=r$

$5\sqrt{2}=r$

PTS: 4 REF: 011236ge STA: G.G.14 TOP: Volume and Lateral Area

449 ANS:

$L=2\pi rh=2\pi\cdot 12\cdot 22\approx 1659$. $\frac{1659}{600}\approx 2.8$. 3 cans are needed.

PTS: 2 REF: 061233ge STA: G.G.14 TOP: Volume and Lateral Area

450 ANS:

$V=\pi r^2h=\pi(5)^2\cdot 7=175\pi$

PTS: 2 REF: 081231ge STA: G.G.14 TOP: Volume and Lateral Area

451 ANS:

$L=2\pi rh=2\pi\cdot 3\cdot 5\approx 94.25$. $V=\pi r^2h=\pi(3)^2(5)\approx 141.37$

PTS: 4 REF: 011335ge STA: G.G.14 TOP: Volume and Lateral Area

452 ANS:
$L = 2\pi rh = 2\pi \cdot 3 \cdot 7 = 42\pi$

PTS: 2 REF: 061329ge STA: G.G.14 TOP: Volume and Lateral Area

453 ANS: 2
$18\pi \cdot 42 \approx 2375$

PTS: 2 REF: 011418ge STA: G.G.14 TOP: Volume and Lateral Area

454 ANS: 1
$V = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi \cdot 4^2 \cdot 12 \approx 201$

PTS: 2 REF: 060921ge STA: G.G.15 TOP: Volume

455 ANS:
375π $L = \pi r l = \pi(15)(25) = 375\pi$

PTS: 2 REF: 081030ge STA: G.G.15 TOP: Lateral Area

456 ANS: 3
$120\pi = \pi(12)(l)$
$10 = l$

PTS: 2 REF: 081314ge STA: G.G.15 TOP: Volume and Lateral Area

457 ANS:
452. $SA = 4\pi r^2 = 4\pi \cdot 6^2 = 144\pi \approx 452$

PTS: 2 REF: 061029ge STA: G.G.16 TOP: Volume and Surface Area

458 ANS: 4
$SA = 4\pi r^2$ $V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi \cdot 6^3 = 288\pi$
$144\pi = 4\pi r^2$
$36 = r^2$
$6 = r$

PTS: 2 REF: 081020ge STA: G.G.16 TOP: Surface Area

459 ANS: 2
$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi \cdot 3^3 = 36\pi$

PTS: 2 REF: 061112ge STA: G.G.16 TOP: Volume and Surface Area

460 ANS:
$V = \frac{4}{3}\pi \cdot 9^3 = 972\pi$

PTS: 2 REF: 081131ge STA: G.G.16 TOP: Volume and Surface Area

461 ANS: 2

$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi \cdot \left(\frac{15}{2}\right)^3 \approx 1767.1$

PTS: 2 REF: 061207ge STA: G.G.16 TOP: Volume and Surface Area

462 ANS: 2

$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi \cdot \left(\frac{6}{2}\right)^3 \approx 36\pi$

PTS: 2 REF: 081215ge STA: G.G.16 TOP: Volume and Surface Area

463 ANS: 1

$V = \frac{4}{3}\pi r^3$

$44.6022 = \frac{4}{3}\pi r^3$

$10.648 \approx r^3$

$2.2 \approx r$

PTS: 2 REF: 061317ge STA: G.G.16 TOP: Volume and Surface Area

464 ANS:

$SA = 4\pi r^2 = 4\pi \cdot 2.5^2 = 25\pi \approx 78.54$

PTS: 2 REF: 011429ge STA: G.G.16 TOP: Volume and Surface Area

465 ANS: 4

Corresponding angles of similar triangles are congruent.

PTS: 2 REF: fall0826ge STA: G.G.45 TOP: Similarity

KEY: perimeter and area

466 ANS:

20. $5x + 10 = 4x + 30$

$x = 20$

PTS: 2 REF: 060934ge STA: G.G.45 TOP: Similarity

KEY: basic

467 ANS: 2

Because the triangles are similar, $\frac{m\angle A}{m\angle D} = 1$

PTS: 2 REF: 011022ge STA: G.G.45 TOP: Similarity

KEY: perimeter and area

468 ANS: 4

$180 - (50 + 30) = 100$

PTS: 2 REF: 081006ge STA: G.G.45 TOP: Similarity

KEY: basic

469 ANS: 4 PTS: 2 REF: 081023ge STA: G.G.45
TOP: Similarity KEY: perimeter and area

470 ANS: 3

$\frac{7x}{4} = \frac{7}{x}$. $7(2) = 14$

$7x^2 = 28$

$x = 2$

PTS: 2 REF: 061120ge STA: G.G.45 TOP: Similarity
KEY: basic

471 ANS:

2 $\frac{x+2}{x} = \frac{x+6}{4}$

$x^2 + 6x = 4x + 8$

$x^2 + 2x - 8 = 0$

$(x+4)(x-2) = 0$

$x = 2$

PTS: 4 REF: 081137ge STA: G.G.45 TOP: Similarity
KEY: basic

472 ANS: 3 PTS: 2 REF: 061224ge STA: G.G.45
TOP: Similarity KEY: basic

473 ANS: 4 PTS: 2 REF: 081216ge STA: G.G.45
TOP: Similarity KEY: basic

474 ANS: 2

Perimeter of ΔDEF is $5 + 8 + 11 = 24$. $\frac{5}{24} = \frac{x}{60}$

$24x = 300$

$x = 12.5$

PTS: 2 REF: 011307ge STA: G.G.45 TOP: Similarity
KEY: perimeter and area

475 ANS:

$x^2 - 8x = 5x + 30$. $m\angle C = 4(15) - 5 = 55$

$x^2 - 13x - 30 = 0$

$(x - 15)(x + 2) = 0$

$x = 15$

PTS: 4 REF: 061337ge STA: G.G.45 TOP: Similarity
KEY: basic

476 ANS: 3

$\frac{15}{18} = \frac{5}{6}$

PTS: 2 REF: 081317ge STA: G.G.45 TOP: Similarity
KEY: perimeter and area

477 ANS:

$2\sqrt{3}$. $x^2 = 3 \cdot 4$

$x = \sqrt{12} = 2\sqrt{3}$

PTS: 2 REF: fall0829ge STA: G.G.47 TOP: Similarity
KEY: altitude

478 ANS: 1

$\overline{AB} = 10$ since ΔABC is a 6-8-10 triangle. $6^2 = 10x$

$3.6 = x$

PTS: 2 REF: 060915ge STA: G.G.47 TOP: Similarity
KEY: leg

479 ANS: 4

Let $\overline{AD} = x$. $36x = 12^2$

$x = 4$

PTS: 2 REF: 080922ge STA: G.G.47 TOP: Similarity
KEY: leg

480 ANS:

2.4. $5a = 4^2$ $5b = 3^2$ $h^2 = ab$

$a = 3.2$ $b = 1.8$ $h^2 = 3.2 \cdot 1.8$

$h = \sqrt{5.76} = 2.4$

PTS: 4 REF: 081037ge STA: G.G.47 TOP: Similarity
KEY: altitude

481 ANS: 4

$6^2 = x(x+5)$

$36 = x^2 + 5x$

$0 = x^2 + 5x - 36$

$0 = (x+9)(x-4)$

$x = 4$

PTS: 2 REF: 011123ge STA: G.G.47 TOP: Similarity
KEY: leg

482 ANS: 1

$x^2 = 7(16 - 7)$

$x^2 = 63$

$x = \sqrt{9}\sqrt{7}$

$x = 3\sqrt{7}$

PTS: 2 REF: 061128ge STA: G.G.47 TOP: Similarity
KEY: altitude

483 ANS: 4

$x \cdot 4x = 6^2$. $PQ = 4x + x = 5x = 5(3) = 15$

$4x^2 = 36$

$x = 3$

PTS: 2 REF: 011227ge STA: G.G.47 TOP: Similarity
KEY: leg

484 ANS: 1

$x^2 = 3 \times 12$

$x = 6$

PTS: 2 REF: 011308ge STA: G.G.47 TOP: Similarity
KEY: altitude

485 ANS: 3

$x^2 = 3 \times 12$. $\sqrt{6^2 + 3^2} = \sqrt{45} = \sqrt{9}\sqrt{5} = 3\sqrt{5}$

$x = 6$

PTS: 2 REF: 061327ge STA: G.G.47 TOP: Similarity
KEY: altitude

Geometry Regents Exam Questions by Performance Indicator: Topic
Answer Section

486 ANS: 3

$x^2 = 2(2+10)$

$x^2 = 24$

$x = \sqrt{24} = \sqrt{4}\sqrt{6} = 2\sqrt{6}$

PTS: 2 REF: 081326ge STA: G.G.47 TOP: Similarity
KEY: leg

487 ANS:

$4x \cdot x = 6^2$

$4x^2 = 36$

$x^2 = 9$

$x = 3$

$\overline{BD} = 4(3) = 12$

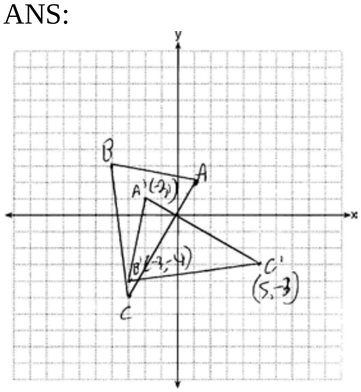
PTS: 4 REF: 011437ge STA: G.G.47 TOP: Similarity
KEY: leg

488 ANS:

$R'(-3,-2)$, $S'(-4,4)$, and $T'(2,2)$.

PTS: 2 REF: 011232ge STA: G.G.54 TOP: Rotations

489 ANS:



$A'(-2,1)$, $B'(-3,-4)$, and $C'(5,-3)$

PTS: 2 REF: 081230ge STA: G.G.54 TOP: Rotations

490 ANS: 4

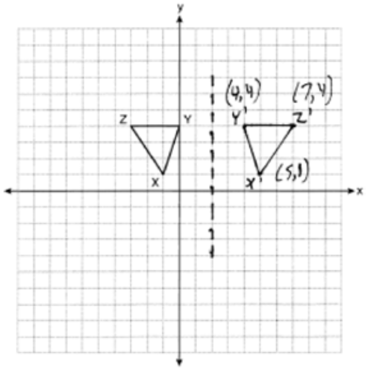
$(x,y) \to (-x,-y)$

PTS: 2 REF: 061304ge STA: G.G.54 TOP: Rotations

491 ANS: 4 PTS: 2 REF: 011421ge STA: G.G.54
TOP: Rotations

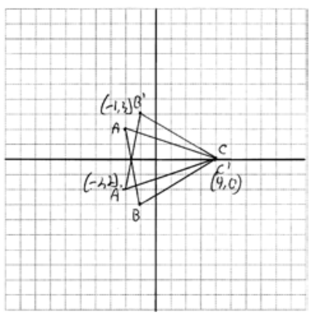
492 ANS: 3 PTS: 2 REF: 060905ge STA: G.G.54
TOP: Reflections KEY: basic

493 ANS:



PTS: 2 REF: 061032ge STA: G.G.54 TOP: Reflections
KEY: grids

494 ANS:



PTS: 2 REF: 011130ge STA: G.G.54 TOP: Reflections
KEY: grids

495 ANS: 2 PTS: 2 REF: 081108ge STA: G.G.54
TOP: Reflections KEY: basic

496 ANS: 1 PTS: 2 REF: 081113ge STA: G.G.54
TOP: Reflections KEY: basic

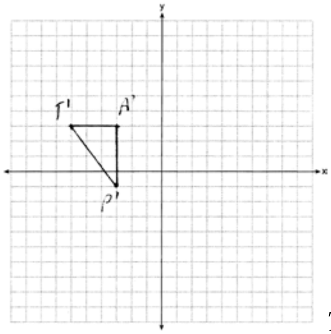
497 ANS: 1
$(x, y) \rightarrow (x + 3, y + 1)$

PTS: 2 REF: fall0803ge STA: G.G.54 TOP: Translations

498 ANS: 3
$-5 + 3 = -2 \qquad 2 + -4 = -2$

PTS: 2 REF: 011107ge STA: G.G.54 TOP: Translations

499 ANS:



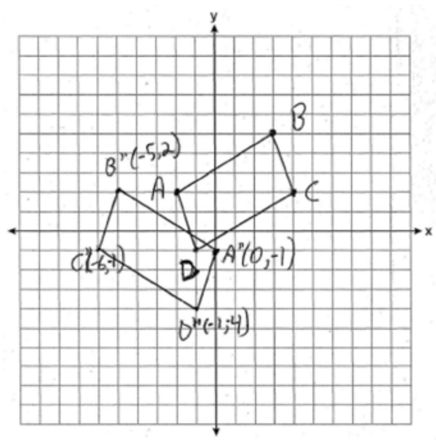
$T'(-6,3), A'(-3,3), P'(-3,-1)$

PTS: 2 REF: 061229ge STA: G.G.54 TOP: Translations

500 ANS:
$A'(2,2), B'(3,0), C(1,-1)$

PTS: 2 REF: 081329ge STA: G.G.58 TOP: Dilations

501 ANS:



PTS: 4 REF: 060937ge STA: G.G.54 TOP: Compositions of Transformations
KEY: grids

502 ANS: 1
$A'(2,4)$

PTS: 2 REF: 011023ge STA: G.G.54 TOP: Compositions of Transformations
KEY: basic

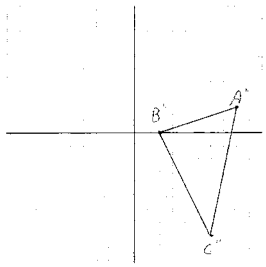
503 ANS: 3
$(3,-2) \rightarrow (2,3) \rightarrow (8,12)$

PTS: 2 REF: 011126ge STA: G.G.54 TOP: Compositions of Transformations
KEY: basic

504 ANS: 1
After the translation, the coordinates are $A'(-1,5)$ and $B'(3,4)$. After the dilation, the coordinates are $A''(-2,10)$ and $B''(6,8)$.

PTS: 2 REF: fall0823ge STA: G.G.58 TOP: Compositions of Transformations

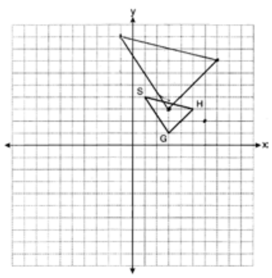
505 ANS:



$A''(8,2),\ B''(2,0),\ C''(6,-8)$

PTS: 4 REF: 081036ge STA: G.G.58 TOP: Compositions of Transformations

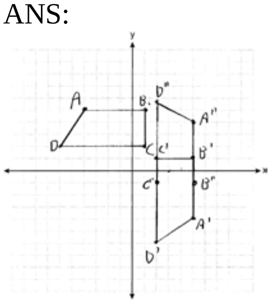
506 ANS:



$G''(3,3), H''(7,7), S''(-1,9)$

PTS: 4 REF: 081136ge STA: G.G.58 TOP: Compositions of Transformations

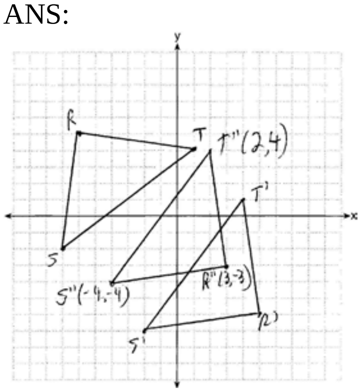
507 ANS:



$A'(5,-4), B'(5,1), C'(2,1), D'(2,-6); A''(5,4), B''(5,-1), C''(2,-1), D''(2,6)$

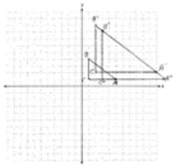
PTS: 4 REF: 061236ge STA: G.G.58 TOP: Compositions of Transformations
KEY: grids

508 ANS:



PTS: 4 REF: 081236ge STA: G.G.58 TOP: Compositions of Transformations
KEY: grids

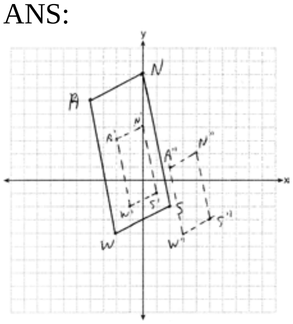
509 ANS:



$A''(11,1)$, $B''(3,7)$, $C''(3,1)$

PTS: 4 REF: 011336ge STA: G.G.58 TOP: Compositions of Transformations

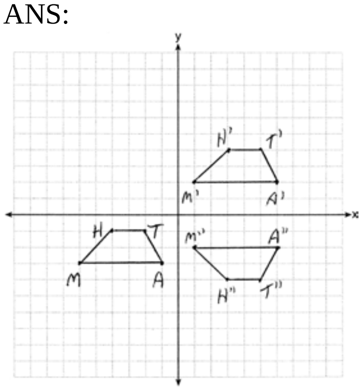
510 ANS:



$S''(5,-3)$, $W''(3,-4)$, $A''(2,1)$, and $N''(4,2)$

PTS: 4 REF: 061335ge STA: G.G.58 TOP: Compositions of Transformations
KEY: grids

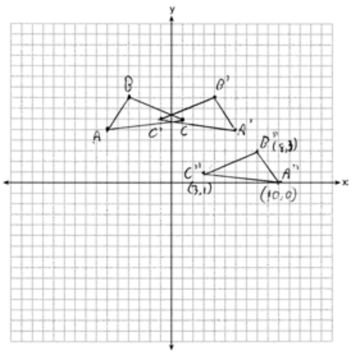
511 ANS:



$M''(1,-2), A''(6,-2), T''(5,-4), H''(3,-4)$

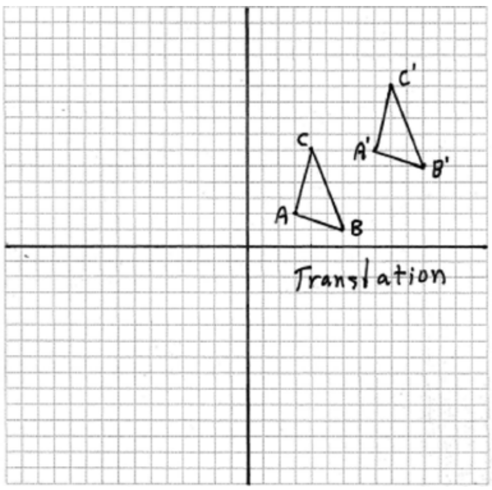
PTS: 4 REF: 081336ge STA: G.G.58 TOP: Compositions of Transformations
KEY: grids

512 ANS:



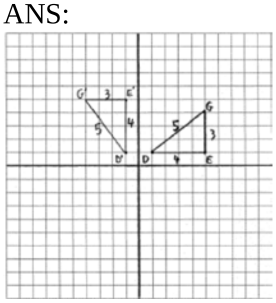
PTS: 3 REF: 011436ge STA: G.G.58 TOP: Compositions of Transformations
KEY: grids

513 ANS:



PTS: 2 REF: fall0830ge STA: G.G.55 TOP: Properties of Transformations

514 ANS:



$D'(-1, 1)$, $E'(-1, 5)$, $G'(-4, 5)$

PTS: 4 REF: 080937ge STA: G.G.55 TOP: Properties of Transformations

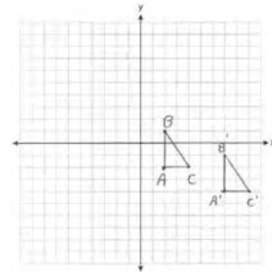
515 ANS: 2 PTS: 2 REF: 011003ge STA: G.G.55
TOP: Properties of Transformations

516 ANS: 1 PTS: 2 REF: 061005ge STA: G.G.55
TOP: Properties of Transformations

517 ANS: 1 PTS: 2 REF: 011102ge STA: G.G.55
TOP: Properties of Transformations

518 ANS:
Yes. A reflection is an isometry.

PTS: 2 REF: 061132ge STA: G.G.55 TOP: Properties of Transformations
519 ANS: 3 PTS: 2 REF: 081104ge STA: G.G.55
TOP: Properties of Transformations
520 ANS: 2 PTS: 2 REF: 011211ge STA: G.G.55
TOP: Properties of Transformations
521 ANS:



$A'(7,-4), B'(7,-1). C'(9,-4)$. The areas are equal because translations preserve distance.

PTS: 4 REF: 011235ge STA: G.G.55 TOP: Properties of Transformations
522 ANS: 2 PTS: 2 REF: 081202ge STA: G.G.55
TOP: Properties of Transformations
523 ANS:
Distance is preserved after the reflection.

$$2x + 13 = 9x - 8$$
$$21 = 7x$$
$$3 = x$$

PTS: 2 REF: 011329ge STA: G.G.55 TOP: Properties of Transformations
524 ANS: 1 PTS: 2 REF: 061307ge STA: G.G.55
TOP: Properties of Transformations
525 ANS: 4
Distance is preserved after a rotation.

PTS: 2 REF: 081304ge STA: G.G.55 TOP: Properties of Transformations
526 ANS: 3 PTS: 2 REF: 081021ge STA: G.G.57
TOP: Properties of Transformations
527 ANS:
36, because a dilation does not affect angle measure. 10, because a dilation does affect distance.

PTS: 4 REF: 011035ge STA: G.G.59 TOP: Properties of Transformations
528 ANS: 2 PTS: 2 REF: 061126ge STA: G.G.59
TOP: Properties of Transformations
529 ANS: 2 PTS: 2 REF: 061201ge STA: G.G.59
TOP: Properties of Transformations
530 ANS: 3 PTS: 2 REF: 081204ge STA: G.G.59
TOP: Properties of Transformations
531 ANS: 1 PTS: 2 REF: 011405ge STA: G.G.59
TOP: Properties of Transformations

532 ANS: 1 PTS: 2 REF: 060903ge STA: G.G.56
TOP: Identifying Transformations
533 ANS: 4 PTS: 2 REF: 080915ge STA: G.G.56
TOP: Identifying Transformations
534 ANS: 2 PTS: 2 REF: 011006ge STA: G.G.56
TOP: Identifying Transformations
535 ANS: 4 PTS: 2 REF: 061015ge STA: G.G.56
TOP: Identifying Transformations
536 ANS: 4 PTS: 2 REF: 061018ge STA: G.G.56
TOP: Identifying Transformations
537 ANS: 2 PTS: 2 REF: 081015ge STA: G.G.56
TOP: Identifying Transformations
538 ANS: 3 PTS: 2 REF: 061122ge STA: G.G.56
TOP: Identifying Transformations
539 ANS: 2 PTS: 2 REF: 061227ge STA: G.G.56
TOP: Identifying Transformations
540 ANS: 3 PTS: 2 REF: 011304ge STA: G.G.56
TOP: Identifying Transformations
541 ANS: 3 PTS: 2 REF: 011427ge STA: G.G.56
TOP: Identifying Transformations
542 ANS: 3 PTS: 2 REF: 060908ge STA: G.G.60
TOP: Identifying Transformations
543 ANS: 2
A dilation affects distance, not angle measure.

PTS: 2 REF: 080906ge STA: G.G.60 TOP: Identifying Transformations
544 ANS: 4 PTS: 2 REF: 061103ge STA: G.G.60
TOP: Identifying Transformations
545 ANS: 4 PTS: 2 REF: fall0818ge STA: G.G.61
TOP: Analytical Representations of Transformations
546 ANS: 1
Translations and reflections do not affect distance.

PTS: 2 REF: 080908ge STA: G.G.61
TOP: Analytical Representations of Transformations
547 ANS: 4 PTS: 2 REF: fall0802ge STA: G.G.24
TOP: Negations
548 ANS: 4
Median $\overline{BF}$ bisects $\overline{AC}$ so that $\overline{CF} \cong \overline{FA}$.

PTS: 2 REF: fall0810ge STA: G.G.24 TOP: Statements
549 ANS: 3 PTS: 2 REF: 080924ge STA: G.G.24
TOP: Negations
550 ANS: 2 PTS: 2 REF: 061002ge STA: G.G.24
TOP: Negations

551 ANS:
The medians of a triangle are not concurrent. False.

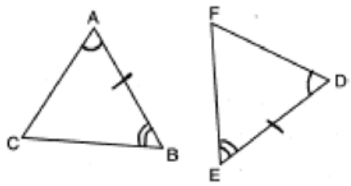
PTS: 2 REF: 061129ge STA: G.G.24 TOP: Negations
552 ANS: 1 PTS: 2 REF: 011213ge STA: G.G.24
TOP: Negations
553 ANS: 2 PTS: 2 REF: 061202ge STA: G.G.24
TOP: Negations
554 ANS:
2 is not a prime number, false.

PTS: 2 REF: 081229ge STA: G.G.24 TOP: Negations
555 ANS: 1 PTS: 2 REF: 011303ge STA: G.G.24
TOP: Statements
556 ANS: 2 PTS: 2 REF: 081301ge STA: G.G.24
TOP: Statements
557 ANS: 1 PTS: 2 REF: 081303ge STA: G.G.24
TOP: Negations
558 ANS:
True. The first statement is true and the second statement is false. In a disjunction, if either statement is true, the disjunction is true.

PTS: 2 REF: 060933ge STA: G.G.25 TOP: Compound Statements
KEY: disjunction
559 ANS: 4 PTS: 2 REF: 011118ge STA: G.G.25
TOP: Compound Statements KEY: general
560 ANS: 4 PTS: 2 REF: 081101ge STA: G.G.25
TOP: Compound Statements KEY: conjunction
561 ANS:
Contrapositive-If two angles of a triangle are not congruent, the sides opposite those angles are not congruent.

PTS: 2 REF: fall0834ge STA: G.G.26 TOP: Conditional Statements
562 ANS: 4 PTS: 2 REF: 060913ge STA: G.G.26
TOP: Conditional Statements
563 ANS: 3 PTS: 2 REF: 011028ge STA: G.G.26
TOP: Conditional Statements
564 ANS: 1 PTS: 2 REF: 061009ge STA: G.G.26
TOP: Converse and Biconditional
565 ANS: 3 PTS: 2 REF: 081026ge STA: G.G.26
TOP: Contrapositive
566 ANS: 1 PTS: 2 REF: 011320ge STA: G.G.26
TOP: Conditional Statements
567 ANS: 1 PTS: 2 REF: 061314ge STA: G.G.26
TOP: Converse and Biconditional
568 ANS: 4 PTS: 2 REF: 081318ge STA: G.G.26
TOP: Converse and Biconditional

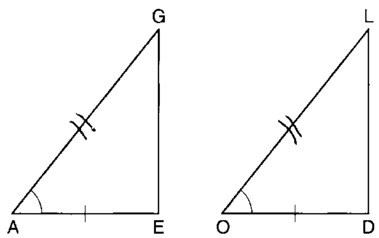
569 ANS: 3



PTS: 2 REF: 060902ge STA: G.G.28 TOP: Triangle Congruency

570 ANS: 3 PTS: 2 REF: 080913ge STA: G.G.28
TOP: Triangle Congruency

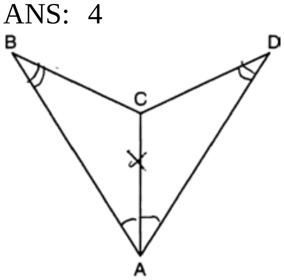
571 ANS: 2



PTS: 2 REF: 081007ge STA: G.G.28 TOP: Triangle Congruency

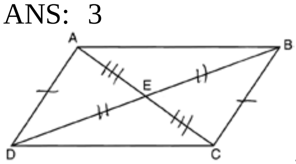
572 ANS: 1 PTS: 2 REF: 011122ge STA: G.G.28
TOP: Triangle Congruency

573 ANS: 4



PTS: 2 REF: 081114ge STA: G.G.28 TOP: Triangle Congruency

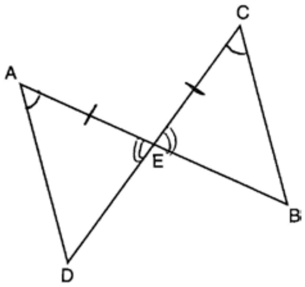
574 ANS: 3



. Opposite sides of a parallelogram are congruent and the diagonals of a parallelogram bisect each other.

PTS: 2 REF: 061222ge STA: G.G.28 TOP: Triangle Congruency

575 ANS: 1

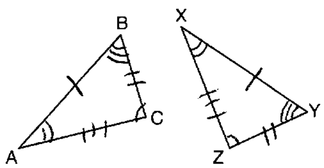


PTS: 2 REF: 081210ge STA: G.G.28 TOP: Triangle Congruency

576 ANS: 1 PTS: 2 REF: 011412ge STA: G.G.28
TOP: Triangle Congruency

577 ANS: 4 PTS: 2 REF: 080905ge STA: G.G.29
TOP: Triangle Congruency

578 ANS: 4



PTS: 2 REF: 081001ge STA: G.G.29 TOP: Triangle Congruency

579 ANS: 3 PTS: 2 REF: 061102ge STA: G.G.29
TOP: Triangle Congruency

580 ANS: 2 PTS: 2 REF: 081102ge STA: G.G.29
TOP: Triangle Congruency

581 ANS: 4 PTS: 2 REF: 011216ge STA: G.G.29
TOP: Triangle Congruency

582 ANS: 1 PTS: 2 REF: 011301ge STA: G.G.29
TOP: Triangle Congruency

583 ANS: 2
(1) is true because of vertical angles. (3) and (4) are true because CPCTC.

PTS: 2 REF: 061302ge STA: G.G.29 TOP: Triangle Congruency

584 ANS: 3 PTS: 2 REF: 081309ge STA: G.G.29
TOP: Triangle Congruency

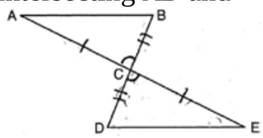
585 ANS: 2

$$AC = BD$$
$$AC - BC = BD - BC$$
$$AB = CD$$

PTS: 2 REF: 061206ge STA: G.G.27 TOP: Line Proofs

586 ANS: 4 PTS: 2 REF: 011108ge STA: G.G.27
TOP: Angle Proofs

587 ANS:
$\overline{AC} \cong \overline{EC}$ and $\overline{DC} \cong \overline{BC}$ because of the definition of midpoint. $\angle ACB \cong \angle ECD$ because of vertical angles. $\Delta ABC \cong \Delta EDC$ because of SAS. $\angle CDE \cong \angle CBA$ because of CPCTC. $\overline{BD}$ is a transversal intersecting $\overline{AB}$ and $\overline{ED}$. Therefore $\overline{AB} \parallel \overline{DE}$ because $\angle CDE$ and $\angle CBA$ are congruent alternate interior angles.



PTS: 6 REF: 060938ge STA: G.G.27 TOP: Triangle Proofs

588 ANS:
$\angle B$ and $\angle C$ are right angles because perpendicular lines form right angles. $\angle B \cong \angle C$ because all right angles are congruent. $\angle AEB \cong \angle DEC$ because vertical angles are congruent. $\Delta ABE \cong \Delta DCE$ because of ASA. $\overline{AB} \cong \overline{DC}$ because CPCTC.

PTS: 4 REF: 061235ge STA: G.G.27 TOP: Triangle Proofs

589 ANS: 1

$$AB = CD$$
$$AB + BC = CD + BC$$
$$AC = BD$$

PTS: 2 REF: 081207ge STA: G.G.27 TOP: Triangle Proofs

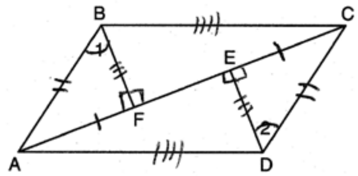
590 ANS:
ΔMAH, $\overline{MH} \cong \overline{AH}$ and medians $\overline{AB}$ and $\overline{MT}$ are given. $\overline{MA} \cong \overline{AM}$ (reflexive property). ΔMAH is an isosceles triangle (definition of isosceles triangle). $\angle AMB \cong \angle MAT$ (isosceles triangle theorem). B is the midpoint of $\overline{MH}$ and T is the midpoint of $\overline{AH}$ (definition of median). $\text{m}\overline{MB} = \frac{1}{2}\text{m}\overline{MH}$ and $\text{m}\overline{AT} = \frac{1}{2}\text{m}\overline{AH}$ (definition of midpoint). $\overline{MB} \cong \overline{AT}$ (multiplication postulate). $\Delta MBA \cong \Delta ATM$ (SAS). $\angle MBA \cong \angle ATM$ (CPCTC).

PTS: 6 REF: 061338ge STA: G.G.27 TOP: Triangle Proofs

591 ANS:
ΔABC, $\overline{BD}$ bisects $\angle ABC$, $\overline{BD} \perp \overline{AC}$ (Given). $\angle CBD \cong \angle ABD$ (Definition of angle bisector). $\overline{BD} \cong \overline{BD}$ (Reflexive property). $\angle CDB$ and $\angle ADB$ are right angles (Definition of perpendicular). $\angle CDB \cong \angle ADB$ (All right angles are congruent). $\Delta CDB \cong \Delta ADB$ (SAS). $\overline{AB} \cong \overline{CB}$ (CPCTC).

PTS: 4 REF: 081335ge STA: G.G.27 TOP: Triangle Proofs

592 ANS:



$\overline{FE} \cong \overline{FE}$ (Reflexive Property); $\overline{AE} - \overline{FE} \cong \overline{FC} - \overline{EF}$ (Line Segment Subtraction Theorem); $\overline{AF} \cong \overline{CE}$ (Substitution); $\angle BFA \cong \angle DEC$ (All right angles are congruent); $\Delta BFA \cong \Delta DEC$ (AAS); $\overline{AB} \cong \overline{CD}$ and $\overline{BF} \cong \overline{DE}$ (CPCTC); $\angle BFC \cong \angle DEA$ (All right angles are congruent); $\Delta BFC \cong \Delta DEA$ (SAS); $\overline{AD} \cong \overline{CB}$ (CPCTC); *ABCD* is a parallelogram (opposite sides of quadrilateral *ABCD* are congruent)

PTS: 6 REF: 080938ge STA: G.G.27 TOP: Quadrilateral Proofs

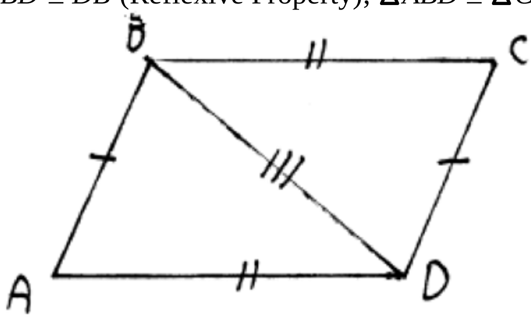
593 ANS:

$\overline{JK} \cong \overline{LM}$ because opposite sides of a parallelogram are congruent. $\overline{LM} \cong \overline{LN}$ because of the Isosceles Triangle Theorem. $\overline{LM} \cong \overline{JM}$ because of the transitive property. *JKLM* is a rhombus because all sides are congruent.

PTS: 4 REF: 011036ge STA: G.G.27 TOP: Quadrilateral Proofs

594 ANS:

$\overline{BD} \cong \overline{DB}$ (Reflexive Property); $\Delta ABD \cong \Delta CDB$ (SSS); $\angle BDC \cong \angle ABD$ (CPCTC).



PTS: 4 REF: 061035ge STA: G.G.27 TOP: Quadrilateral Proofs

595 ANS:

Quadrilateral *ABCD*, $\overline{AD} \cong \overline{BC}$ and $\angle DAE \cong \angle BCE$ are given. $\overline{AD} \parallel \overline{BC}$ because if two lines are cut by a transversal so that a pair of alternate interior angles are congruent, the lines are parallel. *ABCD* is a parallelogram because if one pair of opposite sides of a quadrilateral are both congruent and parallel, the quadrilateral is a parallelogram. $\overline{AE} \cong \overline{CE}$ because the diagonals of a parallelogram bisect each other. $\angle FEA \cong \angle GEC$ as vertical angles. $\Delta AEF \cong \Delta CEG$ by ASA.

PTS: 6 REF: 011238ge STA: G.G.27 TOP: Quadrilateral Proofs

596 ANS: 3 PTS: 2 REF: 081208ge STA: G.G.27
TOP: Quadrilateral Proofs

597 ANS:
Rectangle $ABCD$ with points E and F on side $\overline{AB}$, segments CE and DF intersect at G, and $\angle ADG \cong \angle BCE$ are given. $\overline{AD} \cong \overline{BC}$ because opposite sides of a rectangle are congruent. $\angle A$ and $\angle B$ are right angles and congruent because all angles of a rectangle are right and congruent. $\triangle ADF \cong \triangle BCE$ by ASA. $\overline{AF} \cong \overline{BE}$ per CPCTC. $\overline{EF} \cong \overline{FE}$ under the Reflexive Property. $\overline{AF} - \overline{EF} \cong \overline{BE} - \overline{FE}$ using the Subtraction Property of Segments. $\overline{AE} \cong \overline{BF}$ because of the Definition of Segments.

PTS: 6 REF: 011338ge STA: G.G.27 TOP: Quadrilateral Proofs

598 ANS: 2 PTS: 2 REF: 011411ge STA: G.G.27
TOP: Quadrilateral Proofs

599 ANS:
Because $\overline{AB} \parallel \overline{DC}$, $\overset{\frown}{AD} \cong \overset{\frown}{BC}$ since parallel chords intersect congruent arcs. $\angle BDC \cong \angle ACD$ because inscribed angles that intercept congruent arcs are congruent. $\overline{AD} \cong \overline{BC}$ since congruent chords intersect congruent arcs. $\angle DAC \cong \angle DBC$ because inscribed angles that intercept the same arc are congruent. Therefore, $\triangle ACD \cong \triangle BDC$ because of AAS.

PTS: 6 REF: fall0838ge STA: G.G.27 TOP: Circle Proofs

600 ANS:
$\overline{OA} \cong \overline{OB}$ because all radii are equal. $\overline{OP} \cong \overline{OP}$ because of the reflexive property. $\overline{OA} \perp \overline{PA}$ and $\overline{OB} \perp \overline{PB}$ because tangents to a circle are perpendicular to a radius at a point on a circle. $\angle PAO$ and $\angle PBO$ are right angles because of the definition of perpendicular. $\angle PAO \cong \angle PBO$ because all right angles are congruent. $\triangle AOP \cong \triangle BOP$ because of HL. $\angle AOP \cong \angle BOP$ because of CPCTC.

PTS: 6 REF: 061138ge STA: G.G.27 TOP: Circle Proofs

601 ANS:
2. The diameter of a circle is $\perp$ to a tangent at the point of tangency. 4. An angle inscribed in a semicircle is a right angle. 5. All right angles are congruent. 7. AA. 8. Corresponding sides of congruent triangles are in proportion. 9. The product of the means equals the product of the extremes.

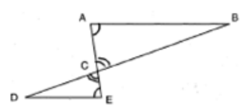
PTS: 6 REF: 011438ge STA: G.G.27 TOP: Circle Proofs

602 ANS: 1
$\triangle PRT$ and $\triangle SRQ$ share $\angle R$ and it is given that $\angle RPT \cong \angle RSQ$.

PTS: 2 REF: fall0821ge STA: G.G.44 TOP: Similarity Proofs

603 ANS: 2

$\angle ACB$ and $\angle ECD$ are congruent vertical angles and $\angle CAB \cong \angle CED$.



PTS: 2 REF: 060917ge STA: G.G.44 TOP: Similarity Proofs

604 ANS: 4 PTS: 2 REF: 011019ge STA: G.G.44
TOP: Similarity Proofs

605 ANS:
$\angle B$ and $\angle E$ are right angles because of the definition of perpendicular lines. $\angle B \cong \angle E$ because all right angles are congruent. $\angle BFD$ and $\angle DFE$ are supplementary and $\angle ECA$ and $\angle ACB$ are supplementary because of the definition of supplementary angles. $\angle DFE \cong \angle ACB$ because angles supplementary to congruent angles are congruent. $\Delta ABC \sim \Delta DEF$ because of AA.

PTS: 4 REF: 011136ge STA: G.G.44 TOP: Similarity Proofs

606 ANS:
$\angle ACB \cong \angle AED$ is given. $\angle A \cong \angle A$ because of the reflexive property. Therefore $\Delta ABC \sim \Delta ADE$ because of AA.

PTS: 2 REF: 081133ge STA: G.G.44 TOP: Similarity Proofs

607 ANS: 3 PTS: 2 REF: 011209ge STA: G.G.44
TOP: Similarity Proofs

608 ANS: 2 PTS: 2 REF: 061324ge STA: G.G.44
TOP: Similarity Proofs