

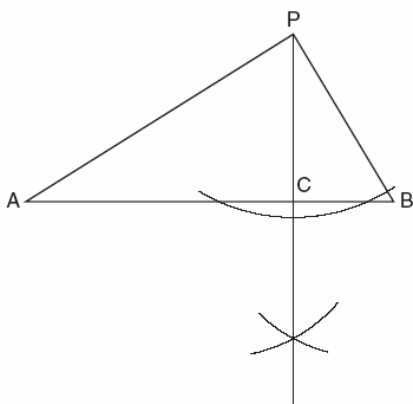
CHAPTER 1-6

NY LESSON 3

CONSTRUCTIONS

1. 010420a, P.I. G.G.19

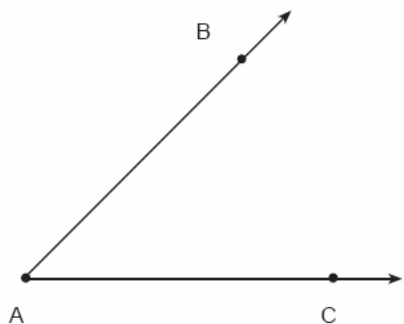
In the accompanying diagram of a construction, what does \overline{PC} represent?



- [A] an altitude drawn to \overline{AB}
- [B] the perpendicular bisector of \overline{AB}
- [C] the bisector of $\angle APB$
- [D] a median drawn to \overline{AB}

2. 060022a, P.I. G.G.17

Using only a ruler and compass, construct the bisector of angle BAC in the accompanying diagram.



3. 060734a, P.I. G.G.18

Using a compass and straightedge, construct the perpendicular bisector of \overline{AB} shown below. Show all construction marks.



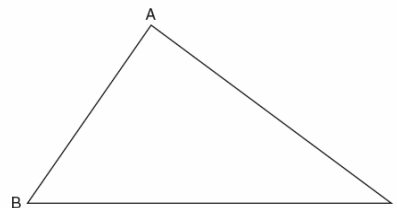
4. 060435a, P.I. G.G.18

Using only a compass and a straightedge, construct the perpendicular bisector of \overline{AB} and label it c . [Leave all construction marks.]



5. 060325a

On the accompanying diagram of $\triangle ABC$, use a compass and a straightedge to construct a median from A to \overline{BC} .



6. 010225a

Construct a triangle with sides of lengths a , b , and c , as shown below. Be sure the longest side of your triangle lies on \overline{PQ} and that point P is one of the triangle's vertices. [Show all arcs necessary for a valid construction.]

a _____
 b _____
 c _____



CHAPTER 1-7

COMPLEMENTARY SUPPLEMENTARY AND VERTICAL ANGLES

7. 060601a, P.I. 8.G.1

In the accompanying diagram, line a intersects line b .

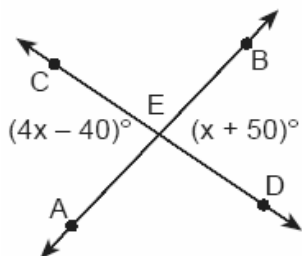


What is the value of x ?

[A] -10 [B] 10 [C] 90 [D] 5

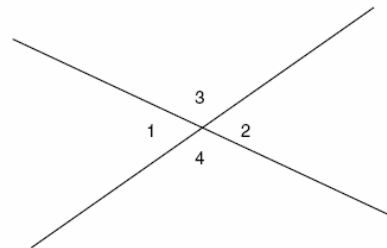
8. 010229a, P.I. 8.G.1

In the accompanying diagram, \overline{AB} and \overline{CD} intersect at E . If $m\angle AEC = 4x - 40$ and $m\angle BED = x + 50$, find the number of degrees in $\angle AEC$.



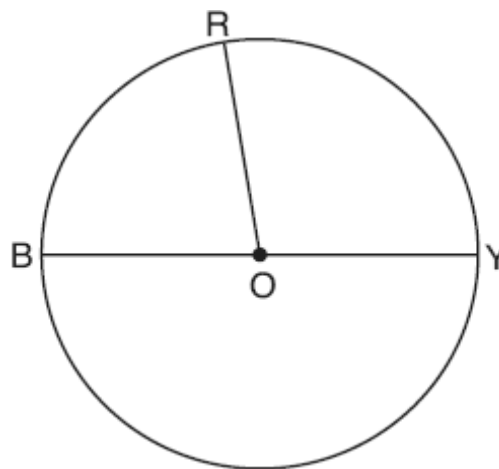
9. 010128a, P.I. 8.G.3

In the accompanying figure, two lines intersect, $m\angle 3 = 6t + 30$, and $m\angle 2 = 8t - 60$. Find the number of degrees in $m\angle 4$.



10. 010836a, P.I. 8.G.3

In the accompanying diagram, \overline{BY} is a diameter of circle O , the measure of central angle ROY is $(x + 60)^\circ$, and the measure of central angle ROB is $(3x - 20)^\circ$. Find the number of degrees in the measure of central angle ROY .



11. 080407a, P.I. 8.G.1

\overline{AB} and \overline{CD} intersect at point E , $m\angle AEC = 6x + 20$, and $m\angle DEB = 10x$. What is the value of x ?

[A] $4\frac{3}{8}$ [B] 5 [C] 10 [D] $21\frac{1}{4}$

12. 080638a, P.I. 8.G.1

\overline{AB} and \overline{CD} intersect at E . If $m\angle AEC = 5x - 20$ and $m\angle BED = x + 50$, find, in degrees, $m\angle CEB$.

13. 010313a, P.I. 8.G.3
If the measure of an angle is represented by $2x$, which expression represents the measure of its complement?
- [A] $88x$ [B] $90 - 2x$
[C] $90 + 2x$ [D] $180 - 2x$
14. 060621a, P.I. 8.G.3
The measures of two complementary angles are represented by $(3x + 15)$ and $(2x - 10)$.
What is the value of x ?
- [A] 19 [B] 37 [C] 17 [D] 35
15. 010823a, P.I. 8.G.3
Two angles are complementary. The measure of one angle is 15° more than twice the other.
What is the measure of the *smaller* angle?
- [A] 55° [B] 25° [C] 65° [D] 35°
16. 060414a, P.I. 8.G.3
The ratio of two supplementary angles is 2:7.
What is the measure of the *smaller* angle?
- [A] 40° [B] 14° [C] 20° [D] 10°
17. 010624a, P.I. 8.G.3
The ratio of two supplementary angles is 3:6.
What is the measure of the *smaller* angle?
- [A] 20° [B] 30° [C] 10° [D] 60°
18. 080431a, P.I. 8.G.3
Two angles are complementary. One angle has a measure that is five times the measure of the other angle. What is the measure, in degrees, of the larger angle?

[1] A

[2] A correct construction is drawn to find the midpoint of \overline{BC} , showing both sets of arcs and a line connecting A with the midpoint.

[1] A correct construction is drawn to find the midpoint of \overline{BC} , but the median is not drawn.
or [1] The construction is appropriate, but a compass and a straightedge are not used.

[0] No construction arcs are shown.
or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[2] obviously incorrect procedure.

[2] A correct construction is drawn, showing the arcs intersecting above and below \overline{AB} , and the perpendicular line is drawn.

[1] All of the construction arcs are drawn, but the perpendicular line is not drawn.

[0] A drawing that is not an appropriate construction is shown.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[3] obviously incorrect procedure.

[2] A correct construction is drawn, showing the arcs intersecting above and below \overline{AB} , and line c is drawn.

[1] A correct construction is drawn, but line c is not labeled.

[0] A drawing that is not a construction is shown with arc marks sketched.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[4] obviously incorrect procedure.

[2] A correct construction is drawn to find the midpoint of \overline{BC} , showing both sets of arcs and a line connecting A with the midpoint.

[1] A correct construction is drawn to find the midpoint of \overline{BC} , but the median is not drawn.
or [1] The construction is appropriate, but a compass and a straightedge are not used.

[0] No construction arcs are shown.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[5] obviously incorrect procedure.

[2] A correct triangle with the longest side on \overline{PQ} and a vertex at P is drawn, and three appropriate arcs are shown.

[1] A correct triangle is constructed on \overline{PQ} , but P is not a vertex.

or [1] A correct triangle is constructed with no sides on \overline{PQ} .

[0] A triangle that is not congruent to the correct solution or a triangle with less than three arcs is shown.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[6] obviously incorrect procedure.

[7] B

- [3] 80, and appropriate work is shown.
 [2] $x = 30$ is shown, but the student fails to substitute to find $m\angle AEC$.
 or [2] $x = 30$ is shown, but the student states that the answer is 100° , by finding the supplement of $\angle AEC$.
 or [2] The student makes one computational error in the solution of the correct equation $4x - 40 = x + 50$ but appropriately substitutes the incorrect value to solve for $m\angle AEC$.
 [1] The student makes one computational error in the solution of the correct equation $4x - 40 = x + 50$ and fails to substitute to find $m\angle AEC$.
 or [1] The student makes more than one computational error in the solution of the correct equation $4x - 40 = x + 50$, but appropriately substitutes the incorrect value to solve for $m\angle AEC$.
 or [1] 80, but no work is shown.
 [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [8] _____
- [3] 120, and appropriate work is shown, such as $6t + 30 + 8t - 60 = 180$.
 [2] The student finds correctly the unknown, $t = 15$, but does not find the measure of angle 4.
 or [2] Appropriate work is shown, but one computational error is made.
 [1] The student forms an incorrect equation, such as setting the two angles equal, and arrives at $t = 45$ and an angle of 300.
 or [1] 120, but no work is shown.
 [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [9] _____

- [3] 95, and appropriate work is shown, such as $3x - 20 + x + 60 = 180$.
 [2] Appropriate work is shown, but one computational error is made.
 or [2] A correct equation is written and solved for x , but $m\angle ROY$ is not found.
 [1] Appropriate work is shown, but two or more computational errors are made.
 or [1] Appropriate work is shown, but one conceptual error is made, such as writing the equation $x + 60 = 3x - 20$, but an appropriate answer is found.
 or [1] A correct equation is written, but no further correct work is shown,
 or [1] 95, but no work is shown.
 [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [10] _____
- [11] B _____
- [4] 112.5, and appropriate work is shown, such as solving the equation $5x - 20 = x + 50$.
 [3] Appropriate work is shown, but one computational error is made.
 or [3] $m\angle BED = 67.5$ or $m\angle AEC = 67.5$, but no further correct work is shown.
 [2] Appropriate work is shown, but two or more computational errors are made.
 or [2] Appropriate work is shown, but one conceptual error is made, but an appropriate measure for $\angle CEB$ is found.
 or [2] A correct equation is written and solved for x , but no further correct work is shown.
 [1] Appropriate work is shown, but one conceptual error and one computational error are made.
 or [1] 112.5, but no work is shown.
 [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [12] _____
- [13] B _____
- [14] C _____
- [15] B _____

[16] A

[17] D

[2] 75, and appropriate work is shown.

[1] Appropriate work is shown, but one computational error is made.

or [1] An incorrect equation of equal difficulty, such as $x + 5x = 180$, is solved appropriately, and an appropriate angle measure is found.

or [1] A correct equation is written and solved for x , but no further correct work is shown.

or [1] 75, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[18] incorrect procedure.