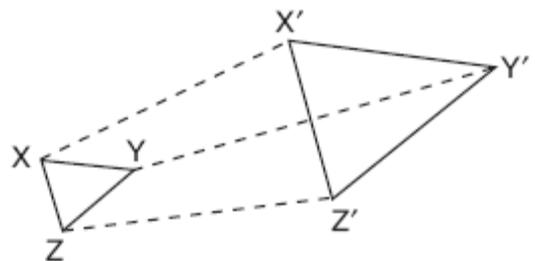


1. 060701a
Which letter has both point and line symmetry?
[A] H [B] T [C] Z [D] C
2. 060702a, P.I. A.A.22
What is the value of x in the equation $6(x - 2) = 36 - 10x$?
[A] 3 [B] -6 [C] 6 [D] 1.5
3. 060703a, P.I. A.A.6
In his first three years coaching baseball at High Ridge High School, Coach Batty's team won 7 games the first year, 16 games the second year, and 4 games the third year. How many games does the team need to win in the fourth year so that the coach's average will be 10 wins per year?
[A] 3 [B] 10 [C] 9 [D] 13
4. 060704a, P.I. A.A.22
What is the value of w in the equation $\frac{1}{2}w + 7 = 2w - 2$?
[A] 2 [B] $3\frac{1}{3}$ [C] 3.6 [D] 6
5. 060705a, P.I. A.S.20
A six-sided number cube has faces with the numbers 1 through 6 marked on it. What is the probability that a number less than 3 will occur on one toss of the number cube?
[A] $\frac{2}{6}$ [B] $\frac{3}{6}$ [C] $\frac{4}{6}$ [D] $\frac{1}{6}$
6. 060706a
The expression $\sqrt{54 - b}$ is equivalent to a positive integer when b is equal to
[A] -10 [B] 54 [C] 16 [D] 4

7. 060707a, P.I. A.A.12
The expression $\frac{-32x^8}{4x^2}$, $x \neq 0$, is equivalent to
[A] $-8x^4$ [B] $8x^6$
[C] $-8x^6$ [D] $8x^4$
8. 060708a, P.I. A.A.13
What is the product of $(c + 8)$ and $(c - 5)$?
[A] $c^2 + 13c - 40$ [B] $c^2 - 40$
[C] $c^2 - 3c - 40$ [D] $c^2 + 3c - 40$
9. 060709a, P.I. A.M.2
Andy is 6 feet tall. If 1 inch equals 2.54 centimeters, how tall is Andy, to the *nearest centimeter*?
[A] 30 [B] 183 [C] 213 [D] 15
10. 060710a, P.I. A.A.45
If the length of a rectangular television screen is 20 inches and its height is 15 inches, what is the length of its diagonal, in inches?
[A] 35 [B] 25 [C] 13.2 [D] 5
11. 060711a, P.I. G.G.60
The accompanying diagram shows the transformation of $\triangle XYZ$ to $\triangle X'Y'Z'$.



- This transformation is an example of a
[A] translation [B] dilation
[C] rotation [D] line reflection

12. 060712a, P.I. A.S.20
When a fair coin was tossed ten times, it landed heads up the first seven times. What is the probability that on the eighth toss the coin will land with tails up?

[A] $\frac{3}{7}$ [B] $\frac{1}{2}$ [C] $\frac{7}{10}$ [D] $\frac{3}{10}$

13. 060713a, P.I. A.G.1
If the base of a triangle is represented by $x + 4$ and the height is represented by $2x$, which expression represents the area of the triangle?

[A] $\frac{1}{2}((x + 4) + (2x))$

[B] $\frac{1}{2}(x + 4)(2x)$

[C] $(x + 4) + (2x)$ [D] $(x + 4)(2x)$

14. 060714a, P.I. A.N.1
Which property is illustrated by the equation $\frac{3}{2}x + 0 = \frac{3}{2}x$?

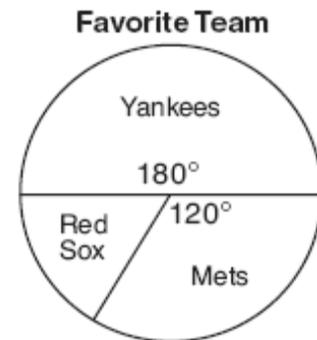
[A] additive inverse property

[B] distributive property

[C] additive identity property

[D] commutative property of addition

15. 060715a, P.I. 7.S.6
In a recent poll in Syracuse, New York, 3,000 people were asked to pick their favorite baseball team. The accompanying circle graph shows the results of that poll.



How many of the people polled picked the Red Sox as their favorite team?

[A] 1,200 [B] 500 [C] 1,800 [D] 300

16. 060716a, P.I. A.A.10
Which ordered pair satisfies the system of equations below?

$$3x - y = 8$$

$$x + y = 2$$

[A] (2.5, 0.5)

[B] (2.5, -0.5)

[C] (5, -3)

[D] (3, -1)

17. 060717a, P.I. G.G.26
What is the converse of the statement "If the Sun rises in the east, then it sets in the west"?

[A] If the Sun rises in the west, then it sets in the east.

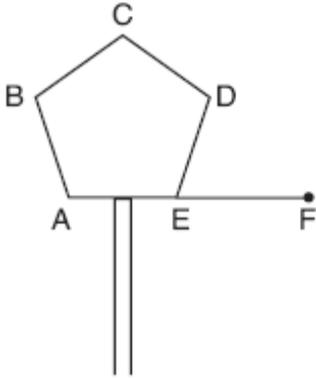
[B] If the Sun sets in the west, then it rises in the east.

[C] If the Sun does not rise in the east, then it does not set in the west.

[D] If the Sun does not set in the west, then it does not rise in the east.

18. 060718a, P.I. G.G.37

One piece of the birdhouse that Natalie is building is shaped like a regular pentagon, as shown in the accompanying diagram.



If side AE is extended to point F , what is the measure of exterior angle DEF ?

- [A] 144° [B] 36° [C] 72° [D] 108°

19. 060719a, P.I. A.A.23

If $c = 2m + d$, then m is equal to

- [A] $\frac{c-d}{2}$ [B] $d-2c$
[C] $\frac{c}{2}-d$ [D] $c-\frac{d}{2}$

20. 060720a, P.I. 7.N.5

According to the 2000 census, the population of New York State was approximately 18,900,000. How is this number expressed in scientific notation?

- [A] 18.9×10^6 [B] 189×10^7
[C] 1890×10^4 [D] 189×10^5

21. 060721a, P.I. A.A.39

The graph of the equation $2x + 6y = 4$ passes through point $(x, -2)$. What is the value of x ?

- [A] 16 [B] 4 [C] -4 [D] 8

22. 060722a, P.I. G.G.63

Which statement describes the lines whose equations are $y = \frac{1}{3}x + 12$ and $6y = 2x + 6$?

- [A] They are segments.
[B] They are parallel to each other.
[C] They intersect each other.
[D] They are perpendicular to each other.

23. 060723a, P.I. A.N.8

What is the total number of different four-letter arrangements that can be formed from the letters in the word "VERTICAL," if each letter is used only once in an arrangement?

- [A] 40,320 [B] 1,680
[C] 6,720 [D] 8

24. 060724a, P.I. A.N.3

The expression $\sqrt{28} + \sqrt{63}$ is equivalent to

- [A] $13\sqrt{7}$ [B] $\sqrt{91}$
[C] $5\sqrt{7}$ [D] $6\sqrt{7}$

25. 060725a, P.I. A.A.27

The solution set of the equation $x^2 - 4x - 12 = 0$ is

- [A] $\{-2, 6\}$ [B] $\{-6, 2\}$
[C] $\{-4, 3\}$ [D] $\{-3, 4\}$

26. 060726a, P.I. 8.N.2

If $a = 3$ and $b = -1$, what is the value of $ab - b^2$?

- [A] 2 [B] -4 [C] -2 [D] 4

27. 060727a, P.I. A.A.17

What is the sum of $\frac{3}{7n}$ and $\frac{7}{3n}$?

- [A] $\frac{10}{21n}$ [B] $\frac{42}{21n}$ [C] $\frac{58}{21n}$ [D] $\frac{1}{n}$

28. 060728a, P.I. A2.S.9
Max goes through the cafeteria line and counts seven different meals and three different desserts that he can choose. Which expression can be used to determine how many different ways Max can choose a meal and a dessert?

- [A] $7! \cdot 3!$ [B] $7 \cdot 3$
[C] ${}_7C_3$ [D] ${}_7P_3$

29. 060729a
If the product of x and $\frac{1}{m}$ is -1 , $m \neq 0$, then x is equivalent to

- [A] $1-m$ [B] $-m$ [C] $-\frac{1}{m}$ [D] m

30. 060730a, P.I. G.G.26
Given the statement: "A right angle measures 90° ." How is this statement written as a biconditional?

- [A] An angle measures 90° and it is a right angle.
[B] If an angle is a right angle, then it measures 90° .
[C] If an angle does not measure 90° , then it is not a right angle.
[D] An angle is a right angle if, and only if, it measures 90° .

31. 060731a, P.I. A.M.2
If a United States dollar is worth \$1.41 in Canadian money, how much is \$100 in Canadian money worth in United States money, to the *nearest cent*?

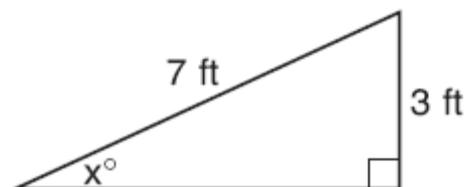
32. 060732a, P.I. A.RP.11
Jose surveyed 20 of his friends to find out what equipment they use to play recorded movies. He found that 12 of his friends have only DVD players, 5 have both DVD players and VCRs, and 2 have neither type of player. The rest of his friends have only VCRs. What is the total number of his friends that have VCRs?

33. 060733a
The perimeter of an isosceles triangle is 71 centimeters. The measure of one of the sides is 22 centimeters. What are all the possible measures of the other two sides?

34. 060734a, P.I. G.G.18
Using a compass and straightedge, construct the perpendicular bisector of \overline{AB} shown below. Show all construction marks.

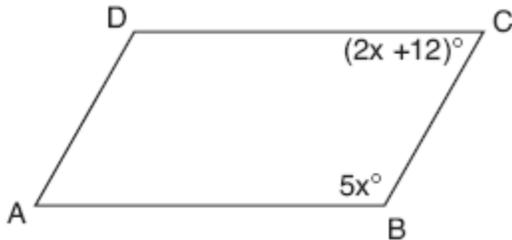


35. 060735a, P.I. A.A.43
Ron and Francine are building a ramp for performing skateboard stunts, as shown in the accompanying diagram. The ramp is 7 feet long and 3 feet high. What is the measure of the angle, x , that the ramp makes with the ground, to the *nearest tenth of a degree*?



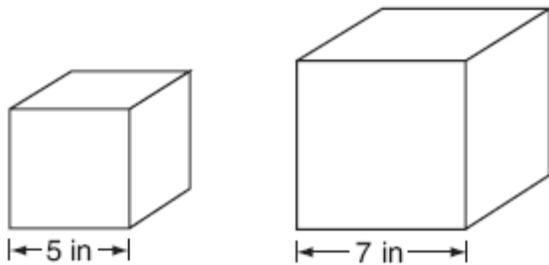
36. 060736a, P.I. G.G.38

In the accompanying diagram of parallelogram $ABCD$, $m\angle B = 5x$ and $m\angle C = 2x + 12$. Find the number of degrees in $\angle D$.



37. 060737a

Tracey has two empty cube-shaped containers with sides of 5 inches and 7 inches, as shown in the accompanying diagram. She fills the smaller container completely with water and then pours all the water from the smaller container into the larger container. How deep, to the *nearest tenth of an inch*, will the water be in the larger container?

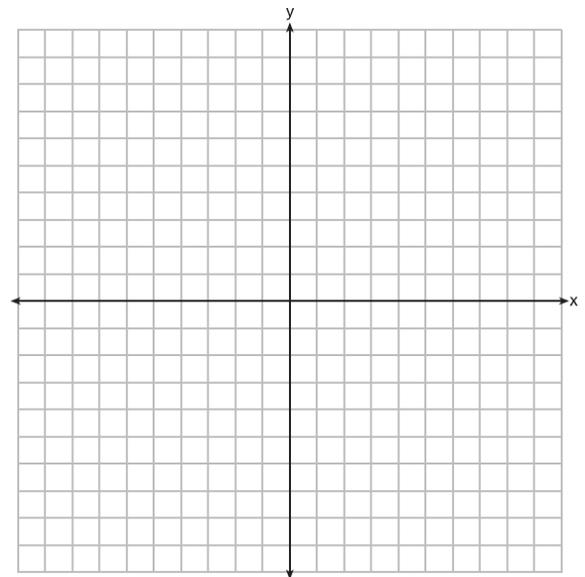


38. 060738a, P.I. A.A.6

Angelo, Brandon, and Carl work in the same office. Angelo's age is 4 years more than twice Carl's age. Brandon is 5 years younger than Carl. The average of the three ages is 41. Find the age of *each* of the men.

39. 060739a, P.I. G.G.54

Carson is a decorator. He often sketches his room designs on the coordinate plane. He has graphed a square table on his grid so that its corners are at the coordinates $A(2,6)$, $B(7,8)$, $C(9,3)$, and $D(4,1)$. To graph a second identical table, he reflects $ABCD$ over the y -axis. On the accompanying set of coordinate axes, sketch and label $ABCD$ and its image $A'B'C'D'$, which show the locations of the two tables. Then find the number of square units in the area of $ABCD$.



- [1] A
- [2] A
- [3] D
- [4] D
- [5] A
- [6] A
- [7] C
- [8] D
- [9] B
- [10] B
- [11] B
- [12] B
- [13] B
- [14] C
- [15] B
- [16] B
- [17] B
- [18] C
- [19] A
- [20] B
- [21] D
- [22] B
- [23] B
- [24] C
- [25] A
- [26] B
- [27] C
- [28] B

- [29] B
- [30] D

[2] 70.92, and appropriate work is shown, such as a proportion.

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

or [1] 70.92, 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

- [31] incorrect procedure.

[2] 6, and appropriate work is shown, such as a Venn diagram.

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

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

or [1] 1, the number of friends with only a VCR player, is found, and appropriate work is shown.

or [1] 6, 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

- [32] incorrect procedure.

[2] 22, 27 and 24.5, 24.5, *or* 22, 27, and 24.5, and appropriate work is shown, such as a labeled diagram.

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

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

or [1] Appropriate work is shown, but only one of the two possible sets of numbers is found.

or [1] 22, 27 and 24.5, 24.5, *or* 22, 27, and 24.5, 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

- [33] 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 obviously incorrect procedure.
-

- [34] [2] 25.4, and appropriate work is shown, such as solving the equation $\sin x = \frac{3}{7}$.
[1] Appropriate work is shown, but one computational or rounding error is made.
or [1] Appropriate work is shown, but one conceptual error is made, such as using an incorrect trigonometric function.
or [1] A correct trigonometric equation is written, but no further correct work is shown.
or [1] 25.4, 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.
-

- [35] [3] 120, and appropriate work is shown, such as solving the equation $5x + 2x + 12 = 180$.
[2] Appropriate work is shown, but one computational error is made.
or [2] The correct equation is solved for x , but no further correct work is shown.
[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.
or [1] A correct equation is written, but no further correct work is shown.
or [1] An incorrect equation of equal difficulty is solved appropriately, and an appropriate measure is found for $\angle D$.
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.
-

[3] 2.6, and appropriate work is shown, such as $(5 \bullet 5 \bullet 5) = (7 \bullet 7)h$.

- [2] Appropriate work is shown, but one computational or rounding error is made.
[1] Appropriate work is shown, but two or more computational or rounding errors are made.
or [1] Appropriate work is shown, but one conceptual error is made, such as using an incorrect formula.
or [1] The volume of both of the cubes is found correctly, but no further correct work is shown.
or [1] 2.6, 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.
-

[37] incorrect procedure.

- [4] Angelo is 66, Brandon is 26, and Carl is 31, and appropriate work is shown, such as solving an equation or trial and error with at least three trials and appropriate checks.
- [3] Appropriate work is shown, but one computational error is made.
or [3] 66, 26, and 31, and appropriate work is shown, but the solutions are not labeled or are labeled incorrectly.
- [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.
or [2] The trial-and-error method is used to find a correct solution, but only two trials and appropriate checks are shown.
or [2] The trial-and-error method is attempted and at least six systematic trials and appropriate checks are shown, but no solution is found.
or [2] Carl is 31, and appropriate work is shown, but the ages of the other men are not found.
or [2] An incorrect equation of equal difficulty is solved appropriately.
- [1] Appropriate work is shown, but one conceptual error and one computational error are made.
or [1] A correct equation is written, but no further correct work is shown.
or [1] Angelo is 66, Brandon is 26, and Carl is 31, but no work or only one trial with an appropriate check is shown.
- [0] Angelo is 66 *or* Brandon is 26 *or* Carl is 31, but no work is shown.
or [0] 66, 26, and 31, but no work is shown, and the answers are not labeled or are labeled incorrectly.
or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [38] _____
- [4] $ABCD$ and its image $A'B'C'D'$ are graphed and labeled correctly and 29, and appropriate work is shown.
- [3] Appropriate work is shown, but one computational or graphing error is made.
or [3] $A'B'C'D'$ is graphed and labeled correctly and 29, but $ABCD$ is not graphed.
or [3] $ABCD$ is graphed incorrectly, but an appropriate image is graphed and labeled, and an appropriate area is found.
or [3] $ABCD$ and $A'B'C'D'$ are graphed correctly and 29, but neither quadrilateral is labeled.
- [2] Appropriate work is shown, but two or more computational or graphing errors are made.
or [2] Appropriate work is shown, but one conceptual error is made, such as an incorrect transformation, but the graphs are labeled, and an appropriate area is found.
or [2] Both $ABCD$ and $A'B'C'D'$ are graphed and labeled correctly, but the area is not found.
or [2] 29, and appropriate work is shown, such as using the distance formula and finding the area, but neither $ABCD$ nor $A'B'C'D'$ is graphed.
- [1] Appropriate work is shown, but one conceptual error and one computational or graphing error are made.
or [1] Either $ABCD$ or $A'B'C'D'$ is graphed and labeled correctly, but no further correct work is shown.
or [1] 29, but no work is shown and no graph is drawn.
- [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [39] _____