

1. 010801a, P.I. A.A.6
Robin spent \$17 at an amusement park for admission and rides. If she paid \$5 for admission, and rides cost \$3 each, what is the total number of rides that she went on?

[A] 12 [B] 2 [C] 4 [D] 9

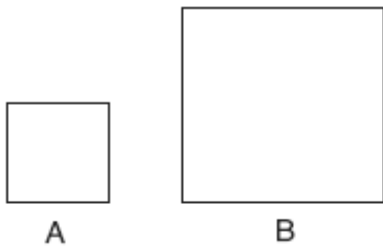
2. 010802a, P.I. A.G.2
A block of wood is 5 inches long, 2 inches wide, and 3 inches high. What is the volume of this block of wood?

[A] 10 in^3 [B] 30 in^3
[C] 25 in^3 [D] 38 in^3

3. 010803a, P.I. G.G.25
The statement " $a > 2$ and $a < 5$ " is true when a is equal to

[A] 10 [B] 3 [C] 2 [D] 5

4. 010804a, P.I. G.G.60
In the accompanying diagram, figure B is the image of figure A .



Which type of transformation was performed?

[A] translation [B] dilation
[C] rotation [D] reflection

5. 010805a, P.I. A.S.20
A box contains 6 dimes, 8 nickels, 12 pennies, and 3 quarters. What is the probability that a coin drawn at random is *not* a dime?

[A] $\frac{23}{29}$ [B] $\frac{8}{29}$ [C] $\frac{6}{29}$ [D] $\frac{12}{29}$

6. 010806a, P.I. A.N.5
If x varies directly as y , and $x = 8$ when $y = 24$, what is the value of x when $y = 6$?

[A] 1 [B] 2 [C] 3 [D] 4

7. 010807a, P.I. A.A.22
What is the value of p in the equation $8p + 2 = 4p - 10$?

[A] -3 [B] 1 [C] -1 [D] 3

8. 010808a, P.I. A.A.27
A solution of the equation $\frac{x^2}{4} = 9$ is

[A] 6 [B] 12 [C] $\frac{3}{2}$ [D] 3

9. 010809a
Which transformation produces a figure that is always the mirror image of the original figure?

[A] dilation [B] translation
[C] rotation [D] line reflection

10. 010810a
If the measures, in degrees, of the three angles of a triangle are x , $x + 10$, and $2x - 6$, the triangle must be

[A] equilateral [B] right
[C] scalene [D] isosceles

11. 010811a, P.I. A.S.20
Which event has a probability of zero?

[A] choosing a triangle that is both isosceles and right
[B] choosing a pair of parallel lines that have unequal slopes
[C] choosing a letter from the alphabet that has line symmetry
[D] choosing a number that is greater than 6 and is even

12. 010812a, P.I. A.N.1
Which property is represented by the statement $\frac{1}{2}(6a + 4b) = 3a + 2b$?

[A] commutative [B] distributive
[C] identity [D] associative

13. 010813a, P.I. 7.A.10
Which equation expresses the relationship between x and y , as shown in the accompanying table?

x	0	1	2	3	4
y	2	5	8	11	14

[A] $y = 3x + 2$ [B] $y = x + 2$
[C] $y = 2x + 3$ [D] $y = x + 3$

14. 010814a, P.I. A.A.20
What are the factors of $x^2 - 5x + 6$?

[A] $(x + 6)$ and $(x - 1)$
[B] $(x - 6)$ and $(x + 1)$
[C] $(x - 2)$ and $(x - 3)$
[D] $(x + 2)$ and $(x + 3)$

15. 010815a, P.I. A.RP.11
A school newspaper took a survey of 100 students. The results of the survey showed that 43 students are fans of the Buffalo Bills, 27 students are fans of the New York Jets, and 48 students do not like either team. How many of the students surveyed are fans of *both* the Buffalo Bills and the New York Jets?

[A] 52 [B] 18 [C] 70 [D] 16

16. 010816a, P.I. 7.N.3
In which group are the numbers arranged in order from smallest value to largest value?
- [A] $3.14, \sqrt{9.86}, \pi, \frac{22}{7}$
[B] $\sqrt{9.86}, \frac{22}{7}, 3.14, \pi$
[C] $\pi, 3.14, \sqrt{9.86}, \frac{22}{7}$
[D] $\frac{22}{7}, 3.14, \pi, \sqrt{9.86}$
17. 010817a, P.I. A.A.12
The expression $\frac{4x^2y^3}{2xy^4}$ is equivalent to
- [A] $2xy$ [B] $\frac{2x}{y}$ [C] $\frac{2y}{x}$ [D] $-2xy$
18. 010818a, P.I. A.A.26
On a map, 1 inch represents 3 miles. How many miles long is a road that is $2\frac{1}{2}$ inches long on the map?
- [A] $\frac{1}{2}$ [B] $5\frac{1}{2}$ [C] $6\frac{1}{2}$ [D] $7\frac{1}{2}$
19. 010819a, P.I. A.A.13
What is the product of $2r^2 - 5$ and $3r$?
- [A] $6r^3 - 5$ [B] $6r^2 - 15$
[C] $6r^2 - 15r$ [D] $6r^3 - 15r$
20. 010820a, P.I. A.A.1
If x represents a given number, the expression "5 less than twice the given number" is written as
- [A] $5 - 2x$ [B] $5 < 2x$
[C] $2x - 5$ [D] $5 < 2 + x$
21. 010821a, P.I. A.N.1
The additive inverse of $\frac{1}{a}$ is
- [A] 0 [B] $-\frac{1}{a}$ [C] a [D] $-a$
22. 010822a, P.I. A.A.15
For which value of x is the expression $\frac{6-x}{x+2}$ undefined?
- [A] -2 [B] 6 [C] 0 [D] 2
23. 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] 65° [B] 35° [C] 25° [D] 55°
24. 010824a, P.I. A.A.1
The larger of two consecutive integers is represented by $x + 4$. Which expression represents the *smaller* integer?
- [A] $x + 5$ [B] $x + 3$
[C] $x + 2$ [D] $x + 6$

25. 010825a, P.I. A.A.26

If $\frac{5}{n} - \frac{1}{2} = \frac{3}{6n}$, what is the value of n ?

- [A] 9 [B] -2 [C] $\frac{2}{7}$ [D] 2

26. 010826a, P.I. A.N.3

The expression $\sqrt{28} - \sqrt{7}$ is equivalent to

- [A] $\sqrt{7}$ [B] 4 [C] 2 [D] $3\sqrt{7}$

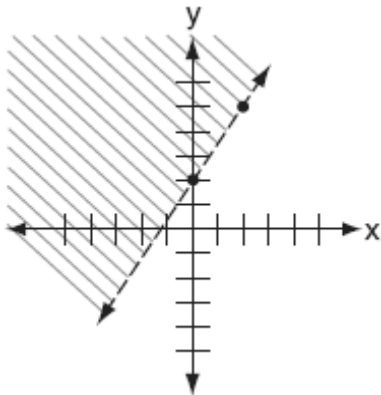
27. 010827a, P.I. G.G.48

Which set of numbers could be the lengths of the sides of a right triangle?

- [A] {4,7,8} [B] {10,24,26}
[C] {3,4,6} [D] {12,16,30}

28. 010828a, P.I. A.G.6

Which inequality is shown in the accompanying diagram?



- [A] $y > \frac{3}{2}x + 2$ [B] $y \leq \frac{3}{2}x + 2$
[C] $y \geq \frac{3}{2}x + 2$ [D] $y < \frac{3}{2}x + 2$

29. 010829a, P.I. A2.S.10

What is the total number of different seven-letter arrangements that can be formed using the letters in the word "MILLION"?

- [A] 210 [B] 2,520 [C] 30 [D] 1,260

30. 010830a, P.I. G.G.22

The locus of points equidistant from the points (4,-5) and (4,7) is the line whose equation is

- [A] $x = 1$ [B] $x = 4$
[C] $y = 1$ [D] $y = 2$

31. 010831a

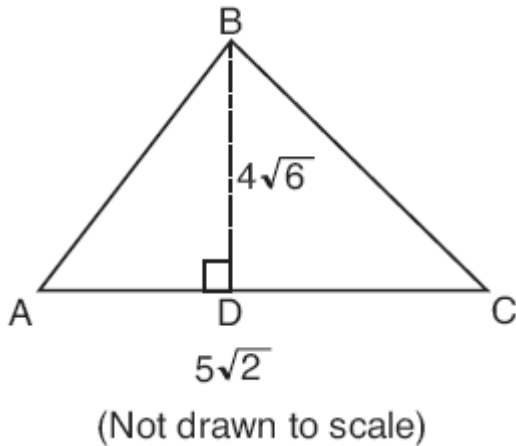
The circumference of a circle measures 22π units. Find the number of square units in the area of the circle. Express your answer in terms of π .

32. 010832a, P.I. A.S.20

As captain of his football team, Jamal gets to call heads or tails for the toss of a fair coin at the beginning of each game. At the last three games, the coin has landed with heads up. What is the probability that the coin will land with heads up at the next game? Explain your answer.

33. 010833a, P.I. A.G.1

In the accompanying diagram of $\triangle ABC$, altitude $BD = 4\sqrt{6}$ and $AC = 5\sqrt{2}$. Find the area of the triangle to the nearest tenth of a square unit.

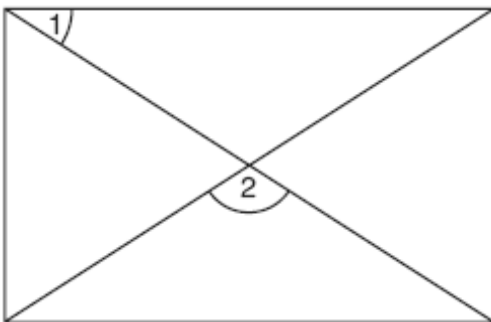


34. 010834a, P.I. G.G.64

Write an equation of a line that is perpendicular to the line $y = \frac{2}{3}x + 5$ and that passes through the point $(0,4)$.

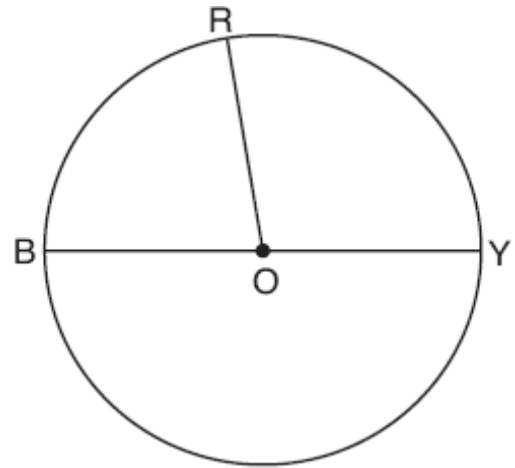
35. 010835a, P.I. G.G.38

As shown in the accompanying diagram, a rectangular gate has two diagonal supports. If $m\angle 1 = 42$, what is $m\angle 2$?



36. 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 .



37. 010837a, P.I. G.G.26

In the spaces provided below, write the converse, the inverse, and the contrapositive of the statement "If I run, then I am tired."

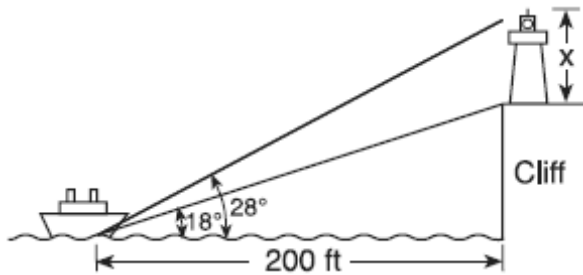
Converse: _____

Inverse: _____

Contrapositive: _____

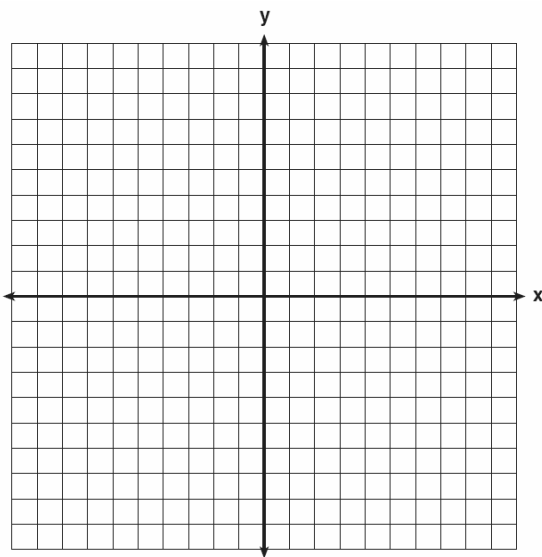
38. 010838a, P.I. A.A.44

A lighthouse is built on the edge of a cliff near the ocean, as shown in the accompanying diagram. From a boat located 200 feet from the base of the cliff, the angle of elevation to the top of the cliff is 18° and the angle of elevation to the top of the lighthouse is 28° . What is the height of the lighthouse, x , to the nearest tenth of a foot?



39. 010839a

On the accompanying set of axes, graph the parabola whose equation is $y = x^2 - 2x - 8$ over the interval $-3 \leq x \leq 5$ and graph the circle whose center is at $(1, -5)$ and whose radius is 4. Using your graphs, determine how many points of intersection the two graphs have.



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

- [29] D
- [30] C

[2] 121π , and appropriate work is shown.

[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 the answer is expressed as a decimal.

or [1] The radius of the circle is found, but no further correct work is shown.

or [1] 121π , 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] $\frac{1}{2}$ or an equivalent answer, and an

appropriate explanation is written.

[1] A correct explanation is written, but the probability is not stated.

or [1] $\frac{1}{2}$ or an equivalent answer, but no

explanation is written.

[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] 34.6, and appropriate work is shown.

[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 area formula.

or [1] Appropriate work is shown, but the answer is left in radical form.

or [1] 34.6, 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

[33] incorrect procedure.

[2] A correct equation is written, such as

$$y = -\frac{3}{2}x + 4 \text{ or } (y - 4) = -\frac{3}{2}(x - 0).$$

[1] An appropriate equation is written, but one computational error is made or one incorrect substitution is made.

[1] An appropriate equation is written, but one conceptual error is made, such as writing an equation for a parallel line going through (0,4) or for a perpendicular line that does not go through (0,4).

or [1] The slope is identified correctly as $-\frac{3}{2}$

or the y-intercept as 4, but no equation or an incorrect equation is written.

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

[34] incorrect procedure.

[2] 96, and appropriate work is shown, such as an algebraic solution or a correctly 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] 96, 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

[35] incorrect procedure.

[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

[36] incorrect procedure.

[3] Three correct statements are written for the converse, the inverse, and the contrapositive.

[2] Two correct statements are written.

[1] One correct statement is written.

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

[37] incorrect procedure.

