

1. 080901ia, P.I. A.A.4

If h represents a number, which equation is a correct translation of "Sixty more than 9 times a number is 375"?

- [A] $9h = 375$ [B] $9h + 60 = 375$
[C] $9h - 60 = 375$ [D] $60h + 9 = 375$

2. 080902ia, P.I. A.A.19

Which expression is equivalent to $9x^2 - 16$?

- [A] $(3x - 8)(3x - 8)$ [B] $(3x + 4)(3x - 4)$
[C] $(3x + 8)(3x - 8)$ [D] $(3x - 4)(3x - 4)$

3. 080903ia, P.I. A.A.12

Which expression represents $(3x^2y^4)(4xy^2)$ in equivalent form?

- [A] $12x^2y^6$ [B] $12x^3y^6$
[C] $12x^3y^8$ [D] $12x^2y^8$

4. 080904ia, P.I. A.A.6

An online music club has a one-time registration fee of \$13.95 and charges \$0.49 to buy each song. If Emma has \$50.00 to join the club and buy songs, what is the maximum number of songs she can buy?

- [A] 131 [B] 74 [C] 73 [D] 130

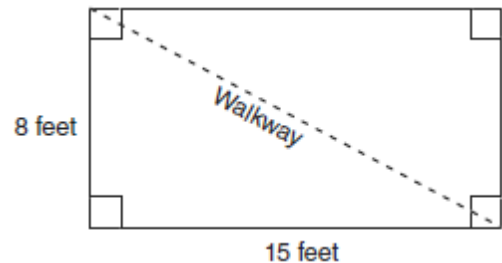
5. 080905ia, P.I. A.N.7

The local ice cream stand offers three flavors of soft-serve ice cream: vanilla, chocolate, and strawberry; two types of cone: sugar and wafer; and three toppings: sprinkles, nuts, and cookie crumbs. If Dawn does not order vanilla ice cream, how many different choices can she make that have one flavor of ice cream, one type of cone, and one topping?

- [A] 12 [B] 7 [C] 18 [D] 8

6. 080906ia, P.I. A.A.45

Nancy's rectangular garden is represented in the diagram below.

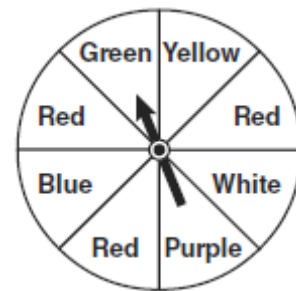


If a diagonal walkway crosses her garden, what is its length, in feet?

- [A] $\sqrt{529}$ [B] 22 [C] $\sqrt{161}$ [D] 17

7. 080907ia, P.I. A.S.20

The spinner below is divided into eight equal regions and is spun once. What is the probability of not getting red?



- [A] $\frac{5}{8}$ [B] $\frac{3}{8}$ [C] $\frac{7}{8}$ [D] $\frac{3}{5}$

8. 080908ia, P.I. A.S.13

Which relationship can best be described as causal?

- [A] number of correct answers on a test and test score
[B] height and intelligence
[C] number of students in a class and number of students with brown hair
[D] shoe size and running speed

9. 080909ia, P.I. A.A.25

Solve for x : $\frac{3}{5}(x+2) = x-4$

- [A] 8 [B] 13 [C] 23 [D] 15

10. 080910ia, P.I. A.S.3

Erica is conducting a survey about the proposed increase in the sports budget in the Hometown School District. Which survey method would likely contain the most bias?

- [A] Erica asks every fifth student entering Hometown High School on Monday morning.
[B] Erica asks every third person entering the Hometown Grocery Store.
[C] Erica asks every fifth person leaving Saturday's Hometown High School football game.
[D] Erica asks every third person leaving the Hometown Shopping Mall this weekend.

11. 080911ia, P.I. A.A.36

Which equation represents a line parallel to the x -axis?

- [A] $y = -5x$ [B] $x = 3y$
[C] $y = -5$ [D] $x = 3$

12. 080912ia, P.I. A.A.30

Given:

$A = \{\text{All even integers from 2 to 20, inclusive}\}$

$B = \{10, 12, 14, 16, 18\}$

What is the complement of set B within the universe of set A ?

- [A] $\{2, 4, 6, 8\}$ [B] $\{4, 6, 8, 20\}$
[C] $\{2, 4, 6, 8, 20\}$ [D] $\{4, 6, 8\}$

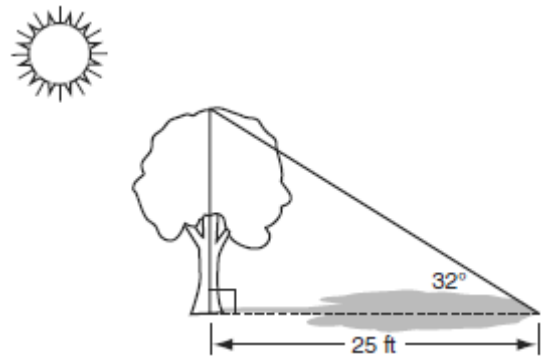
13. 080913ia, P.I. A.A.21

Which value of x is in the solution set of the inequality $-2(x-5) < 4$

- [A] 2 [B] 3 [C] 5 [D] 0

14. 080914ia, P.I. A.A.44

A tree casts a 25-foot shadow on a sunny day, as shown in the diagram below.



If the angle of elevation from the tip of the shadow to the top of the tree is 32° , what is the height of the tree to the nearest tenth of a foot?

- [A] 13.2 [B] 40.0 [C] 21.2 [D] 15.6

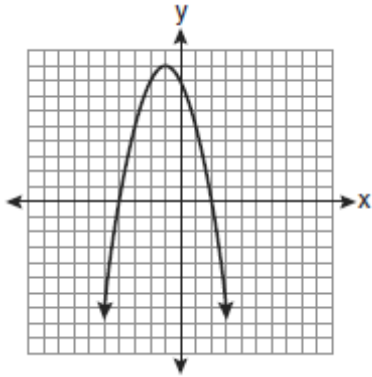
15. 080915ia, P.I. A.A.33

What is the slope of the line that passes through the points $(-5, 4)$ and $(15, -4)$?

- [A] 0 [B] $-\frac{5}{2}$
[C] $-\frac{2}{5}$ [D] undefined

16. 080916ia, P.I. A.G.8

The equation $y = -x^2 - 2x + 8$ is graphed on the set of axes below.



Based on this graph, what are the roots of the equation $-x^2 - 2x + 8 = 0$?

- [A] 2 and -4 [B] 4 and -2
[C] 9 and -1 [D] 8 and 0
17. 080917ia, P.I. A.A.17
- What is the sum of $\frac{3}{2x}$ and $\frac{4}{3x}$ expressed in simplest form?
- [A] $\frac{12}{6x^2}$ [B] $\frac{7}{5x}$ [C] $\frac{17}{6x}$ [D] $\frac{17}{12x}$
18. 080918ia, P.I. A.A.15
- Which value of x makes the expression $\frac{x^2 - 9}{x^2 + 7x + 10}$ undefined?
- [A] -5 [B] -3 [C] 2 [D] 3

19. 080919ia, P.I. A.G.3

Which relation is *not* a function?

- [A] $\{(4,7), (2,1), (-3,6), (3,4)\}$
[B] $\{(-1,2), (0,5), (5,0), (2,-1)\}$
[C] $\{(-1,6), (1,3), (2,5), (1,7)\}$
[D] $\{(1,5), (2,6), (3,6), (4,7)\}$

20. 080920ia, P.I. A.A.10

What is the value of the y -coordinate of the solution to the system of equations $x - 2y = 1$ and $x + 4y = 7$?

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

21. 080921ia, P.I. A.A.27

The solution to the equation $x^2 - 6x = 0$ is

- [A] 6, only [B] $\pm\sqrt{6}$
[C] 0 and 6 [D] 0, only

22. 080922ia, P.I. A.N.2

When $5\sqrt{20}$ is written in simplest radical form, the result is $k\sqrt{5}$. What is the value of k ?

- [A] 20 [B] 10 [C] 4 [D] 7

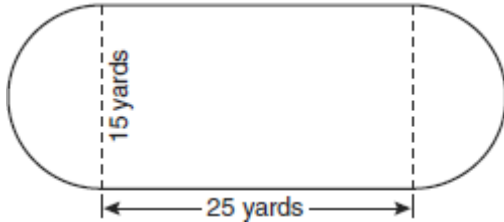
23. 080923ia, P.I. A.N.6

What is the value of the expression $|-5x + 12|$ when $x = 5$?

- [A] 37 [B] -37 [C] 13 [D] -13

24. 080924ia, P.I. A.G.1

A playground in a local community consists of a rectangle and two semicircles, as shown in the diagram below.

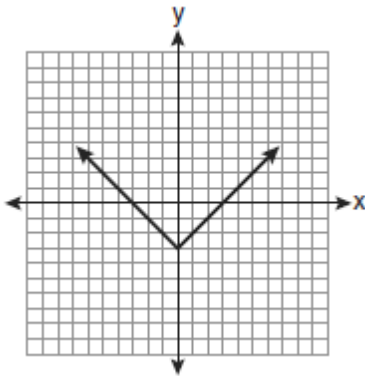


Which expression represents the amount of fencing, in yards, that would be needed to completely enclose the playground?

- [A] $15\pi + 50$ [B] $30\pi + 80$
[C] $30\pi + 50$ [D] $15\pi + 80$

25. 080925ia, P.I. A.G.4

Which equation is represented by the graph below?



- [A] $y = x^2 - 3$ [B] $y = (x - 3)^2$
[C] $y = |x - 3|$ [D] $y = |x| - 3$

26. 080926ia, P.I. A.M.3

Carrie bought new carpet for her living room. She calculated the area of the living room to be 174.2 square feet. The actual area was 149.6 square feet. What is the relative error of the area to the nearest ten-thousandth?

- [A] 0.1412 [B] 0.1644
[C] 1.8588 [D] 2.1644

27. 080927ia, P.I. A.A.34

What is an equation of the line that passes through the point $(3, -1)$ and has a slope of 2?

- [A] $y = 2x - 4$ [B] $y = 2x - 1$
[C] $y = 2x + 5$ [D] $y = 2x - 7$

28. 080928ia, P.I. A.A.6

The ages of three brothers are consecutive even integers. Three times the age of the youngest brother exceeds the oldest brother's age by 48 years. What is the age of the youngest brother?

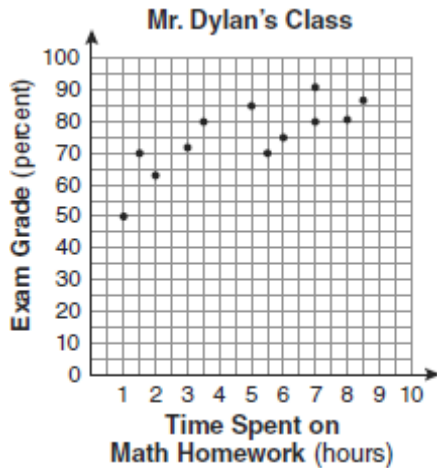
- [A] 18 [B] 26 [C] 22 [D] 14

29. 080929ia, P.I. A.A.9

Cassandra bought an antique dresser for \$500. If the value of her dresser increases 6% annually, what will be the value of Cassandra's dresser at the end of 3 years to the nearest dollar?

- [A] \$770 [B] \$596
[C] \$415 [D] \$590

30. 080930ia, P.I. A.S.17
The number of hours spent on math homework each week and the final exam grades for twelve students in Mr. Dylan's algebra class are plotted below.



Based on a line of best fit, which exam grade is the best prediction for a student who spends about 4 hours on math homework each week?

- [A] 92 [B] 72 [C] 62 [D] 82

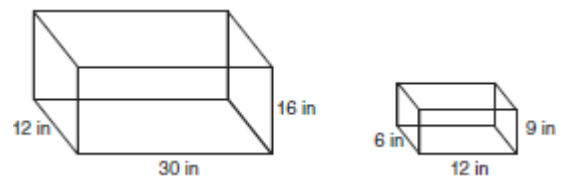
31. 080931ia, P.I. A.A.3
Chad complained to his friend that he had five equations to solve for homework. Are all of the homework problems equations? Justify your answer.

Math Homework

1. $3x^2 \cdot 2x^4$
2. $5 - 2x = 3x$
3. $3(2x + 7)$
4. $7x^2 + 2x - 3x^2 - 9$
5. $\frac{2}{3} = \frac{x+2}{6}$

Name Chad

32. 080932ia, P.I. A.G.2
The diagram below represents Joe's two fish tanks.



Joe's larger tank is completely filled with water. He takes water from it to completely fill the small tank. Determine how many cubic inches of water will remain in the larger tank.

33. 080933ia, P.I. A.S.19
Clayton has three fair coins. Find the probability that he gets two tails and one head when he flips the three coins.

34. 080934ia, P.I. A.A.41
Find algebraically the equation of the axis of symmetry and the coordinates of the vertex of the parabola whose equation is $y = -2x^2 - 8x + 3$.

35. 080935ia, P.I. A.N.5
At the end of week one, a stock had increased in value from \$5.75 a share to \$7.50 a share. Find the percent of increase at the end of week one to the *nearest tenth of a percent*. At the end of week two, the same stock had decreased in value from \$7.50 to \$5.75. Is the percent of decrease at the end of week two the same as the percent of increase at the end of week one? Justify your answer.

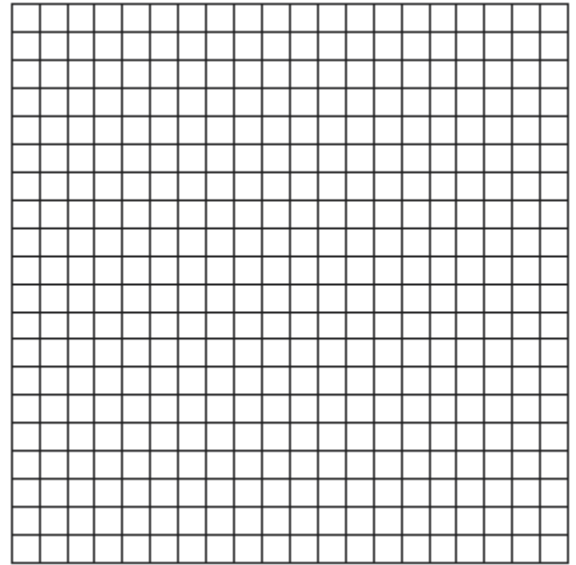
36. 080936ia, P.I. A.M.1
The chart below compares two runners.

Runner	Distance, in miles	Time, in hours
Greg	11	2
Dave	16	3

Based on the information in this chart, state which runner has the faster rate. Justify your answer.

37. 080937ia, P.I. A.A.18
Express in simplest form:
$$\frac{2x^2 - 8x - 42}{6x^2} \div \frac{x^2 - 9}{x^2 - 3x}$$

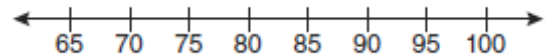
38. 080938ia, P.I. A.G.7
On the grid below, solve the system of equations graphically for x and y .
 $4x - 2y = 10$
 $y = -2x - 1$



39. 080939ia, P.I. A.S.5
The test scores from Mrs. Gray's math class are shown below.

72, 73, 66, 71, 82, 85, 95, 85, 86, 89, 91, 92

Construct a box-and-whisker plot to display these data.



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

[29] B

[30] B

[2] "No," and an appropriate justification is given.

[1] The equations and expressions are correctly categorized, but the justification is missing or is incorrect.

or [1] Appropriate justification is given, but the question is not answered or is answered incorrectly.

[0] "No," but the justification is missing or is incorrect.

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

[31] obviously incorrect procedure.

[2] 5,112, 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, such as not finding the difference.

or [1] $(12)(30)(16) - (6)(9)(12)$ or an equivalent expression, but no further correct work is shown.

or [1] 5,112, 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] $\frac{3}{8}$ or an equivalent answer, 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] A correct tree diagram or sample space is shown, but no probability or an incorrect probability is written.
or [1] $\frac{3}{8}$ or an equivalent answer, 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] $x = -2$ and $(-2,11)$, and appropriate algebraic work is shown.
[2] Appropriate work is shown, but one computational error is made.
or [2] An incorrect equation of the axis of symmetry is written, but an appropriate vertex is found.
or [2] $x = -2$ and $y = 11$, and appropriate work is shown, but the vertex is not stated as a point.
[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 not expressing the axis of symmetry as an equation.
or [1] $x = -2$ and $(-2,11)$, but a method other than algebraic is used.
or [1] Appropriate work is shown to find $x = -2$, but no further correct work is shown.
or [1] Appropriate work is shown to find $(-2,11)$, but no further correct work is shown.
or [1] $x = -2$ and $(-2,11)$, but no work is shown.
[0] $x = -2$ or $(-2,11)$, but no work 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.
-

- [3] 30.4, and appropriate work is shown, and "no," and an appropriate justification is given.
[2] Appropriate work is shown, but one computational or rounding error is made, but an appropriate answer and justification are given.
or [2] 30.4, and appropriate work is shown, and "no," but no justification or an incorrect justification is given.
[1] Appropriate work is shown, but two or more computational or rounding errors are made, but an appropriate answer and justification are given.
or [1] Appropriate work is shown, but one conceptual error is made, but an appropriate answer and justification are given.
or [1] 30.4 and "no," but no work is shown, and no justification or an incorrect justification is given.
[0] "No," but no work is shown, and no justification or an incorrect justification is given.
or [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] Greg, and appropriate work is shown to justify the answer.
[2] Appropriate work is shown, but one computational error is made, but an appropriate name is stated.
or [2] Appropriate work is shown computing both rates, but Greg is not stated to have the faster rate.
[1] Appropriate work is shown, but two or more computational errors are made, but an appropriate name is stated.
or [1] Appropriate work is shown, but one conceptual error is made, but an appropriate name is stated.
or [1] Appropriate work is shown to determine one of the rates, but no further correct work is shown.
[0] Greg, but no work 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.
[36]

- [4] $\frac{x-7}{3x}$, and appropriate work is shown.
[3] Appropriate work is shown, but one computational, factoring, or simplification error is made.
[2] Appropriate work is shown, but two or more computational, factoring, or simplification errors are made.
or [2] Appropriate work is shown, but one conceptual error is made, such as not multiplying by the reciprocal.
or [2] All numerators and denominators are factored correctly, but no further correct work is shown.
[1] Appropriate work is shown, but one conceptual error and one computational, factoring, or simplification error are made.
or [1] $\frac{x-7}{3x}$, 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]

[4] Both equations are graphed correctly, and at least one is labeled, and $(1,-3)$ is stated.

[3] Appropriate work is shown, but one computational, graphing, or labeling error is made, but an appropriate point of intersection is stated.

or [3] Both equations are graphed correctly and at least one is labeled, but the point of intersection is not stated or is stated incorrectly.

[2] Appropriate work is shown, but two or more computational, graphing, or labeling errors are made, but an appropriate point of intersection is stated.

or [2] Appropriate work is shown, but one conceptual error is made, but an appropriate point of intersection is stated.

or [2] Both equations are graphed correctly, but neither is labeled, and the point of intersection is not stated or is stated incorrectly.

or [2] $(1,-3)$, but a method other than graphic is used.

[1] Appropriate work is shown, but one conceptual error and one computational, graphing, or labeling error are made, but an appropriate point of intersection is stated.

or [1] One line is graphed and labeled correctly, but no further correct work is shown.

or [1] $(1,-3)$, 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

[38] incorrect procedure.

[4] A box-and-whisker plot is constructed correctly, where the minimum = 66, the first quartile = 72.5, the median = 85, the third quartile = 90, and the maximum = 95.

[3] A box-and-whisker plot is constructed, but one computational or graphing error is made.

[2] A box-and-whisker plot is constructed, but two or more computational or graphing errors are made.

or [2] A box-and-whisker plot is constructed, but one conceptual error is made.

[1] A box-and-whisker plot is constructed, but one conceptual error and one computational or graphing error are made.

or [1] A box-and-whisker plot is constructed, but only two of the statistical measures, the first quartile, the median, or the third quartile are found.

or [1] Minimum = 66, first quartile = 72.5, median = 85, third quartile = 90, and maximum = 95 are found, but no further correct work is shown.

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

[39] incorrect procedure.