

PART II Released Algebra I Items

1. Which is the **correct** way to factor the polynomial $x^2 - 16$?

- A. $(x - 4)(x - 4)$
- * B. $(x - 4)(x + 4)$
- C. $(x + 4)(x - 2)(x + 2)$
- D. not factorable

2. Evaluate the algebraic expression below when $a = 4$ and $x = 5$.

$$\sqrt{a} - x(3 + a^2) - 10$$

- A. -43
- B. -67
- * C. -103
- D. -253

3. What is the solution for the two algebraic equations below?

$$\begin{cases} 3x - 2y = 25 \\ 5y = 2x - 24 \end{cases}$$

- * A. $(7, -2)$
- B. $(-2, 7)$
- C. $(17, 2)$
- D. $(1, -11)$

4. Simplify the expression $(-8x^3)(3x^5)$.

- A. $-5x^2$
- B. $-5x^8$
- * C. $-24x^8$
- D. $-24x^{15}$

5. Grace hiked 20 kilometers south and then 15 kilometers east. How far is Grace from the starting point of her hike?

- A. 14.1 km
- B. 17.5 km
- * C. 25.0 km
- D. 35.0 km

6. What are the solutions to the quadratic equation $x^2 - 6x + 8 = 0$?

- A. $x = -2, x = -4$
- B. $x = -2, x = 4$
- C. $x = 2, x = -4$
- * D. $x = 2, x = 4$

7. The weights of 11 people in John's class are averaged to be 94 pounds. John takes out one person's weight and the average becomes 97 pounds. What weight was removed from the data set?

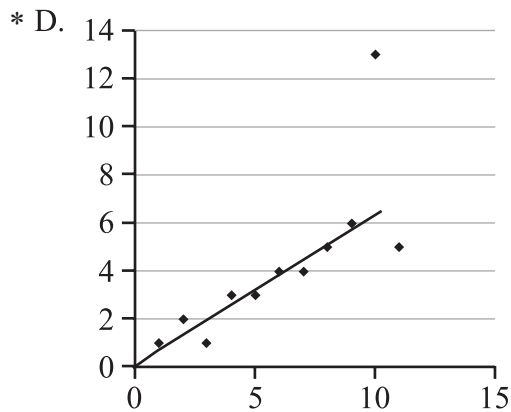
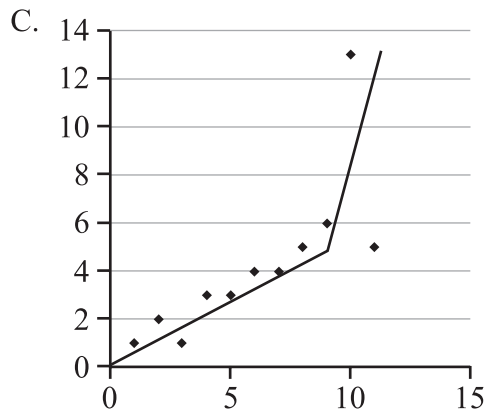
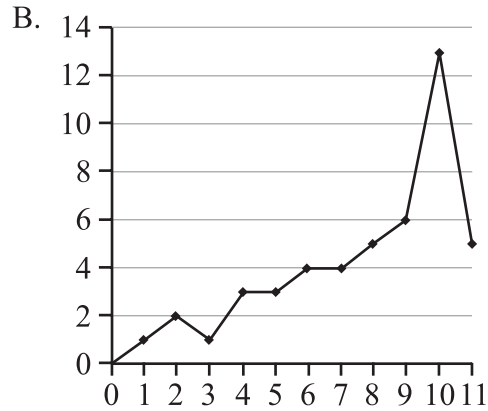
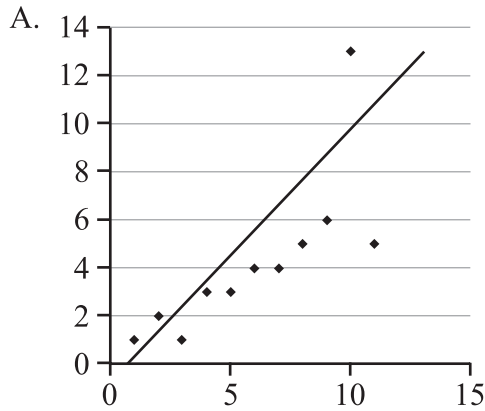
- A. 33 pounds
- * B. 64 pounds
- C. 97 pounds
- D. 100 pounds

8. Given the function $f(x) = 2 - 3x$, what is $f(-4)$?

- A. -10
- B. 2
- C. 4
- * D. 14

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9. Which graph **correctly** shows the line of best fit for its series of points?



10. Which line is parallel to the line with the equation $y = -\frac{2}{3}x + 7$?

A. $y = \frac{2}{3}x + 2$

B. $y = \frac{3}{2}x + 6$

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

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

11. Solve the formula below for r .

$$I = prt$$

* A. $r = \frac{I}{pt}$

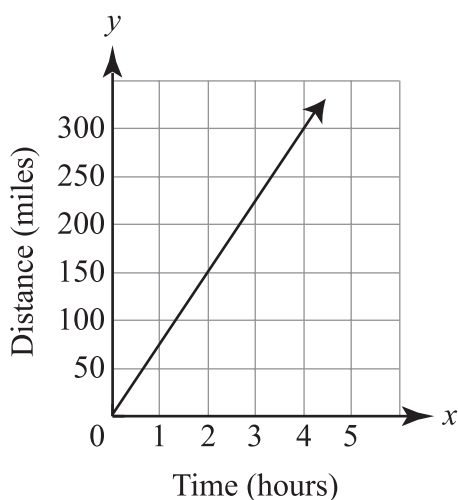
B. $r = \frac{pt}{I}$

C. $r = I + pt$

D. $r = I - pt$

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12. The distance a car travels over time when traveling at a constant speed is shown on the graph below.



What is the independent variable in the function?

- * A. time
 - B. speed
 - C. distance
 - D. amount of gas
13. What is the simplest form of the radical expression below?

$$\sqrt{\frac{27}{169}}$$

- A. $\frac{\sqrt{27}}{13}$
- B. $\frac{9\sqrt{3}}{13}$
- * C. $\frac{3\sqrt{3}}{13}$
- D. $\frac{3\sqrt{3}}{\sqrt{169}}$

14. A batter hits a ball directly upward with an initial velocity of 96 ft per second. The equation $h = vt - 16t^2$ represents vertical motion that is only affected by gravity. The height the ball travels is represented by h , the initial velocity of the ball is v , and t is the time. How high is the ball after 3 seconds?

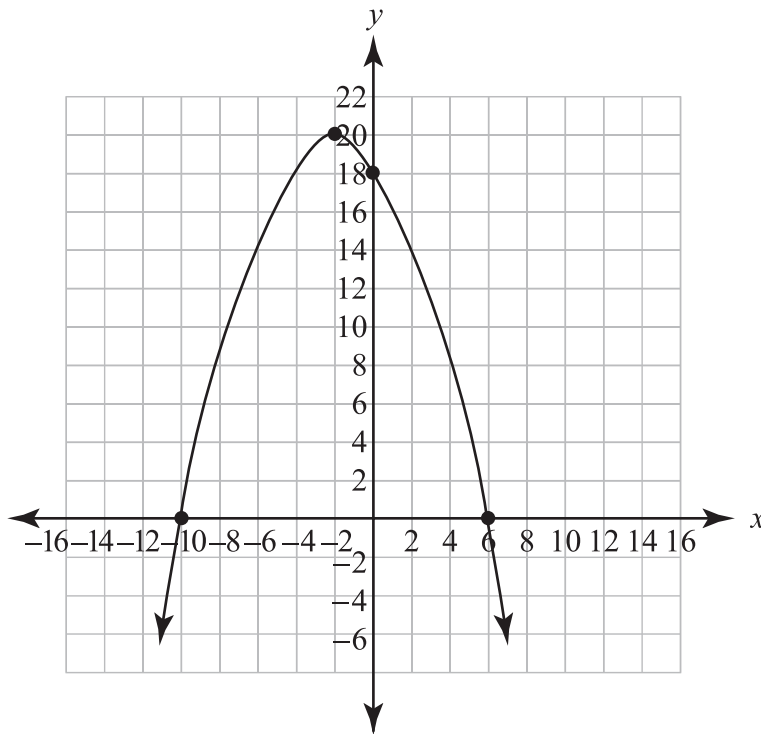
- * A. 144 ft
- B. 240 ft
- C. 272 ft
- D. 432 ft

15. Use the laws of exponents to evaluate $\left(\frac{1}{x}\right)^{-n}$ when $x = 7$ and $n = 2$.

- A. $\frac{1}{49}$
- B. $\frac{1}{7}$
- C. 7
- * D. 49

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16. What are the zeros of the nonlinear function graphed below?



- A. $(-2, 20)$ and $(0, 18)$
- B. $(-2, 20)$ and $(0, 0)$
- * C. $(-10, 0)$ and $(6, 0)$
- D. $(0, 0)$ and $(0, 18)$

17. If the equation $y = |x|$ is graphed and then moved up 3 units on the y -axis, what will be the equation of the new graph?

- * A. $y = |x| + 3$
- B. $y = |x+3|$
- C. $y = 3|x|$
- D. $y = 3x$

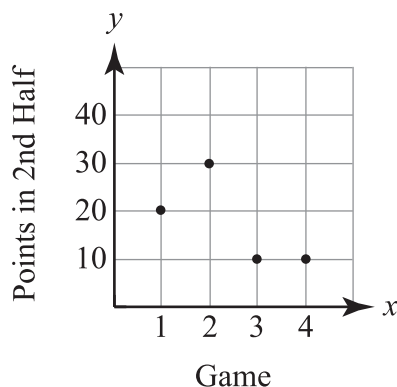
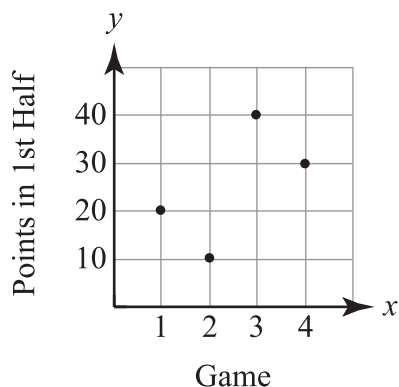
18. What is the solution, rounded to the nearest tenth, of the algebraic equation below?

$$x = (6.73 \times 10^{-9})(2.54 \times 10^8)$$

- * A. $x = 1.7$
- B. $x = 170.9$
- C. $x = 1.7 \times 10^{-17}$
- D. $x = 17.1 \times 10^{-72}$

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19. Jimmy is organizing results from the basketball games this season.



Which matrix represents the graphs above?

A.

	Game
	1 2
Half	1 $\begin{bmatrix} 20 & 20 \\ 10 & 30 \\ 40 & 10 \\ 30 & 10 \end{bmatrix}$

B.

	Game
	1 2
Game	1 $\begin{bmatrix} 40 \\ 40 \\ 50 \\ 40 \end{bmatrix}$

C.

	Game
	1 2 3 4
Half	$\begin{bmatrix} 40 & 40 & 50 & 40 \end{bmatrix}$

* D.

	Half
	1 2
Game	1 $\begin{bmatrix} 20 & 20 \\ 10 & 30 \\ 40 & 10 \\ 30 & 10 \end{bmatrix}$

20. What are the solutions for $2x^2 + 11x - 6 = 0$?

- A. $x = 3, -6$
- B. $x = -3, 6$
- * C. $x = \frac{1}{2}, -6$
- D. $x = -\frac{1}{2}, 6$

21. What is the value of $5\sqrt{3} - \sqrt{75}$?

- * A. 0
- B. $10\sqrt{3}$
- C. $-20\sqrt{3}$
- D. cannot be subtracted

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22. Which set of slopes would belong to a pair of lines perpendicular to one another?

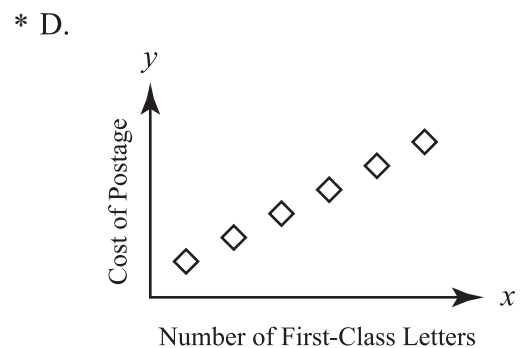
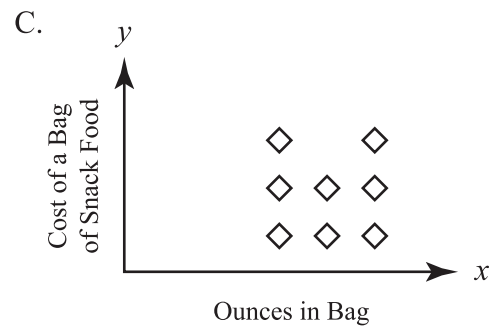
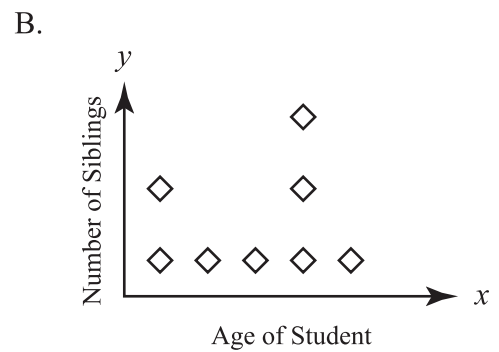
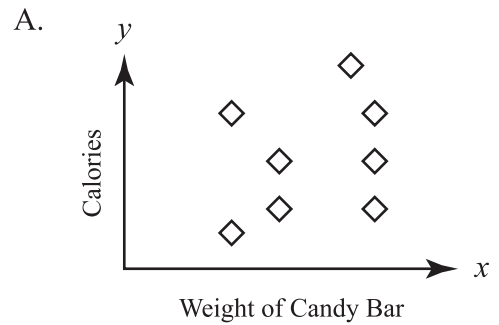
- * A. $m = \frac{3}{10}$ and $m = -\frac{10}{3}$
- B. $m = \frac{3}{10}$ and $m = -\frac{3}{10}$
- C. $m = \frac{3}{10}$ and $m = \frac{3}{10}$
- D. $m = \frac{3}{10}$ and $m = \frac{10}{3}$

23. Based on the matrix below, what is $\frac{1}{2}Y$?

$$Y = \begin{bmatrix} 7 & 8 & 10 \\ 1 & -3 & 12 \\ 22 & 8 & 4 \end{bmatrix}$$

- * A. $\begin{bmatrix} 3.5 & 4 & 5 \\ 0.5 & -1.5 & 6 \\ 11 & 4 & 2 \end{bmatrix}$
- B. $\begin{bmatrix} 14 & 16 & 20 \\ 2 & -6 & 24 \\ 44 & 16 & 8 \end{bmatrix}$
- C. $[138]$
- D. $[34.5]$

24. Which graph represents a function?

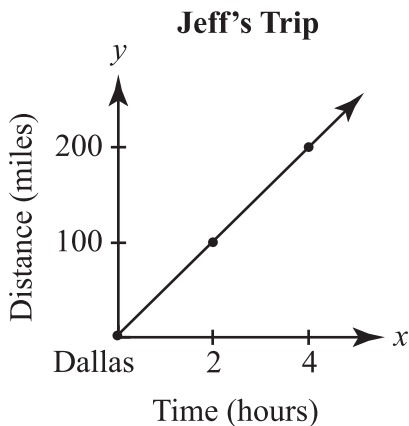


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25. Melissa has \$790 in savings. She wants to purchase a new computer for \$1,750. She plans to add \$20 each week to her savings. How many weeks will Melissa need to add to her savings before she can purchase the new computer?

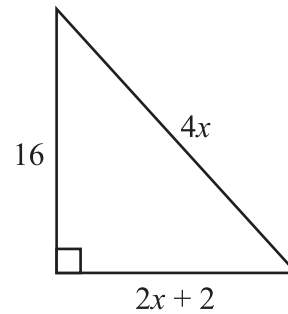
- A. 40
- * B. 48
- C. 88
- D. 127

26. Jeff drove at a constant speed from Dallas to his home. The graph below shows his distance from Dallas as a function of time. If David drove the same route at a constant but slower speed, how would the slope of the graph of David's trip compare to the slope of the graph of Jeff's trip?



- A. The slope of David's graph would be zero.
- * B. The slope of David's graph would be less than that of Jeff's graph.
- C. The slope of David's graph would be the same as that of Jeff's graph.
- D. The slope of David's graph would be greater than that of Jeff's graph.

Use the diagram below to answer question 27.



27. The area of the right triangle above is 96 square inches. What is the perimeter of the triangle?

- A. 5 inches
- B. 12 inches
- C. 20 inches
- * D. 48 inches

28. Trystan painted a mural. He was paid \$150 for supplies and x dollars for every hour he worked. He finished the mural after painting 4 hours on Monday, 6 hours on Tuesday, 3 hours on Wednesday, and 2 hours on Thursday. His total pay can be described by the expression below:

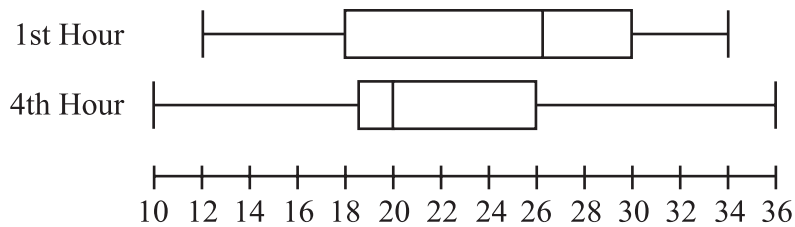
$$4x + 6x + 3x + 2x + 150$$

How can the expression be simplified?

- A. $x = 10$
- B. $x = -10$
- * C. $15x + 150$
- D. $144x + 150$

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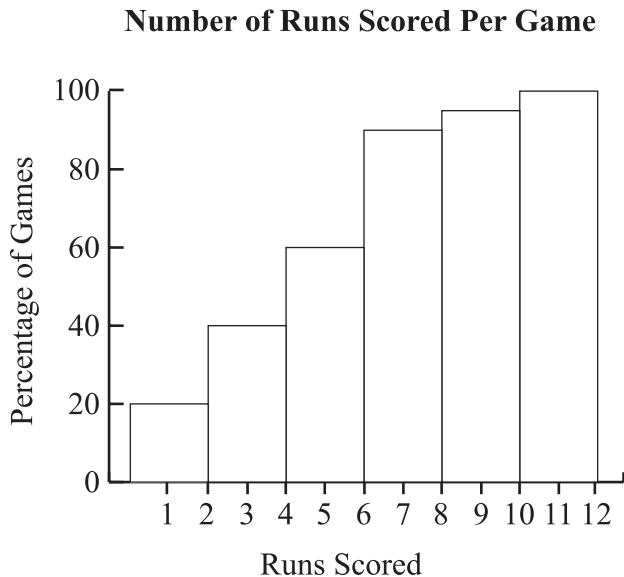
29. Below is a box-and-whisker plot that Mr. Malsom made of the tests in his 1st-hour and 4th-hour classes.



Which must be true about the scores in his classes?

- A. The range of the 1st-hour class is larger.
- B. The mean of the 1st-hour class is higher.
- * C. The median of the 1st-hour class is higher.
- D. The interquartile range of the 4th-hour class is larger.

30. Based on the cumulative frequency histogram below, in what percentage of games were 5 or fewer runs scored?



- A. 40%
- * B. 60%
- C. 90%
- D. 120%

31. Charlie had a full tank of gas before he drove 400 miles. Then, Charlie stopped to refill the tank. It took 36 gallons of fuel to fill up. Based on the equation $m \div g = \text{mpg}$, how many miles per gallon (mpg) did the truck get?

- A. 9.0
- B. 10.0
- * C. 11.1
- D. 12.4

32. Ashley is pricing shirts using the function $P(w) = 1.72w + 1.80$. What price (P) should she put on a shirt having a wholesale cost (w) of \$6.50?

- A. \$ 2.00
- B. \$11.18
- * C. \$12.98
- D. \$14.28

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33. Rodney goes for a jog. When he leaves the house, he jogs at a slow pace. Then he stops to stretch. He then restarts at the same slow pace as before. He ends his jog with a period of running at a very fast pace. Which graph shows Rodney's jog?

