

Math 0090 Lab Worksheet #13

Objective: Solve word problems #1 - #10 involving quadratic models. Problems #11 through #15 are review problems.

1. Length of a rectangle is 7 ft more than twice its width and the area is 60 ft^2 . Find the length of the rectangle.
 - A. 4 ft
 - B. 5 ft
 - C. 12 ft
 - D. 15 ft
2. One side of a square is increased by 3 ft while the other side is reduced by 2 ft to make a rectangle. The square and the rectangle have equal areas, and S represents a side of the original square. Which of the following equations expresses this relationship?
 - A. $S + 3 - 2S = S^2$
 - B. $3S(S-2) = S^2$
 - C. $S(3S-2) = S^2$
 - D. $(S+3)(S-2) = S^2$
3. One side of a square is decreased by 8 ft while the other side is tripled to produce a rectangle. How long was the side of the original square if the area of the rectangle is 56 square feet more than the area of the original square?
 - A. 2 cm
 - B. 6 cm
 - C. 7 cm
 - D. 14 cm
4. David's age is 4 years less than twice the age of his brother John. If the product of their ages is 126. How old is David?
 - A. 7 years
 - B. 9 years
 - C. 14 years
 - D. 18 years

5. The height of a rocket in feet is given by the equation $h = 128t - 32t^2$, where t is the time in seconds after it is fired and h is the height in feet at that time. After how many seconds will the rocket come back to the ground?
- A. 0 second
 - B. 2 seconds
 - C. 4 seconds
 - D. 32 seconds
6. Jorge left a party at 10:00 p.m. and headed due east at 50 mph. Angela left the same party at 11:00 p.m. and headed due north at 65 mph. If t represents the time Angela traveled, then which equation represents the time when Jorge and Angela will be 80 miles apart?
- A. $50(t+1) + 65t = 80$
 - B. $50(t-1)^2 + 65t^2 = 80^2$
 - C. $[50(t-1)]^2 + 65t^2 = 80^2$
 - D. $[50(t+1)]^2 + 65t^2 = 80^2$
7. One end of a 15-foot guy wire is tied to the top of an upright TV antenna for support. The other end of the guy wire is tied to a post on the ground that is 9 ft away from the base of the TV antenna. How high is the TV antenna?
- A. 9 ft
 - B. 10 ft
 - C. 12 ft
 - D. 81 ft
8. One leg of a right triangle is 2 cm longer than the other. If the hypotenuse is 2 cm more than the longer leg, find the length of the shorter leg.
- A. 2 cm
 - B. 6 cm
 - C. 8 cm
 - D. 10 cm

9. The side of a square tablet is 3 cm less than the side of another square tablet. If the difference of the areas of the two square tablets is 33 square centimeters, what is the length of one side of the smaller tablet?
- A. 3 cm
B. 4 cm
C. 7 cm
D. 10 cm
10. A rectangular garden lies at the center of a rectangular lot. A path of uniform width surrounds the garden. The lot is 17-ft by 24-ft. If the area of the garden is 170 ft^2 , how wide is the path?
- A. 2.5 ft
B. 3.5 ft
C. 5 ft
D. 7 ft
11. Figure ABCDE is similar to figure FGHIJ. If $AE = 4$, $FJ = 20$, and $BC = 40$, what is GH ?
- A. 80
B. 100
C. 160
D. 200
12. Simplify each term in the following expression and combine if possible.
- $$\sqrt{48} - 2\sqrt{75} + 6\sqrt{3}$$
- A. 0
B. $\sqrt{3}$
C. $4\sqrt{3}$
D. $9\sqrt{3}$

13. Which of the following numbers should be placed in each set of parentheses below in order to solve the equation by completing the square?

$$x^2 - 3x + (?) = 2 + (?)$$

- A. $-\frac{5}{2}$
B. $-\frac{3}{2}$
C. $\frac{9}{4}$
D. $\frac{25}{4}$

14. Simplify the expression. $\frac{2x^{-3}y^{-1}}{(2x^{-2}y^3)^2}$

- A. $\frac{x}{2y^7}$
B. $\frac{y^8}{4x^2}$
C. $\frac{4}{xy^5}$
D. $\frac{8x^2}{y^3}$

15. Which of the following is a factor of $9x^2 - 9x - 54$?

- A. $(x + 3)$
B. $(x + 2)$
C. $(9x - 6)$
D. $(9x - 54)$