

*Find the GCF of the pair of numbers.*

1.  $12a^2b^3$  and  $18a^3b^2$

2.  $4(x-3)^4$  and  $6(x-3)^7$

*Solve by factoring.*

3.  $x^2 - 12x = -32$

4.  $6x^2 - 5x - 4 = 0$

5.  $3x^3 - 2x^2 - 48x + 32 = 0$

6.  $25x^2 + 70x = -49$

*Solve by completing the square.*

7.  $x^2 - 8x + 9 = 0$

8.  $3x^2 - 6x = 21$

*Solve using the quadratic formula.*

9.  $-3x^2 + x = -8$

10.  $x^2 + 2x - 24 = 0$

How many x-intercepts does the equation have?

11.  $y = -\frac{1}{3}x^2 + 6x$

How many solutions do each of the equations have?

12.  $y = -x^2 + 3x - 8$  and  $y = -\frac{1}{2}x^2 + 8x - 32$

Task

13. A high school has a square MPR with side length  $2x$  yards. Adjacent to the MPR, there is a gym, which is  $2x$  yards long and 40 yards wide.

The total area for both pens is  $6000 \text{ yd}^2$ .

- Define the variables.
- Write an equation that represents the total area.
- Use your equation to find the dimensions of the pens.

ask.

14. A model rocket is launched from the ground into the air with an initial velocity of 200 ft/sec. After how many seconds does it land? (HINT: Use the vertical motion equation:  $h = -16t^2 + vt + c$ )

a. Define the variable.

b. Write the expression that shows the rocket's height in factored form.

c. Solve.

d. Describe the meaning of both of your answers.

15. Given any factorable quadratic expression, in your own words explain how the values of  $a$ ,  $b$ , and  $c$  affect the factoring process.

## Solve or choose the best answer.

1. What are the solutions of  $x^2 - 16 = 6x$ ?

2. Kandie correctly solved the equation  $x^2 + 6x = 29$  by completing the square. Which equation is part of her solution?

A.  $(x + 3)^2 = 38$

B.  $(x + 3)^2 = 20$

C.  $(x + 6)^2 = 20$

D.  $(x + 6)^2 = 38$

3. Which expression is NOT equivalent to the polynomial

$$54x^3 + 81x^2 - 15x?$$

A.  $3x(9x + 1)(2x - 5)$

B.  $3x(18x^2 + 27x - 5)$

C.  $3x(6x - 1)(3x + 5)$

D.  $3(18x^3 + 27x^2 - 5x)$

4. The amount of paint needed to cover a wall is

proportional to its area. The wall is rectangular and has an area of  $(2b^3 - 72b)$  square meters. Factor the polynomial to find possible expressions for the length and the width of the wall. (Assume the factors are polynomials and factor completely).

5. How many real solutions does the equation

$$6(x + 3)^2 + 2 = 2$$
 have?

A. No Solution

B. One Solution

C. Two Solutions

D. Three Solutions