

Name:  
Instructor:

Date:  
Section:

### Practice Set 5.8

Use the choices to fill in each blank.

zero-factor                      standard form                      zero                      two  
Pythagorean                      slope-intercept form                      one                      three

- $ax^2 + bx + c = 0$  is called the \_\_\_\_\_ of a quadratic equation.
- The theorem that expresses the relationship between the legs and the hypotenuse of a right triangle is the \_\_\_\_\_ theorem.
- To solve equations by factoring use the \_\_\_\_\_ property. This property can only be used when one side of the equation is equal to \_\_\_\_\_.
- A quadratic function may have \_\_\_\_\_, \_\_\_\_\_, or \_\_\_\_\_  $x$ -intercepts.

Solve.

- |                              |                              |           |
|------------------------------|------------------------------|-----------|
| 5. $x(x + 7) = 0$            | 6. $x(x - 8) = 0$            | 5. _____  |
|                              |                              | 6. _____  |
| 7. $3x(x + 5) = 0$           | 8. $2(x + 5)(x - 4) = 0$     | 7. _____  |
|                              |                              | 8. _____  |
| 9. $(3x - 2)(4x + 5) = 0$    | 10. $5x^2 = 45$              | 9. _____  |
|                              |                              | 10. _____ |
| 11. $-3x^2 = 9x$             | 12. $-x^2 + 7x = 0$          | 11. _____ |
|                              |                              | 12. _____ |
| 13. $x^2 + x - 72 = 0$       | 14. $x^2 + 3x - 40 = 0$      | 13. _____ |
|                              |                              | 14. _____ |
| 15. $(3x + 1)(2x - 5) = -6x$ | 16. $(4x - 5)(3x + 8) = 13x$ | 15. _____ |
|                              |                              | 16. _____ |
| 17. $2y^2 - 7y - 15 = 0$     | 18. $3y^2 + 17y = -10$       | 17. _____ |
|                              |                              | 18. _____ |
| 19. $4y^2 - 4y = 15$         | 20. $6y^2 + 5y - 40 = 16$    | 19. _____ |
|                              |                              | 20. _____ |

For each function, find all values of  $a$  for which  $f(a)$  equals the indicated value.

21.  $f(x) = 3x^2 - 14x - 3$   
 $f(a) = 2$

22.  $f(x) = 5x^2 + 23x + 16$   
 $f(a) = 4$

21. \_\_\_\_\_

22. \_\_\_\_\_

23.  $f(x) = 6x^2 + x - 16$   
 $f(a) = -4$

24.  $f(x) = x^2 + x - 40$   
 $f(a) = 16$

23. \_\_\_\_\_

24. \_\_\_\_\_

Use factoring to find the  $x$ -intercepts of the graphs of each equation.

25.  $y = x^2 + 8x + 15$

26.  $y = x^2 + 3x - 28$

25. \_\_\_\_\_

26. \_\_\_\_\_

27.  $y = 8x^2 + 6x - 9$

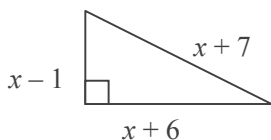
28.  $y = 12x^2 - 13x - 4$

27. \_\_\_\_\_

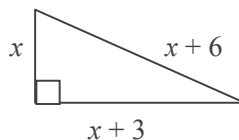
28. \_\_\_\_\_

For each triangle, use the Pythagorean Theorem to find  $x$ .

29.



30.



29. \_\_\_\_\_

30. \_\_\_\_\_

**Problem Solving**

31. Find the base and height of an isosceles triangle if the base of the triangle is 4 less than twice the height and the area is 15.

31. \_\_\_\_\_

32. A rectangular dog pen has an area of 60 square feet. Find the length and width if the length is 11 feet more than the width.

32. \_\_\_\_\_

33. Carole Hottinger, owner of Fantastic Frames in Houston, Texas, is framing a piece of Native American sand art. The outside dimensions of the frame are 24 inches by 20 inches. The area of the picture is 320 square inches. Find the width of the frame itself.

33. \_\_\_\_\_

34. Park ranger, Forest Green, launches a flare from the top of a fire tower, 128 feet off the ground. The flare has an initial velocity of 112 feet per second. The height,  $h$ , of the flare above the ground at any given time,  $t$ , is determined by the function  $h(t) = -16t^2 + 112t + 128$ . Find the time it takes the flare to hit the ground after it is launched.

34. \_\_\_\_\_