

Name: \_\_\_\_\_

**Blitzer Section 6.6:**

**Concept and Vocabulary Check:**

1. An equation that can be written in the standard form  $ax^2 + bx + c = 0$ ,  $a \neq 0$ , is called a/an \_\_\_\_\_.
2. The zero-product principle states that if  $AB = 0$ , then \_\_\_\_\_.
3. The solutions of  $ax^2 + bx + c = 0$  correspond to the \_\_\_\_\_ for the graph of  $y = ax^2 + bx + c$ .

**Practice Exercises:**

In Exercises 1 - 65 odd, solve each equation. Check your solutions to 5, 9, 21, 33, 43, and 53.

1.  $x(x + 7) = 0$

7.  $10(x - 4)(2x + 9) = 0$

5.  $(x - 9)(5x + 4) = 0$

9.  $x^2 + 8x + 15 = 0$

check:

check:

$$13. x^2 - 4x = 21$$

$$25. 3x^2 = -5x$$

$$15. x^2 + 9x = -8$$

$$27. x^2 + 4x + 4 = 0$$

$$21. x^2 = 4x$$

$$33. 2x^2 = 7x + 4$$

**check:**

**check:**

$$35. 5x^2 = 18 - x$$

$$47. (x - 1)(x + 4) = 14$$

$$41. 81x^2 = 25$$

$$51. y(y + 8) = 16(y - 1)$$

$$43. x(x - 4) = 21$$

$$53. 4y^2 + 20y + 25 = 0$$

**check:**

**check:**

$$57. (x - 4)(x^2 + 5x + 6) = 0$$

$$65. (x - 2)^2 - 5(x - 2) + 6 = 0$$

**Applications:**

69. A ball is thrown straight up from a rooftop 300 feet high. The formula

$$h = -16t^2 + 20t + 300$$

describes the ball's height above the ground,  $h$ , in feet,  $t$  seconds after it was thrown. The ball misses the rooftop on its way down and eventually strikes the ground. The graph of the formula is shown in the text on page 470 with tick marks omitted along the horizontal axis.

Draw the graph from the book on page 470 and use the given formula to figure out when the ball's height will be 276 feet. Identify the solution as a point on the graph.

81. The formula

$$N = \frac{t^2 - t}{2}$$

describes the number of football games,  $N$ , that must be played in a league with  $t$  teams if each team is to play every other team once. If a league has 45 games scheduled, how many teams belong to the league, assuming that each team plays every other team once?

83. A rectangular parking lot has a length that is 3 yards greater than the width. The area of the parking lot is 180 square yards. Draw a picture and find the length and width.

**Blitzer Section 9.1:**

**Concept and Vocabulary Check:**

(a) The square root property states that if  $u^2 = d$ , then  $u = \underline{\hspace{2cm}}$ ,  $d > 0$ .

4. The distance,  $d$ , between the points  $(x_1, y_1)$  and  $(x_2, y_2)$  in the rectangular coordinate system is given by the formula  $d = \underline{\hspace{2cm}}$ .

**Practice Exercises:**

In exercises 1 - 39 odd, solve each quadratic equation using the square root property. Simplify radicals and rationalize denominators when necessary. Describe the solutions using set notation.

1.  $x^2 = 16$

9.  $5x^2 = 20$

3.  $y^2 = 81$

11.  $4y^2 = 49$

7.  $x^2 = 50$

13.  $2x^2 + 1 = 51$

$$17. 5z^2 - 7 = 0$$

$$29. (z - 4)^2 = 18$$

$$19. (x - 3)^2 = 16$$

$$33. x^2 - 6x + 9 = 36$$

$$23. (3x + 2)^2 = 9$$

$$37. x^2 + 2x + 1 = 5$$

$$27. (y + 8)^2 = 11$$

$$39. y^2 - 14y + 49 = 12$$

In exercises 41 - 47 odd, **FIRST DRAW THE TRIANGLE FROM THE BOOK** then use Pythagorean's Theorem to find the missing length of the triangle.

41.

43.

45.

In exercises 49 - 57 odd, find the distance between each pair of points. Express answers in simplified radical form and, if necessary, round to two decimal places.

49. (3, 5) and (4, 1)

53. (6, -1) and (9, 5)

51. (-4, 2) and (4, 17)

55. (-7, -5) and (-2, -1)

57.  $(-2\sqrt{7}, 10)$  and  $(4\sqrt{7}, 8)$

**Practice Plus:**

59. The square of the difference between a number and 3 is 25. Find the numbers.

**Applications:**

67. **COPY The important elements of the picture** from page 542. Use the Pythagorean Theorem to find the length of the ladder. Express your answer in radical form and simplify if possible.

69. A baseball diamond is actually a square with 90 foot sides. Draw a picture. What is the distance from home plate to second base?

71. If the area of a circle is  $36\pi$  square inches, find its radius.

79. A machine produces open boxes using square sheets of metal. The figure illustrates that the machine cuts equal-sized squares measuring 2 inches on a side from the corners and then shapes the metal into an open box by turning up the sides. If each box must have a volume of 200 cubic inches, find the size of the length and width of the open box. Begin by COPYING the figures from the book, page 542.