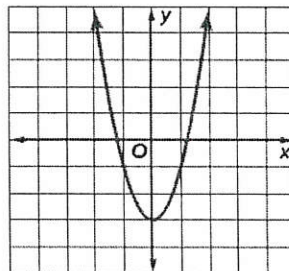NAME _____Key_____ DATE_____ PERIOD _____

# Chapter 9 Mid-Chapter Practice Test

(Lessons 9-1 through 9-5)

SCORE _____

**Part I** *Write the letter for the correct answer in the blank at the right of each question.*

1. Which equation corresponds to the graph shown?
   A $y = x^2 - 3$          C $y = x^2 + 3$
   B $y = -(x-3)^2$          D $y = -(x+3)^2$

   1. $A$

2. Find the coordinates of the vertex of the graph of
   $y = -x^2 - 4x - 6$. Identify the vertex as a maximum
   or a minimum.

   $x = -\frac{b}{2a} = \frac{-(-4)}{2(-1)} = -2$

   $a < 0$ Maximum

   $y = -(-2)^2 - 4(-2) - 6$
   $= -4 + 8 - 6 = -2$

   vertex $(-2, -2)$   $\frac{12}{6 \times 6}{36}$

   Vertex: $(-2, -2)$
   and Maximum

   2. _____

3. Solve $x^2 + 8x + 16 = 169$ by taking the square root of each side.
   ③ $(x+4)^2 = 169$       $x = -4 \pm 13$       ⓑ $b^2 + 12b + 36 = -28 + 36$
   $x + 4 = \pm 13$        ④ ÷2... $b^2 + 12b + 28 = 0$  $\frac{12}{2} = (6)^2 = 36$  $(b+6)(b+6) = 8$

   3. $x = 9, -17$

4. Which equation can be used to solve $2b^2 + 24b + 56 = 0$ by completing the square?
   F $(b+6)^2 = 8$     G $(b+6)^2 = 46$     H $(b+3)^2 = 11$     J $(b+3)^2 = 19$

   4. $F$

5. Which step is *not* performed in the process of solving $r^2 + 6r + 3 = 0$ by completing the square?
   A Add 3 from each side.          C Add 9 to each side.
   B Divide 6 by 2, then square      D Take the square root of each side.

   5. $A$

   5.2.2

**Part II**

Solve each equation. If integral roots cannot be found, estimate the roots by stating the consecutive integers between which the roots lie.

6. $x^2 - 7x + 10 = 0$   ⑥ $-2 \times -5$   $(x-2)(x-5) = 0$  $x = -\frac{b}{2a} = \frac{-(-7)}{2(1)} = 3.5$
   $\frac{}{10}$ $x = 2, 5$

   6. $x = 2, 5$

7. $x^2 + 3 = 7x$
   $1 - 7 + 3$   $4 - 14 + 3 = -7$ ⑦ $x^2 - 7x + 3 = 0$
   $9 - 27 + 3$   $16 \; 42 \; -28 + 10 \; 25 - 35$

   | x | y |
   |---|---|
   | 0 | 3 |
   | 1 | -3 |
   | 2 | -7 |
   | 3 | -15 |
   | 5 | -7 |

   0 and 1   ⑧ cont.

   $x + 3 = \pm 7$
   $x = -3 \pm 7$

   7. 0 and 1, 6 and 7

**For Questions 8 and 9, round to the nearest tenth if necessary.**

8. Solve $x^2 + 6x = 40$ by completing the square.
   $x^2 + 6x + 9 = 40 + 9$ $\{(x+3)^2 = 49$

   6 and 7

   8. $x = 4, -10$

9. Solve $-2x^2 + 8x = 6$ by completing the square.
   $-2(x^2 - 4x + 4) = 6 + -8$ $(x-2)^2 = 1$   $-2(x-2)^2 = -2$

   $x - 2 = \pm 1$
   $x = 2 \pm 1$

   9. $x = 3, 1$

10. The base of a rectangle is 3 less than the height. The area of the rectangle is 10 square inches. What are the dimensions of the rectangle?

   $\frac{1}{2}bh = A$
   $(h)(h-3) = 10$
   $h^2 - 3h = 10$
   $h^2 - 3h - 10 = 0$
   $(h-5)(h+2) = 0$
   $h = 5$
   $b = 5 - 3 = 2$

   2  5

   $h = 5$

   10. $2 \times 5$