

Name _____

6-5B Lesson Master**Questions on SPUR Objectives**

See Student Edition pages 446–449 for objectives.

SKILLS Objective B

1. **Fill in the Blanks** Find a number to make a perfect square trinomial on the left side of the equation, then rewrite the expression as the square of a binomial on the right side.

a. $x^2 + 8x + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

b. $r^2 - 20r + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

c. $t^2 - \frac{2}{3}t + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

d. $x^2 - bx + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

e. $x^2 + 3x + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

f. $x^2 + \frac{b}{4}x + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

In 2–11, find an equation in vertex form equivalent to the given equation.

2. $y = x^2 + 12x + 40$

3. $y = x^2 - 10x + 10$

4. $y = x^2 - 6x - 15$

5. $y = x^2 + 3x + 7$

6. $y = 6x^2 - 18x - 5$

7. $y = -3x^2 + 15x$

8. $y = x^2 - 9x + 4$

9. $y = x^2 + 18x + 81$

10. $y = \frac{1}{4}x^2 - 3x + 2$

11. $8y = 4x^2 + 24x - 6$

In 12–15, find the vertex of the parabola determined by the equation.

12. $y = x^2 - 8x + 13$

13. $y = -x^2 - 16x - 68$

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

15. $y = 4x^2 + 16x - 1$

Name _____

6-5B

page 2

16. Multiple Choice The graphs of which equation(s) have the same vertex as the graph of $y = x^2 + 14x + 52$? _____

A $y = x^2 + 14x - 52$

B $y = -x^2 - 14x - 46$

C $y = 2x^2 + 28x + 101$

D $y = x^2 + 6x + 2$

USES Objective I

17. Suppose a ball is thrown upward so that its height h (in feet) after t seconds is given by $h = -16t^2 + 30t + 5$.

a. Convert the equation to vertex form. _____

b. Find the maximum height the ball reaches.
Round your answer to the nearest tenth. _____

c. After how many seconds does the ball reach the maximum height? _____

18. A trucker averaged 100 deliveries per week when the cost of a delivery was \$20. For every \$0.10 per gallon increase in the cost of gas, the average cost of a delivery increased by \$1, and the average number of deliveries per week dropped by 2. Let n be the number of \$0.10 increases in the cost of gas.

a. Write the cost of each delivery in terms of n . _____

b. Write the average number of deliveries per week in terms of n . _____

c. Write the trucker's average weekly income I as a function of n . _____

d. Convert your answer for Part c to vertex form. _____

e. What price should the company charge to maximize its income? _____

REVIEW Lesson 3-8, Objective D

In 19–22, an arithmetic sequence is given. a. Write an explicit formula for the n th term. b. Find a_{20} .

19. 18, 11, 4, -3, -10, -17, ...

a. _____

b. _____

20. 109, 129, 149, 169, 189, ...

a. _____

b. _____

21. 1.55, 2.56, 3.57, 4.58, 5.59, ...

a. _____

b. _____

22. $\frac{1}{3}, \frac{4}{3}, \frac{7}{3}, \frac{10}{3}, \dots$

a. _____

b. _____