

Name _____

9-1B Lesson Master

Questions on SPUR Objectives
See pages 576–579 for objectives.

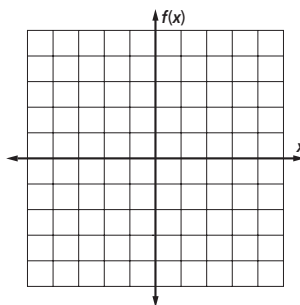
REPRESENTATIONS Objective G

1. Let $f(x) = \frac{1}{4}x^2$.

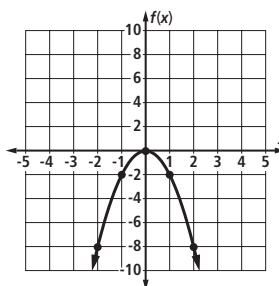
- What are the coordinates of the vertex? _____
- Is the vertex a minimum or a maximum? _____
- Complete the table of values below.

x	-4	-3	-2	-1	0	1	2	3	4
f(x)									

- Graph the equation.



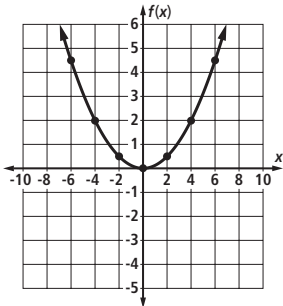
2. Refer to the graph at the right.



- Does the parabola open up or down? _____
- What are the coordinates of the vertex? _____
- Is the vertex a minimum or a maximum? _____
- Use the graph to estimate the value of $f(1.5)$. _____
- Is $(-3, -10)$ a point of the graph? Explain how you know.

Name

3. The graph below has equation $f(x) = 0.125x^2$.

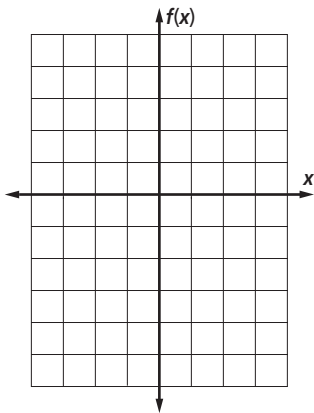


- a. Find y if $x = 0$.
- b. From the graph, estimate the value of y if $x = -5$.
- c. Find the x values if $y = 2$.
- d. From the graph, estimate the value(s) of x for which $y = 4.5$.
- e. What is the axis of symmetry for this function?
4. Consider the function $f(x) = -\frac{2}{5}x^2$.

a. Complete the table of values below.

x	-15	-10	-5	0	5	10	15
$f(x)$							

b. Graph the equation.



- c. Use the graph to estimate the value(s) of x when $y = -25.6$.
- d. The point $(14, -78.4)$ lies on this parabola. What are the coordinates of its reflection image over the y -axis?

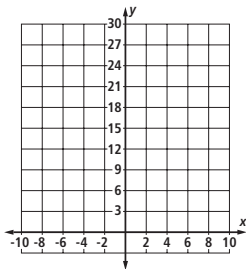
Name _____

9-2B Lesson Master

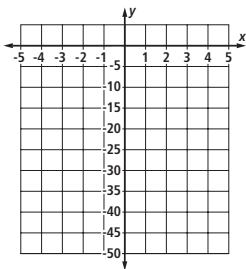
Questions on SPUR Objectives
See pages 576–579 for objectives.

SKILLS Objective A

1. Solve $\frac{3}{4}x^2 = 27$ by using a graph.



2. Solve $-5x^2 = -45$ by graphing $y = -5x^2$ and $y = -45$.



3. Let $y = 2x^2 + 15$. Solve $-2x^2 + 15 = -17$ using the table.

x	-5	-4	-3	-2	-1	0	1	2	3	4
y	-35	-17	-3	7	13	15	13	7	-3	-17

4. Let $f(x) = 4(x - 1)^2$. Create a table of values to help you solve $4(x - 1)^2 = 16$.

x	-3	-2	-1	0	1	2	3	4
f(x)								

In 5–10, solve the equation. Give the exact answer(s).

5. $x^2 = 20$

6. $6a^2 = 72$

7. $b^2 - 235 = 165$

8. $12 - 7c^2 = -51$

9. $2(x - 9)^2 = 32$

10. $\frac{3}{5}(2d + 3)^2 = 15$

Name _____

9-2B

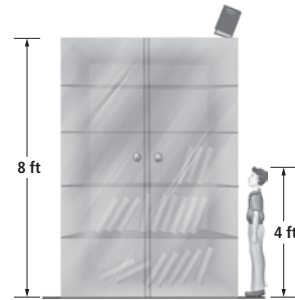
page 2

USES Objectives D and E

In 11–14, use the equation $d = 16t^2$ where d = distance in feet, and t = time in seconds. Approximate the answer to the nearest thousandth of a second.

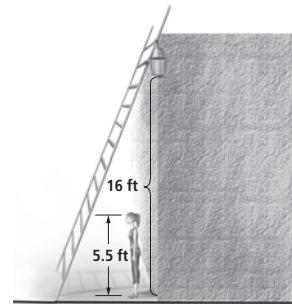
11. Emily drops a ball from a ledge in the loft of her home, which is 13 feet above the family room floor. How long will it take the ball to hit the floor? _____

12. A book falls off the top of an 8-foot shelf. Theodore is 4 feet tall. If it takes Theodore 2 seconds to respond to the fall and get out of the way, does the book hit him? Explain.



13. Cats are known to always land on their feet. A cat climbed to the top of a 30-foot tree. She lost her footing and fell to the ground. After how many seconds is she back on her feet? _____

14. Caitlyn bumped a ladder, which had a pail of paint sitting on it 16 feet from the ground. She is 5.5 feet tall. How many seconds does she have to react so the pail of paint doesn't land on her? Explain.



15. A 20-foot ladder is being used to clean windows that are 16 feet from the ground on Sean's house. How far from the base of the house should the ladder be placed so that the top of the ladder reaches the windows? _____

16. Cheryl has two square gardens. The length of the larger garden is 5 more than twice the length of the smaller garden. The area of the larger garden is 961 square feet.

a. What is the length of the smaller garden? _____

b. What is the area of the smaller garden? _____

Name _____

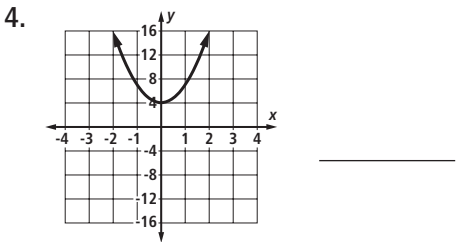
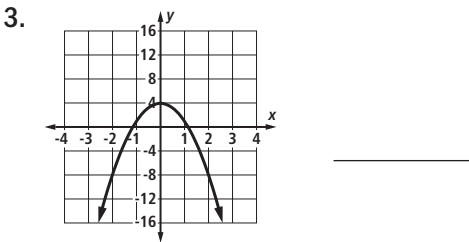
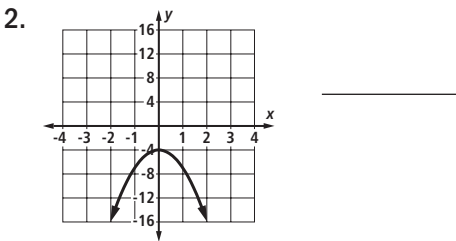
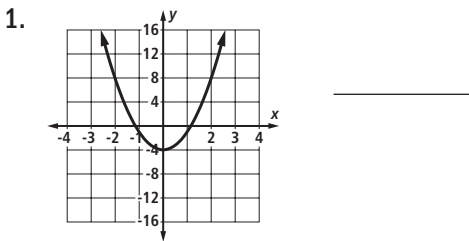
9-3A Lesson Master

Questions on SPUR Objectives
See pages 576–579 for objectives.

REPRESENTATIONS Objective H

In 1–4, match the graph with its equation.

- A $y = -3x^2 + 4$ B $y = 3x^2 + 4$ C $y = 3x^2 - 4$ D $y = -3x^2 - 4$



5. Let $f(x) = -x^2 + 3x + 10$.

a. Fill in the table.

x	-5	-4	-3	-2	-1	0	1	2	3	4	5
$f(x)$											

b. Using the table, estimate the vertex. _____

c. Identify the x -intercepts. Identify the y -intercept. _____

d. Find an equation of the axis of symmetry. _____

6. Graph $y = 2x^2 + 17x - 33$ on your calculator.

a. Give the dimensions of the window that allow you to see the vertex and x -intercepts. _____

b. Estimate the coordinates of the vertex to the nearest tenth. _____

c. Estimate the x -intercepts to the nearest tenth. _____

7. *True or False.* Consider $h(x) = -4x^2 - 5x + 1$.

a. The graph of $h(x)$ opens down. _____

b. The vertex is approximately $(-0.6, 2.6)$. _____

c. The graph has no x -intercepts. _____

Name _____

9-4A Lesson Master

Questions on SPUR Objectives
See pages 576–579 for objectives.

USES Objective D

1. Suppose the height h of a ball versus time t is given by the formula $h(t) = -16t^2 + 23t + 6$.
 - a. Is the height of the ball being measured in feet or meters? _____
 - b. At what height was the ball released? _____
 - c. What was the initial upward velocity of the ball? _____
2. Mourette is a member of her high school golf team. She hits a golf ball off the ground with an initial upward velocity of 60 meters per second.
 - a. Write a formula describing the height h of the ball (in meters) after t seconds. _____
 - b. After how many seconds, to the nearest tenth, will the golf ball land on the ground? _____
 - c. What is the maximum height the golf ball reaches? _____
3. Suppose a soccer ball is kicked off of the ground with an initial upward velocity of 73 feet per second at the same time a baseball is released from a height of 5 feet 6 inches with an initial upward velocity of 24 feet per second.
 - a. Which ball will stay in the air longer? Justify your answer.

 - b. Which ball will reach a higher point? Justify your answer.

4. During Super Bowl XXXIII, Denver Bronco quarterback John Elway threw an 80-yard pass (longest of his career) to Rod Smith. Suppose Elway released the ball from a height of 6 feet 3 inches and that the maximum height the ball reached was 8 feet and this occurred 38 yards away from Elway.
 - a. What is a third point that can be assumed on the path of the football from Elway to Smith? _____
 - b. Use the three points and quadratic regression to find a formula for the height of the football in feet based on the yards it is from Elway. _____
 - c. At about what height did Rod Smith catch the football? _____

Name

9-5B Lesson Master

Questions on SPUR Objectives
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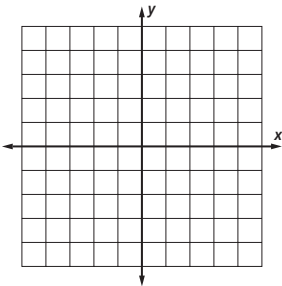
SKILLS

Objective B

1. If $2x^2 - 5x - 12 = 0$, complete the following.
- a. The equation is given in the form $ax^2 + bx + c = 0$. What are the values of a , b , and c ?
- b. Solve the equation using the Quadratic Formula.

- c. Fill in the table of values below.
- d. Graph the equation to check your solutions.

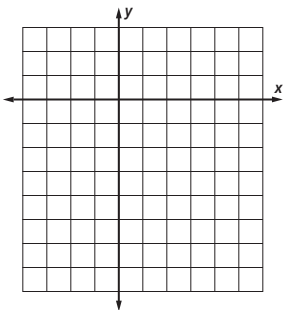
x	-2	0	2	4	6
y					



2. If $25 = -2x^2 + 15x$, complete the following.
- a. Rewrite the equation in the form $ax^2 + bx + c = 0$. What are the values of a , b , and c ?
- b. Solve the equation using the Quadratic Formula.

- c. Fill in the table of values below.
- d. Graph the equation to check your solutions.

x	2	3	4	5	6
y					



Name _____

9-5B

page 2

In 3–5, solve using the Quadratic Formula. Give exact answers.

3. $x^2 - 6x + 6 = 0$

4. $-4r = 2r^2 + 1$

5. $y^2 = 7y - 1$

In 6–11, solve using the Quadratic Formula. Round answers to the nearest hundredth.

6. $3a^2 - 6 = 0$

7. $5m^2 - 10 = 7m$

8. $5y^2 = 6y + 27$

9. $21n^2 - n = 2$

10. $6(h^2 - 2h) = 7$

11. $4x^2 - 15x = 0$

12. In 15-meter platform diving, the function $h(t) = -4.9t^2 + 4.3t + 15$ gives the approximate height h (in meters) above the water a diver is t seconds after launching the dive.
How many seconds elapse from the time the diver leaves the 15-meter platform until the diver hits the water?

13. If a diver dives from a 25-foot platform with an initial velocity of 18 feet per second, the diver's approximate height in feet can be represented by the function $h(t) = -16t^2 + 18t + 25$, where h is the height and t is the time in seconds.

- a. Find $h(1)$. Write a sentence explaining what it means.

- b. Estimate the length of time the diver will be in the air before hitting the water.

Name _____

9-6B Lesson Master**Questions on SPUR Objectives**

See pages 576–579 for objectives.

SKILLS Objective B

In 1–12, find all real solutions to the equations using the Quadratic Formula. Round your answers to the nearest hundredth.

1. $5a^2 - 2a + 1 = 0$

2. $-2b^2 + 5b + 3 = 0$

3. $25 - 20c + c^2 = 0$

4. $7d^2 - d = 3$

5. $-e^2 - 36 = 12e$

6. $3f^2 = 4f - 2$

7. $6g^2 + 18g = 54$

8. $h(3 - h) - 2.25 = 0$

9. $3(j + 7) = 7j^2$

10. $3k^2 - 6 = k$

11. $m^2 = 11(m - 2)$

12. $3(n - 9) = 2n(n - 7)$

Name _____

9-6B

page 2

PROPERTIES Objective C

In 13–16, a quadratic equation is given.

- a. Find the discriminant.
- b. Give the number of real solutions to the equation.

13. $23x^2 + 12x - 7 = 0$

a. _____

b. _____

14. $-4p^2 + 16p - 16 = 0$

a. _____

b. _____

15. $r = \frac{r^2}{5} + \frac{1}{2}$

a. _____

b. _____

16. $9s\left(s - \frac{1}{3}\right) = -6$

a. _____

b. _____

17. The discriminant of $12t^2 + bt + 7 = 0$ is -272 . Find the value(s) of b . _____

18. The discriminant of the equation $ax^2 + bx + c = 0$ is 0. How many x -intercepts are on the graph of this equation? _____

19. The discriminant of the equation $ax^2 + bx + c = 0$ is -24 . What does this indicate about the graph of $y = ax^2 + bx + c$? _____

20. An equation in the form $y = ax^2 + bx + c$ is graphed. Tell whether the value of the discriminant is positive, negative, or zero. _____

