

**Unit 2 Remediation**  
**Learning Target Set F**

Key

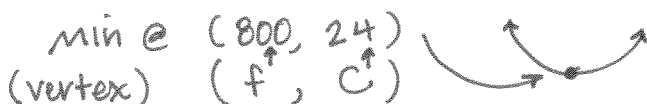
**Glencoe Algebra 2 Text Practice**

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**Example 4** 32. **PRODUCTION** A financial analyst determined the cost in thousands of dollars of producing bicycle frames is  $C = 0.000025f^2 - 0.04f + 40$ , where  $f$  is the number of frames produced.

- a. Find the number of frames that minimizes cost. 800
- b. What is the total cost for that number of frames? \$24,000

**254** | Lesson 5-1 | Graphing Quadratic Functions



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60. **BASEBALL** Lolita throws a baseball into the air and the height  $h$  of the ball in feet at a given time  $t$  in seconds after she releases the ball is given by the function  $h(t) = -16t^2 + 30t + 5$ .

- a. State the domain and range for this situation. Domain: (0, 2.029)  
Range: (0, ∞)
  - b. Find the maximum height the ball will reach. 19.0625 feet
- MAX: (0.93750089..., 19.0625)

x-intercept/  
zero: (2.0290156, 0)

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4. **PHYSICAL SCIENCE** From 4 feet above the ground, Maya throws a ball upward with a velocity of 18 feet per second. The height  $h(t)$  of the ball  $t$  seconds after Maya throws the ball is given by  $h(t) = -16t^2 + 18t + 4$ . Find the maximum height reached by the ball and the time that this height is reached. (Lesson 5-1)

max/vertex: (0.56250139, 9.0625)  
(t ↑, h(t) ↑)

max height = 9.0625 feet  
time @ max height = 0.5625 seconds.

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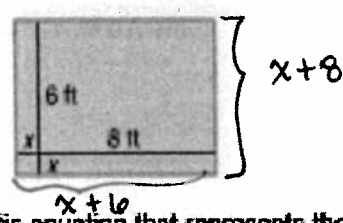
9. **BASEBALL** A baseball is hit upward with a velocity of 40 feet per second. Ignoring the height of the baseball player, how long does it take for the ball to fall to the ground? Use the formula  $h(t) = v_0t - 16t^2$  where  $h(t)$  is the height of an object in feet,  $v_0$  is the object's initial velocity in feet per second, and  $t$  is the time in seconds. (Lesson 5-2)

$h(t) = v_0t - 16t^2$   
 $h(t) = 40t - 16t^2$

x-intercept/  
zero: (2.5, 0)  
(t ↑, h(t) ↑)

2.5 seconds

16. PATIO Eli is putting a cement slab in his backyard. The original slab was going to have dimensions of 8 feet by 6 feet. He decided to make the slab larger by adding  $x$  feet to each side. The area of the new slab is 120 square feet. (Lesson 5-3)



$$A = (x+6)(x+8)$$

$$120 = x^2 + 14x + 48$$

- a. Write a quadratic equation that represents the area of the new slab.
- b. Find the new dimensions of the slab.

$$x^2 + 14x - 72 = 0$$

$$(x+18)(x-4) = 0$$

$$x = -18 \quad x = 4$$

$$x+8 = 4+8 = 12$$

$$x+6 = 4+6 = 10$$

dimensions:  
10 feet x 12 feet

19. BASEBALL A baseball is hit upward at 120 feet per second. Use the formula  $h(t) = v_0 t - 16t^2$ , where  $h(t)$  is the height of an object in feet,  $v_0$  is the object's initial velocity in feet per second, and  $t$  is the time in seconds. Ignoring the height of the ball when it was hit, how long does it take for the ball to hit the ground?

$$h(t) = v_0 t - 16t^2$$

$$h(t) = 120t - 16t^2$$

x-intercept/zero:  $(7.5, 0)$   
 $(t, h(t))$

$$h(t) = 0$$

7.5 seconds

58. PHYSICAL SCIENCE Lauren throws a ball with an initial velocity of 40 feet per second. The equation for the height of the ball is  $h = -16t^2 + 40t + 5$ , where  $h$  represents the height in feet and  $t$  represents the time in seconds. When will the ball hit the ground?

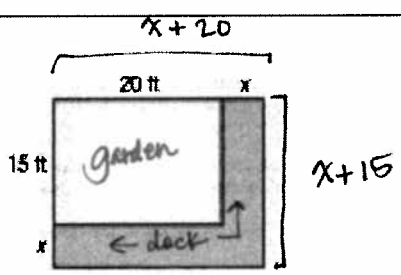
$$h = -16t^2 + 40t + 5$$

x-intercept/zero:  $(2.6193064, 0)$   
 $t$        $h$

$$h = 0$$

approx. 2.62 seconds

68. Solomon wants to put a deck along two sides of his garden. The deck width will be the same on both sides and the total area of the garden and deck cannot exceed 500 square feet. How wide can the deck be?



$$A = (x+20)(x+15)$$

of DECK and GARDEN

$$500 = (x+20)(x+15)$$

$$500 = x^2 + 35x + 300$$

$$0 = x^2 + 35x - 200$$

$$0 = (x+40)(x-5)$$

$$x = -40 \quad x = 5$$

5 feet maximum width  
Between 0 and 5 feet