

# Modules 20 and 21 Review Packet

**LESSON**  
**20-2** **Connecting Intercepts and Linear Factors**  
*Practice and Problem Solving*

Graph each quadratic function. Identify the x-intercepts, vertex and axis of symmetry of each parabola. Give the Domain and Range.

1.  $y = (x - 1)(x - 5)$

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2.  $y = (x - 3)(x + 2)$

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5.  $y = (x - 1)(x + 3)$

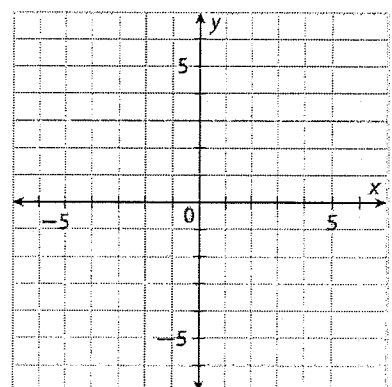
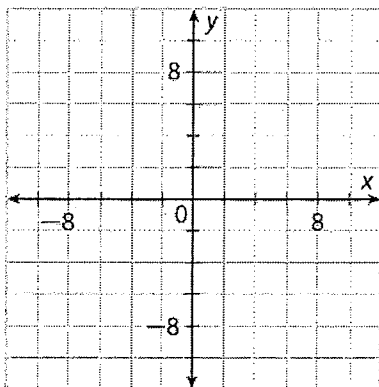
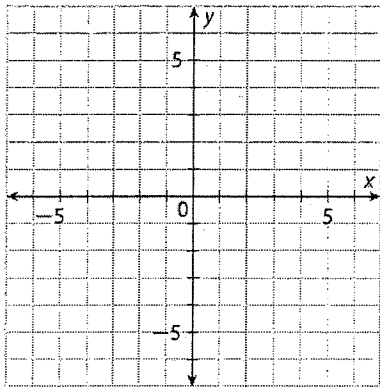
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Write each function in standard form.

3.  $y = 5(x + 3)(x - 2)$

4.  $y = -2(x - 3)(x - 1)$

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**LESSON**  
**20-3****Applying the Zero Product Property to Solve Equations**  
*Practice and Problem Solving***Find the zeros of each function.**

1.  $f(x) = (x - 3)(x + 5)$

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2.  $f(x) = x(x - 1)$

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3.  $f(x) = (x + 1)(x + 1)$

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4.  $f(x) = (x - 5)(x + 1)$

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5.  $f(x) = x(x - 3)$

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6.  $f(x) = (x - 6)(x + 1)$

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7.  $f(x) = (x - 11)(x - 1)$

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8.  $f(x) = (x + 13)(x + 5)$

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9.  $f(x) = (x + 5)(x - 8)$

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10.  $f(x) = (x - 7)(x + 2)$

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**Solve.**

15. The height of an arrow after it has left the bow can be modeled by the function  $h = 2t(t - 9)$ , where  $h$  is the height of the arrow and  $t$  is the time in seconds. How long is the arrow in the air before it hits the target?

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16. The height of a person after he has left the trampoline in a jump can be modeled by the function  $h = -3t(t - 8)$ , where  $h$  is the height of the person and  $t$  is the time in seconds. How long is the person in the air before he lands back on the trampoline?

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**LESSON**  
**21-1**

**Solving Equations by Factoring  $x^2 + bx + c$**

*Practice and Problem Solving*

**Factor.**

3.  $x^2 - 3x - 4$

4.  $x^2 + 4x + 3$

5.  $x^2 - 14x + 45$

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6.  $x^2 + 11x + 24$

7.  $x^2 - 12x + 32$

8.  $x^2 - 15x + 36$

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9.  $x^2 - 11x - 42$

10.  $x^2 - 18x + 81$

11.  $x^2 - 7x - 44$

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**Solve by factoring.**

13.  $x^2 = 9x - 18$

14.  $x^2 - 15x + 50 = 0$

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15.  $x^2 = -4x + 21$

16.  $x^2 + 7x = 8$

17.  $x^2 = -2x + 15$

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**Solve.**

19. The length of a small bathroom is  $(x+5)$ feet and the width is  $(x+3)$ feet.  
The rectangular bathroom has an area of  $120 \text{ ft}^2$ .

Find a polynomial to represent the Area of the bathroom.

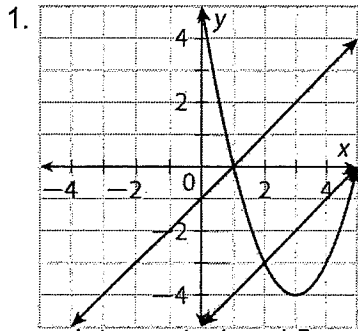
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Use the polynomial to find the length and width of the bathroom.

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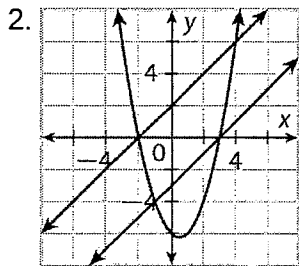
### LESSON 20-2

#### Practice and Problem Solving



x-intercepts 1 and 5

Axis of symmetry:  $x = 3$

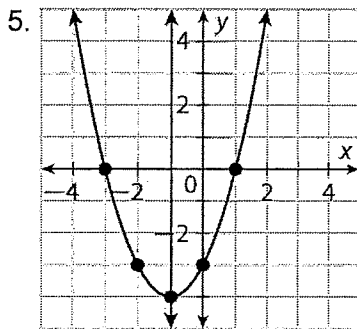


x-intercepts -2 and 3

Axis of symmetry:  $x = \frac{1}{2}$

3.  $y = 5x^2 + 5x - 30$

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



### LESSON 20-3

#### Practice and Problem Solving

1.  $x = 3, x = -5$
2.  $x = 0, x = 1$
3.  $x = -1$
4.  $x = 5, x = -1$
5.  $x = 0, x = 3$
6.  $x = 6, x = -1$
7.  $x = 11, x = 1$
8.  $x = -13, x = -5$
9.  $x = -5, x = 8$
10.  $x = 7, x = -2$
15. 9 s
16. 8 s

### LESSON 21-1

#### Practice and Problem Solving

3.  $(x + 1)(x - 4)$
4.  $(x + 1)(x + 3)$
5.  $(x - 9)(x - 5)$
6.  $(x + 3)(x + 8)$
7.  $(x - 8)(x - 4)$
8.  $(x - 3)(x - 12)$
9.  $(x + 3)(x - 14)$
10.  $(x - 9)(x - 9)$
11.  $(x + 4)(x - 11)$
13.  $x = 6, x = 3$
14.  $x = 5, x = 10$
15.  $x = -7, x = 3$
16.  $x = -8, x = 1$
17.  $x = -5, x = 3$
19.  $x^2 + 8x + 15 = 120$ ; 12 feet, 10 feet