Bell Work

1. Describe the transformation of the parent quadratic function.

$$f(x) = \frac{5}{3}(x+3)^2 + 6$$

2. What is the area of a rectangle formula?

3. What is the range in interval for the constant parent function?

4. Find the roots of the following quadratic function.

$$f(x) = x^2 + 6x - 40$$

1. The height of a piece of art hanging on a wall is 26 cm longer than it width. Its area is 672 cm^2. What are the dimensions of the piece of art?

$A = hw$

$672 = (w + 26)w$ *Multiply the 2 sides.*

$672 = w^2 + 26w$

Set 1 side = 0.

$0 = w^2 + 26w - 672$

Factor.

$0 = (w - 16)(w + 42)$

$w = 16, \ -42$ *Choose the positive answer.*

Find the other answer.

$h = 16 + 26 = 42$

Answer the question in a complete sentence.

The height is 42 cm and the width is 16 cm.

2. The length of a room is 8 ft shorter than the width. The area of the room is 209 square ft. What are the dimensions of the room?

$A = lw$

$209 = (w - 8)w$ *Multiply the 2 sides.*

$209 = w^2 - 8w$

Set 1 side = 0.

$0 = w^2 - 8w - 209$

Factor.

$0 = (w + 11)(w - 19)$

$w = -11,\ 19$ *Choose the positive answer.*

Find the other answer.

$l = 19 - 8 = 11$

Answer the question in a complete sentence.

The room is 11 ft by 19 ft.

3. A towel has a width that is 6 cm more than its length. Its area is 315 cm^2. What are the towel's dimensions?

$A = lw$

$315 = l(l - 6)$ *Multiply the 2 sides.*

$315 = l^2 - 6l$ *Set 1 side = 0.*

$0 = l^2 - 6l - 315$ *Factor.*

$0 = (l - 15)(l + 21)$

$w = 15, \ -21$ *Choose the positive answer.*

Find the other answer.

$w = 15 + 6 = 21$

Answer the question in a complete sentence.

The towel is 15 cm by 21 cm.

4. The length of a rug is 3 times the width plus 9 in. The area of the rug is 2262 in^2. What are the dimensions of the rug?

$A = lw$

$2262 = (3w + 9)w$

$\frac{2262}{3} = \frac{(3w + 9)}{3}w$ *Simplify before multiplying.*

$754 = w^2 + 3w$ *Set 1 side = 0.*

$0 = w^2 + 3w - 754$ *Factor.*

$0 = (w + 26)(w - 29)$

$w = -26,\ 29$ *Choose the positive answer.*

Find the other answer.

$l = 3(29) + 9 = 96$

Answer the question in a complete sentence.

The rug is 29 cm by 96 cm.

5. The height of the front of a building is twice the width minus 4 meters. The area of the front of the building is 448 m^2. What are the dimensions of the front of the building?

$A = lw$

$448 = l(2l - 4)$

$\frac{448}{2} = l\frac{(2l - 4)}{2}$ *Simplify before multiplying.*

$224 = l^2 - 2l$ *Set 1 side = 0.*

$0 = l^2 - 2l - 224$ *Factor.*

$0 = (l - 16)(l + 14)$

$l = 16, -14$ *Choose the positive answer.*

Find the other answer.

$h = 2(16) - 4 = 28$

Answer the question in a complete sentence.

The front of the building is 16 m by 28 m.

6. The width of a towel is twice the length plus 16 cm. The area of the towel is 3840 square cm. What are the dimensions of the towel?

$A = lw$

$3840 = l(2l + 16)$

$\frac{3840}{2} = l\frac{(2l + 16)}{2}$ *Simplify before multiplying.*

$1920 = l^2 + 8l$

$0 = l^2 + 8l - 1920$ *Set 1 side = 0.*

$0 = (l - 40)(l + 48)$ *Factor.*

$l = 40, -48$ *Choose the positive answer.*

Find the other answer.

$w = 2(40) + 16 = 96$

Answer the question in a complete sentence.

The towel is 40 cm by 96 cm.

7. The length of a rug is three times the width plus 12 cm. The area of the rug is 4320 square cm. What are the dimensions of the rug?

$A = lw$

$4320 = (3w + 12)w$

$\frac{4320}{3} = \frac{(3w + 12)}{3}w$ *Simplify before multiplying.*

$1440 = w^2 + 4w$

Set 1 side = 0.

$0 = w^2 + 4w - 1440$

Factor.

$0 = (w + 40)(w - 36)$

$w = -40,\ 36$ *Choose the positive answer.*

Find the other answer.

$l = 3(36) + 12 = 120$

Answer the question in a complete sentence.

The rug is 436 cm by 120 cm.

8. The length of a hallway is four times the width minus 4 m. The area of the hallway is 24 m^2. What are the dimensions of the hallway?

$$A = lw$$

$$24 = (4w - 4)w$$

$$\frac{24}{4} = \frac{(4w - 4)}{4}w$$

Simplify before multiplying.

$$6 = w^2 - w$$

Set 1 side = 0.

$$0 = w^2 - w - 6$$

Factor.

$$0 = (w + 2)(w - 3)$$

$$w = -2,\ 3$$

Choose the positive answer.

Find the other answer.

$$l = 4(3) - 4 = 8$$

Answer the question in a complete sentence.

The hallway is 3 m by 8 m.

Assignment:

Solving Word Problems by Factoring A Worksheet