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$$2x(x^2 - 3x + 2) = 0$$

$$2x(x-2)(x-1) = 0$$

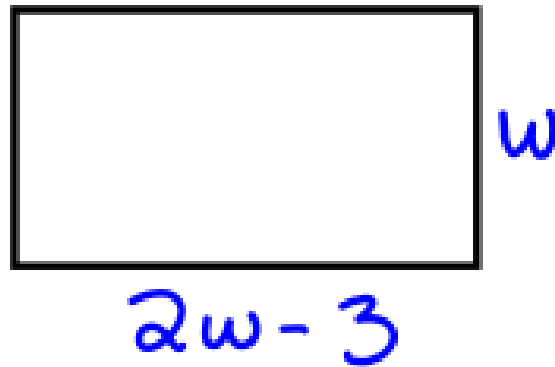
$$x = 0, 2, 1$$

Chapter 10 Test Review Story Problem Example

The room's length is 3 feet less than twice its width. The room's area is 135 square feet. What are the dimensions of the room in feet?

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$$A = l \cdot w$$

$$135 = (2w - 3)(w)$$

$$135 = 2w^2 - 3w$$

$$0 = 2w^2 - 3w - 135$$

Discriminant $b^2 - 4ac$

$$\sqrt{1089} = 33 \quad \text{Can be factored}$$

$$2w^2 - 3w - 135$$

$$a \quad c \\ 2 \times 135 = 270$$

-18 and 15

-9

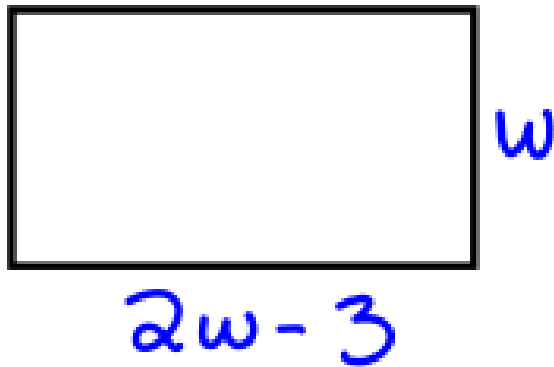
	$2w$	15
w	$2w^2$	$15w$
	$-18w$	-135

$$(2w + 15)(w - 9) = 0$$

$$w = -7\frac{1}{2} \text{ or } \boxed{9}$$

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The room's length is 3 feet less than twice its width. The room's area is 135 square feet. What are the dimensions of the room in feet?



$$w = 9 \text{ or } -7\frac{1}{2}$$

only 9 is possible

$$\text{width} = 9 \text{ ft}$$

$$\begin{aligned} \text{length} &= 2(9) - 3 \\ &= 15 \text{ ft} \end{aligned}$$

Chapter 10 Test Review Story Problem Example

The length (l) of a box is 3 inches less than the height (h). The width (w) is 9 inches less than the height. The box has a volume of 324 cubic inches. What are the dimensions of the box?

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$$h = x \quad (x-3)(x-9)(x) = 324$$

$$l = x - 3 \quad \text{FOIL} \quad (x^2 - 9x - 3x + 27)(x) = 324$$

$$w = x - 9 \quad (x^2 - 12x + 27)(x) = 324$$

$$V = l \cdot w \cdot h$$

$$\text{Dist} \quad x^3 - 12x^2 + 27x = 324$$

$$\text{Set} = 0 \quad x^3 - 12x^2 + 27x - 324 = 0$$

Chapter 10 Test Review Story Problem Example

The length (l) of a box is 3 inches less than the height (h). The width (w) is 9 inches less than the height. The box has a volume of 324 cubic inches.

What are the dimensions of the box?

$$(x^3 - 12x^2) + 27x - 324 = 0$$

Group

$$x^2(x - 12) + 27(x - 12) = 0$$

$$(x - 12)(x^2 + 27) = 0$$

$$\text{height} = 12 \quad x = 12$$

$$\text{length} = 12 - 3 = 9$$

$$\text{width} = 12 - 9 = 3$$

Day 2

Chapter 10 Test Review Story Problem Example

A soccer goalie kicks the ball from 1 foot above the ground with an initial upward velocity of 40 feet per second. Use the vertical motion model $h = -16t^2 + vt + s$ to find the time it takes for the ball to reach the ground. Round the nearest tenth of a second.

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$$h = -16t^2 + 40t + 1$$

quadratic formula

$$\frac{-40 \pm \sqrt{40^2 - 4(-16)(1)}}{2(-16)}$$

$$\frac{-40 \pm \sqrt{1664}}{-32}$$

$$\frac{-40 \pm 40.8}{-32}$$

$$-.03 \text{ or } 2.5$$

only 2.5 seconds
is a solution

Solve the quadratic.

1. $20x^2 - 100x + 125 = 0$

Solve the quadratic.

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$$5(4x^2 - 20x + 25) = 0$$

Perfect Square
Trinomial
Subtraction

$$5(2x - 5)^2 = 0$$

$$x = \frac{5}{2}$$

Solve the quadratic.

2. $-3x^3 - 15x^2 - 12x = 0$

Solve the quadratic.

$$2. -3x^3 - 15x^2 - 12x = 0$$

$$-3x(x^2 + 5x + 4) = 0$$

$$-3x(x + 4)(x + 1) = 0$$

$$x = 0, -4, -1$$

Chapter 10 Test Review Problems

Solve the quadratic.

3. $8x^3 - 3x^2 + 16x - 6 = 0$

Solve the quadratic.

$$3. (8x^3 - 3x^2)(+ 16x - 6) = 0$$

$$x^2(8x-3) + 2(8x-3) = 0$$

$$(8x-3)(x^2+2) = 0$$

$$x = \frac{3}{8}$$