

## DHW Check

Multi-step equations #11

Multi-step equations #25

When you are finished, go to my website and begin CW worksheet Solving Equations with Variables on both sides.

# Multi-Step Equations Word Problems

1) Alex needs to rent a moving truck.  
Suppose Company A charges a rate of \$40 per day and Company B charges \$60 fee plus \$20 per day. For what number of days is the cost the same?

$x$  - # of days

3 days

$$\begin{aligned}40x &= 20x + 60 \\40x - 20x &= 20x - 20x + 60 \quad (\text{subt. prop.} =) \\20x &= 60 \\ \frac{20x}{20} &= \frac{60}{20} \quad (\text{div. prop.} =) \\x &= 3\end{aligned}$$

Three times a number minus 8 is equal to 5 times the same number plus 10. What is the number?  
 $x$  - the number

A.  $-9$

B. 1

C. 9

$$3x - 8 = 5x + 10$$

$$3x - 3x - 8 = 5x - 3x + 10 \quad (\text{subt. prop.} =)$$

$$-8 = 2x + 10$$

$$-8 - 10 = 2x + 10 - 10 \quad (\text{subt. prop.} =)$$

$$-18 = 2x$$

$$\frac{-18}{2} = \frac{2x}{2} \quad (\text{div. prop.} =)$$

$$-9 = x$$

Emily is 4 years older than Grace. When their ages are added together, they equal 26. How old is Emily?

A. 13 years old

B. 15 years old

C. 17 years old

$x$  - Grace's Age

$x+4$  - Emily's Age

$$x+4 = 11+4 = 15$$

$$x+x+4 = 26$$

$$2x+4 = 26$$

$$2x+4-4 = 26-4 \text{ (subt. prop. =)}$$

$$2x = 22$$

$$\frac{2x}{2} = \frac{22}{2} \text{ (div. prop. =)}$$

$$x = 11$$

Four <sup>+4</sup> more than twice<sup>2</sup> a number is two<sup>//</sup> less than three<sup>3</sup> times the number. Find the number.

$x$  - the #

$$2x + 4 = 3x - 2$$

$$2x - 2x + 4 = 3x - 2x - 2 \text{ (subt. prop. =)}$$

$$4 = x - 2$$

$$4 + 2 = x - 2 + 2 \text{ (add. prop. =)}$$

$$6 = x$$

The number is 6.

The table below shows the models for the cost, in dollars, for renting a car for  $x$  miles from two different rental companies. At what number of miles will the cost be the same?

200 miles

|           |              |
|-----------|--------------|
| Company a | $1.25x + 50$ |
| Company b | $1.3x + 40$  |

$$1.25x + 50 = 1.3x + 40$$

$$1.25x - 1.25x + 50 = 1.3x - 1.25x + 40 \text{ (subt. prop. =)}$$

$$50 = .05x + 40$$

$$50 - 40 = .05x + 40 - 40 \text{ (subt. prop. =)}$$

$$10 = .05x$$

$$\frac{10}{.05} = \frac{.05x}{.05} \text{ (div. prop. =)}$$

$$200 = x$$

Three less than twice a number is three times the sum of one and the number.

What is the number?

$x$  - the #

$$2x - 3 = 3(1 + x)$$

$$2x - 3 = 3 + 3x \text{ (dist. prop.)}$$

$$2x - 2x - 3 = 3 + 3x - 2x \text{ (subt. prop.=)}$$

$$-3 = 3 + x$$

$$-3 - 3 = 3 - 3 + x \text{ (subt. prop.=)}$$

$$-6 = x$$



A telephone company charges a monthly fee of \$24 for 100 minutes of long distance service. The customer must then pay 7 cents per additional minute over 100. Todd's phone bill for October was \$26.38, not including taxes. How many total minutes of long distance did Todd use in October?

A. 34

B. 66

C. 134

D. 377

$$24 + .07x = 26.38$$

$x = \# \text{ min. over } 100$

$$24 - 24 + .07x = 26.38 - 24 \text{ (subt. prop. =)}$$

$$.07x = 2.38$$

$$\frac{.07x}{.07} = \frac{2.38}{.07} \text{ (div. prop. =)}$$

$$x = 34$$

$$100 + 34 = 134$$

Eight more than twice a number is four times the difference between five and the number. What is the number?

$x = \text{the \#}$

$$2x + 8 = 4(5 - x)$$

$$2x + 8 = 20 - 4x \text{ (dist. prop.)}$$

$$2x + 4x + 8 = 20 - 4x + 4x \text{ (add. prop. =)}$$

$$6x + 8 = 20$$

$$6x + 8 - 8 = 20 - 8 \text{ (subt. prop. =)}$$

$$6x = 12$$

$$\frac{6x}{6} = \frac{12}{6} \text{ (div. prop. =)}$$

$$x = 2$$

Sixteen is fourteen less than the product of a number and five. What is the number?

$x = \text{the \#}$

$$16 = 5x - 14$$

$$16 + 14 = 5x - 14 + 14 \text{ (add. prop. =)}$$

$$30 = 5x$$

$$\frac{30}{5} = \frac{5x}{5} \text{ (div. prop. =)}$$

$$6 = x$$

Two times a number plus one equals four times the same number minus five. What is the number?

$x = \text{the \#}$

A. -3

B. -1

C. 3

$$2x + 1 = 4x - 5$$

$$2x - 2x + 1 = 4x - 2x - 5 \text{ (subt. prop. =)}$$

$$1 = 2x - 5$$

$$1 + 5 = 2x - 5 + 5 \text{ (add. prop. =)}$$

$$6 = 2x$$

$$\frac{6}{2} = \frac{2x}{2} \text{ (div. prop. =)}$$

$$3 = x$$

Suppose your club is selling candles to raise money. It costs \$100 to rent a booth from which to sell the candles. If the candles cost your club \$1 each and are sold for \$5 each, how many candles must be sold to equal your booth rent?

$x = \#$  of candles

$$5x - 1x \quad \text{or} \quad (5 - 1)x = 100$$

25 candles

$$4x = 100$$

$$\frac{4x}{4} = \frac{100}{4} \quad (\text{div. prop.} =)$$

$$x = 25$$

**HW: Finish Word Problems & Complete  
Study Guide #1-8**