

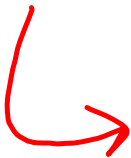
Good morning!

1. turn in homework: HW Page 12 & HW Page 13

2. have a seat!

3. Do: notes page 20 examples a & b

*in
workbook*



Two Step Equations Word Problems

Examples:

Translate to an algebraic equation and solve:

a. Three more than twice a number is fifteen. Find the number.

b. Five less than four times a number is eleven. Find the number.

4. Homework: HW Pages 15, 16, 17 (odds only)

Business:

- * Homework Return
- * Missed class notes
- * Detention reminders

PAGE 20

Two Step Equations Word Problems

Examples:

Translate to an algebraic equation and solve:

- a. Three more than twice a number is fifteen. Find the number.

$$\begin{array}{rcl}
 3 + 2x & = & 15 \\
 2x & = & 12 \\
 x & = & 6
 \end{array}$$

- b. ~~Five less than four times~~ a number is eleven. Find the number.

$20 - 5$

$$\begin{array}{rcl}
 4x - 5 & = & 11 \\
 4x & = & 16 \\
 x & = & 4
 \end{array}$$

✓ Understanding Check

Translate to an algebraic equation and solve:

- a. Four less than three times a number is fourteen. Find the number.

$$3x - 4 = 14$$

- b. Eight more than twice a number is six. Find the number.

$$8 + 2x = 6$$

- ~~✗~~ One more than a the quotient of a number and two is five. Find the number.

$$1 + \frac{x}{2} = 5$$

$$\frac{x}{2} = 4$$

$$x = 8$$

- d. Three less than six times a number is negative nine. Find the number.

$$6x - 3 = -9$$

- e. Two more than the product of negative six and a number is twenty. Find the number.

$$-6x + 2 = 20$$

- ~~✗~~ f. Three less than the quantity of a number divided by two is four. Find the number.

$$\frac{x}{2} - 3 = 4$$

$$\frac{x}{2} = 7$$

$$x = 14$$

a. $x = 6$	b. $x = -1$
c. $x = 8$	d. $x = -1$
e. $n = -3$	f. $n = 14$

2-2 Solving Multi-Step Equations p 21

Example 1: Solving Two-Step Equations with Combining Like Terms

Solve each equation:

a. $2c + c + 12 = 78$

$$3c + 12 = 78$$

$$3c = 66$$

$$c = 22$$

Step 1 combine like terms

Step 2 sub 12

Step 3 div by 3

Check

$$2(22) + 22 + 12 = 78$$

$$44 + 22 + 12 = 78$$

$$78 = 78$$

✓

b. $46 = 8p + 16 - 2p$

$$46 = 6p + 16$$

$$30 = 6p$$

$$5 = p$$

Step 1 comb. like terms

Step 2 undo +16 by -16

Step 3 undo mult by div by 6

Check

$$46 = 8(5) + 16 - 2(5)$$

$$46 = 40 + 16 - 10$$

$$46 = 56 - 10$$

$$46 = 46 \quad \checkmark$$

Example 2: Solving Two-Step Equations with Distributive Property

c. $-3(x - 1) + 9 = 15$

	Step 1	distribute the -3
$-3x + 3 + 9 = 15$	Step 2	combine like terms
$-3x + 12 = 15$	Step 3	undo $+12$ by -12
$-3x = 3$	Step 4	undo mult by div by -3
$x = -1$		

Check

$$\begin{aligned} -3(-1-1) + 9 &= 15 \\ -3(-2) + 9 &= 15 \\ 6 + 9 &= 15 \\ 15 &= 15 \end{aligned}$$

d. $10 - 2(w - 4) = 12$

	Step 1	distribute -2
$10 - 2w + 8 = 12$	Step 2	combine like terms
$-2w + 18 = 12$	Step 3	solve the 2-step eqn
$-2w = -6$	Step 4	
$w = 3$		

Check

$$\begin{aligned} 10 - 2(3-4) &= 12 \\ 10 - 2(-1) &= 12 \\ 10 + 2 &= 12 \\ 12 &= 12 \end{aligned}$$

✓ Understanding Check

p 22

a. $5x + 7x = 72$

b. $-6y - 3y = 27$

c. $7 = 4m - 2m + 1$

d. $3(k + 8) = 21$

e. $2(x - 3) = 8$

f. $36 = 6(2x - 8)$

g. $9m - 2(2m + 6) = 28$

h. $-5a + 4(2a + 2) = -1$

i. $12 - 3(x - 5) = 21$

j. $7y - (3y + 6) = 38$

k. $2(3x + 5) + 3(2x + 5) = 1$

a. $x = 6$	b. $y = -3$	c. $m = 3$
d. $k = -1$	e. $x = 7$	f. $x = 7$
g. $m = 8$	h. $a = -3$	i. $x = 2$
j. $y = 11$	k. $x = -2$	

Sum of Two Number Word Problems 23

Examples

Translate to an algebraic equation and solve:

- a. A larger number is four more than a smaller number. If the sum of the numbers is 20, find the numbers.

$$\begin{array}{lcl}
 \text{smaller number :} & & x \\
 \text{larger :} & & x + 4 \\
 & & \hline
 x + x + 4 = 20 \\
 2x + 4 & = & 20 \\
 2x & = & 16 \\
 \text{smaller} \rightarrow & x = & 8 \\
 \text{larger} \rightarrow & x + 4 = & 12
 \end{array}$$

- b. A first number is six less than ~~twice a second~~. If the sum of the numbers is 42, find the numbers.

$$\begin{array}{lcl}
 \text{second \# :} & & x \\
 \text{first \# :} & & 2x - 6 \\
 & & \hline
 x + 2x - 6 = 42 \\
 3x - 6 & = & 42 \\
 3x & = & 48 \\
 x & = & 16 \\
 & & \{ 16, 26 \}
 \end{array}$$

✓ Understanding Check

p23

Translate to an algebraic equation and solve:

- a. A smaller number is five less than a larger number. If the sum of the numbers is 7, find the numbers.

$$\begin{array}{lcl}
 \text{sm:} & x-5 & \rightarrow 1 \\
 \text{lg:} & x & \rightarrow 6 \\
 \hline
 & x-5+x & = 7 \\
 & 2x-5 & = 7 \\
 & 2x & = 12 \\
 & x & = 6
 \end{array}$$

$\{6, 1\}$

- c. A second number is eight more than five times a first number. If the sum of the numbers is 2, find the numbers.

$$\begin{array}{lcl}
 2^{\text{nd}} \# : & 8 + 5x & \rightarrow 3 \\
 1^{\text{st}} \# : & x & \rightarrow -1 \\
 \hline
 & 8 + 5x & = 2 \\
 & 5x & = -6 \\
 & x & = -1.2
 \end{array}$$

$\{-1.2, 3\}$

- b. A greater number is seven less than three times a smaller number. If the sum of the numbers is 13, find the numbers.

$$\begin{array}{lcl}
 \text{Sm:} & x & \rightarrow 5 \\
 \text{Lg:} & 3x-7 & \rightarrow 8 \\
 \hline
 & 4x-7 & = 13 \\
 & 4x & = 20 \\
 & x & = 5
 \end{array}$$

$\{5, 8\}$

- d. A sailor cut a 55 foot length of rope into two pieces. If the longer piece of rope was five feet less than twice the shorter piece of rope, how long was each piece?

$$\begin{array}{lcl}
 \text{Sm:} & x & \rightarrow 20 \\
 \text{Lg:} & 2x-5 & \rightarrow 35 \\
 \hline
 & 3x-5 & = 55 \\
 & 3x & = 60 \\
 & x & = 20
 \end{array}$$

$\{20 \text{ ft}, 35 \text{ ft}\}$