


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

**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.

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

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

$$\begin{aligned}\cancel{5 - 4x} &= 11 \\&\text{or} \\4x - 5 &= 11\end{aligned}$$

✓ Understanding Check

Translate to an algebraic equation and solve:

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

$$\begin{aligned} 3x - 4 &= 14 \\ 3x &= 18 \\ x &= 6 \end{aligned}$$

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

$$\begin{aligned} 8 + 2x &= 6 \\ 2x + 8 &= 6 \\ 2x &= -2 \\ x &= -1 \end{aligned}$$

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

$$\begin{aligned} 1 + \frac{x}{2} &= 5 \\ x &= 8 \end{aligned}$$

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

$$\begin{aligned} 6x - 3 &= -9 \\ x &= -1 \end{aligned}$$

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

$$\begin{aligned} -6x + 2 &= 20 \\ x &= -3 \end{aligned}$$

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

$$\begin{aligned} \frac{x}{2} - 3 &= 4 \\ x &= 14 \end{aligned}$$

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

## 2-2 Solving Multi-Step Equations

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

Solve each equation:

$$\begin{array}{rcl} \text{a. } 2c + c + 12 & = & 78 \\ \hline 3c + 12 & = & 78 \\ -12 & & -12 \\ \hline 3c & = & 66 \\ \div 3 & & \div 3 \\ \hline c & = & 22 \end{array}$$

Step 1 Combine like terms

Step 2 undo +12 with -12

Step 3 undo mult by 3 by div by 3

#### Check

$$\begin{array}{l} 2(22) + 22 + 12 = 78 \\ 44 + 22 + 12 = 78 \\ 78 = 78 \\ \checkmark \end{array}$$

$$\begin{array}{rcl} \text{b. } 46 & = & 8p + 16 - 2p \\ \hline 46 & = & 6p + 16 \\ -16 & & -16 \\ \hline 30 & = & 6p \\ \div 6 & & \div 6 \\ \hline 5 & = & p \end{array}$$

Step 1 Combine like terms

Step 2 undo +16 with -16

Step 3 undo mult by 6 by div

#### Check

$$\begin{array}{l} 46 = 8(5) + 16 - 2(5) \\ 46 = 40 + 16 - 10 \\ 46 = 56 - 10 \\ 46 = 46 \\ \checkmark \end{array}$$

**Example 2: Solving Two-Step Equations with Distributive Property**

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

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

**Check**

$$-3(-1-1)+9=15$$

$$-3(-2)+9=15$$

$$6+9=15$$

$$15=15 \checkmark$$

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

	Step 1	distribute
$10-2w+8=12$	Step 2	combine like terms
$18-2w=12$	Step 3	undo $+18$ by $-18$
$-2w=-6$	Step 4	undo mult by div by $-2$
$w=+3$		

**Check**

$$10-2(3-4)=12$$

$$10-2(-1)=12$$

$$10+2=12$$

$$\checkmark$$

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Understanding Check

a.  $5x + 7x = 72$

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

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

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

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

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

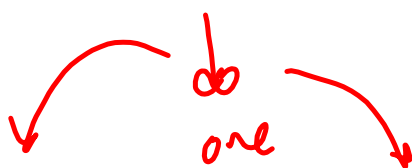
Circled exercises should be complete.

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

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

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

do  
one



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. $x = -2$	

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## Sum of Two Number Word Problems

### 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.

lg #:  $x \rightarrow 12$   
 sm #:  $x - 4 \rightarrow 8$

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$$2x - 4 = 20$$

$$2x = 24$$

$$x = 12$$

$\{12, 8\}$

lg #:  $x + 4 \rightarrow 12$   
 sm #:  $x \rightarrow 8$

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$$2x + 4 = 20$$

$$2x = 16$$

$$x = 8$$

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

1<sup>st</sup>:  $2x - 6 \rightarrow 26$

2<sup>nd</sup>:  $x \rightarrow 16$

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$$3x - 6 = 42$$

$$3x = 48$$

$$x = 16$$

$$\{26, 16\}$$

All 4 exercises should be complete in notes.

✓ Understanding Check

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.

Sm:  $x - 5 \rightarrow 1$

Lg:  $x \rightarrow 6$

$$\frac{2x - 5 = 7}{x = 6}$$

$\{1, 6\}$

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

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

- 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?