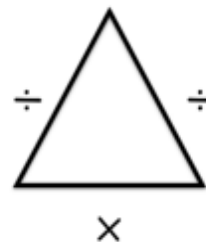
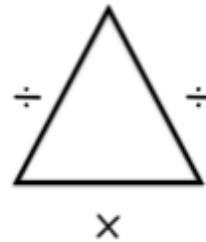
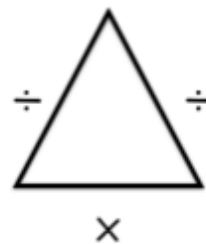
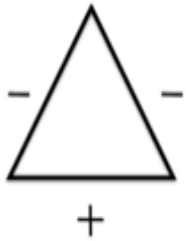
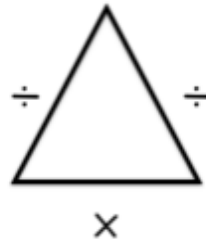


# Using Fact Family Triangles to Solve 1-Step Equations



# Strategies for Solving Two Step Equations

Solving Two Step  
Equations using Fact  
Family Triangles

Solving Two Step  
Equations using  
Inverse Operations

Solving Two Step  
Equations using  
Diagramming

# Decimal Operations

## Adding & Subtracting

Line up the decimals and add place holder zeros if needed

$$\begin{array}{r} 1.260 \\ + 1.357 \\ \hline 2.617 \end{array}$$

## Multiplying

Multiply like they are whole numbers

$$2.75 \times 0.03$$

$$275 \times 3 = 825$$

$$2.75 \times 0.03$$

(2 & 2)

$$\begin{array}{r} 0.0825 \\ \hline \end{array}$$

(4 places)

Count decimal places in the problem

Move decimal places in the product

## Dividing

When the divisor is a whole number...

$$32.8 \div 2 =$$

$$2 \overline{)32} \begin{array}{l} \uparrow \\ \downarrow \end{array} 8$$

move the decimal into the quotient...

and divide.

$$\begin{array}{r} 16.4 \\ 2 \overline{)32.8} \\ \underline{-2} \phantom{.8} \\ 12 \phantom{.8} \\ \underline{-12} \phantom{.8} \\ 08 \\ \underline{-8} \\ 0 \end{array}$$

When the divisor is a decimal...

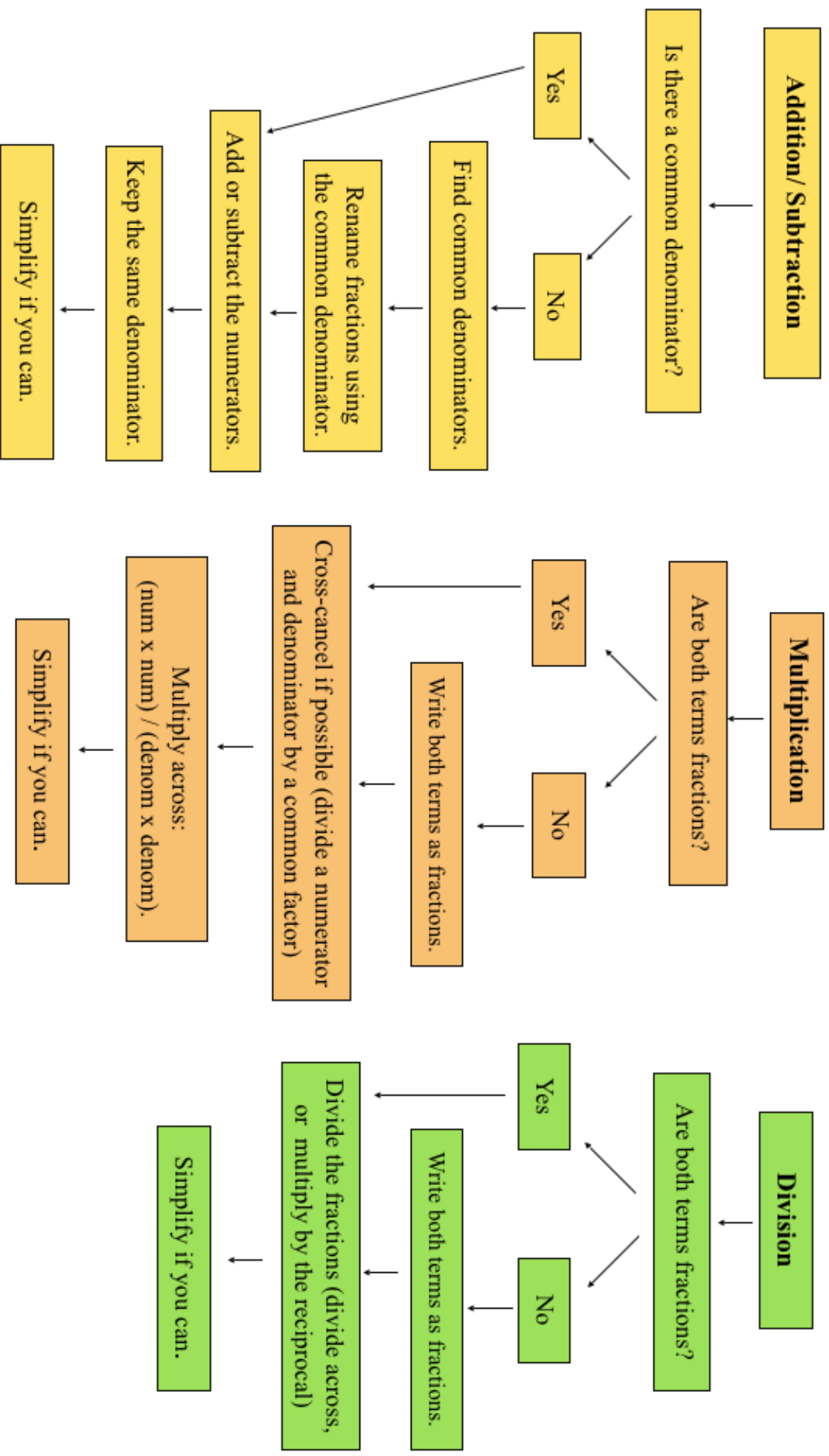
- 1) move the decimal until the divisor is a whole number
- 2) move the decimal in the dividend the same number of places
- 3) then move the decimal up and divide.

$$32.8 \div 0.2 =$$

$$328 \div 2 = 164$$

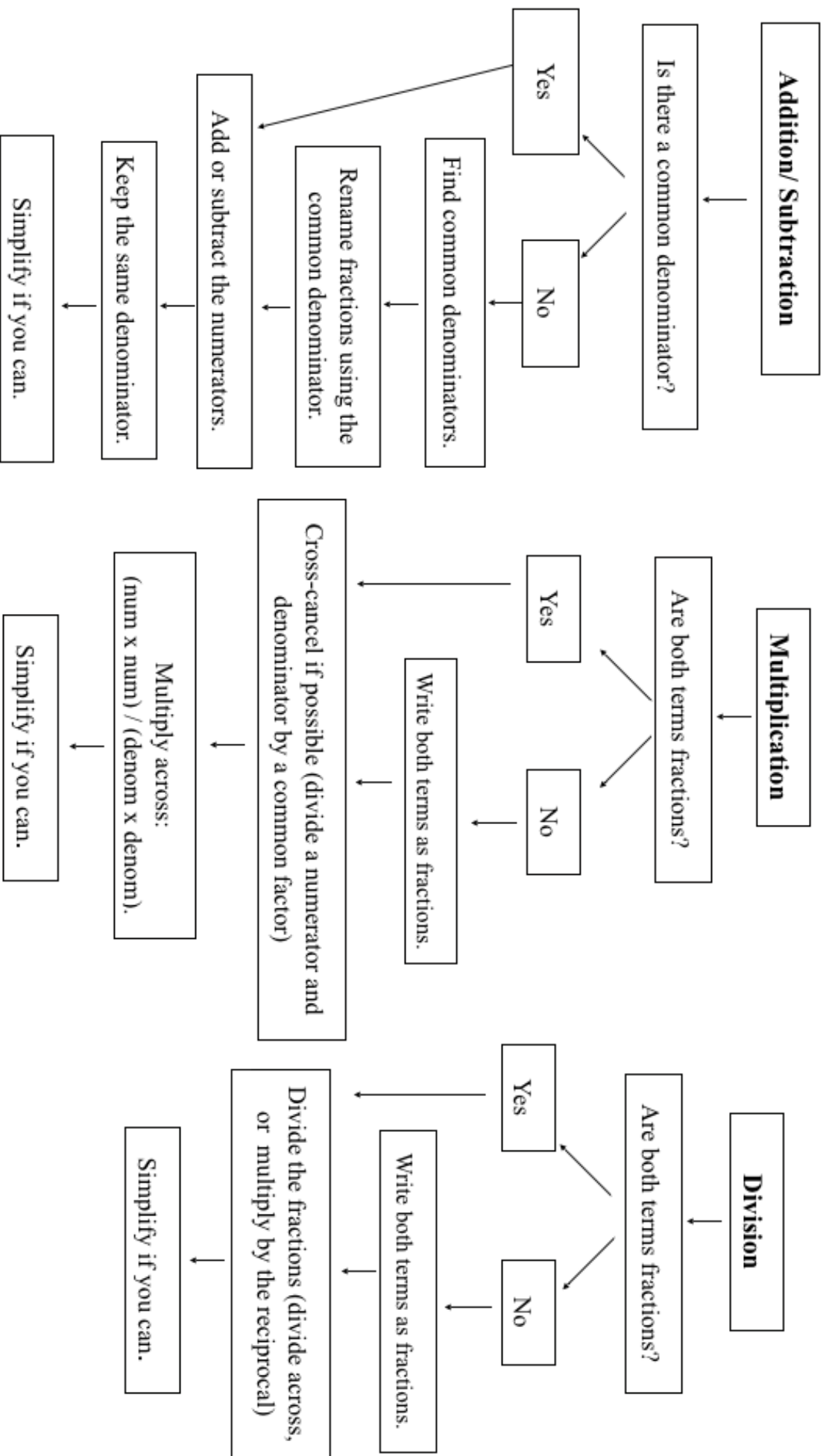
# Fraction Operations Flowchart

## WHAT KIND OF PROBLEM IS IT?



# Fraction Operations Flowchart

## WHAT KIND OF PROBLEM IS IT?



## Solving Equations with Decimals

$8 + 0.5x = 10.5$	$-0.03n - 1.2 = -1.44$
$-0.6x = 14.4$	$3.5 \div n = 0.07$

## Solving Equations with Fractions

$$n + \frac{4}{5} = \frac{19}{20}$$











$$\frac{8}{15} - n = \frac{1}{3}$$

$$\frac{2}{3}x = \frac{7}{10}$$

$$a \div \frac{1}{4} = \frac{5}{6}$$

# WORK RECORDING SHEET FOR SCAVENGER HUNT

Show work in the appropriate box. Record the letter that corresponds with your answer.

DECIMAL EQUATIONS: + 	DECIMAL EQUATIONS: - 
DECIMAL EQUATIONS: X 	DECIMAL EQUATIONS: ÷ 
FRACTION EQUATIONS: + 	FRACTION EQUATIONS: - 
FRACTION EQUATIONS: X 	FRACTION EQUATIONS: ÷ 
RATIONAL EQUATIONS: DECIMALS 	RATIONAL EQUATIONS: FRACTIONS 



# Scavenger Hunt Activity: Equations with Rational Numbers

## DECIMAL EQUATIONS: +

Solve the equation: $12.5 + n = 18$		
30.5	6.5	5.5
R	S	T

## DECIMAL EQUATIONS: -

Solve the equation: $12.5 - n = 10$		
2.5	22.5	-2.5
A	E	I

# Scavenger Hunt Activity: Equations with Rational Numbers

## FRACTION EQUATIONS: +

Solve the equation: $2/5 + n = 7/10$		
$3/5$	$9/15$	$3/10$
I	O	U

## FRACTION EQUATIONS: -

Solve the equation: $n - 1/4 = 5/8$		
$7/8$	$6/8$	$3/8$
Y	W	P

Scavenger Hunt Activity: Equations with Rational Numbers

Solve the equation: $6n = 1.2$		
2	0.2	0.02
D	F	G

DECIMAL EQUATIONS:  $\div$

Solve the equation: $1.5 \div n = 3$		
5	4.5	0.5
H	J	F

# Scavenger Hunt Activity: Equations with Rational Numbers

## FRACTION EQUATIONS: $\times$

Solve the equation: $\frac{1}{2} \bullet n = \frac{5}{6}$		
$\frac{5}{3}$	$\frac{5}{12}$	$\frac{3}{5}$
B	C	D

## FRACTION EQUATIONS: $\div$

Solve the equation: $21 \div n = \frac{1}{3}$		
$\frac{1}{63}$	7	63
V	M	B

# Scavenger Hunt Activity: Equations with Rational Numbers

## RATIONAL EQUATIONS (Decimals)

Solve the equation: $0.2n + 1.5 = 3$		
0.3	7.5	22.5
E	B	M

## RATIONAL EQUATIONS (Fractions)

Solve the equation: $(1/2)n + 4/5 = 9/10$		
$1/5$	$1/10$	$1/20$
!	?	.

**5-9**

# Solving Equations with Rational Numbers

(Pages 244–248)

You can solve rational number equations using the same skills you used to solve equations involving integers.

<b>Solving Equations</b>	<ul style="list-style-type: none"> <li>• Solving an equation means getting the variable alone on one side of the equation to find its value.</li> <li>• To get the variable alone, you use inverse operations to undo what has been done to the variable.</li> <li>• Addition and subtraction are inverse operations.</li> <li>• Multiplication and division are inverse operations.</li> <li>• Whatever you do to one side of the equation, you must also do to the other side to maintain the equality.</li> </ul>
--------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Examples**

**a. Solve  $x + 5.7 = 2.5$ .**

$$x + 5.7 = 2.5$$

$$x + 5.7 - 5.7 = 2.5 - 5.7 \quad \text{Subtract 5.7 from each side.}$$

$$x = -3.2 \quad \text{Simplify.}$$

**b. Solve  $\frac{2}{3}y = \frac{5}{6}$ .**

$$\frac{2}{3}y = \frac{5}{6}$$

$$\frac{3}{2}\left(\frac{2}{3}y\right) = \frac{3}{2}\left(\frac{5}{6}\right) \quad \text{Multiply each side by } \frac{3}{2}.$$

$$y = \frac{5}{4} \text{ or } 1\frac{1}{4} \quad \text{Simplify.}$$

**Try These Together**

1. Solve  $\frac{3}{5} = a - \frac{1}{8}$ .

*HINT: Add  $\frac{1}{8}$  to each side.*

2. Solve  $1.4n = 4.2$ .

*HINT: Divide each side by 1.4.*

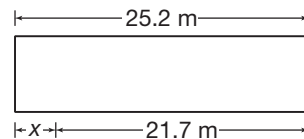
**Practice**

Solve each equation. Check your solution.

- |                                    |                                                  |                                      |
|------------------------------------|--------------------------------------------------|--------------------------------------|
| 3. $p - 3.7 = -2.4$                | 4. $b - (-60.25) = 121.6$                        | 5. $-8.8 + q = 14.3$                 |
| 6. $w + \frac{1}{2} = \frac{7}{8}$ | 7. $j - \left(-\frac{1}{9}\right) = \frac{1}{6}$ | 8. $y - 1\frac{2}{5} = 2\frac{4}{5}$ |
| 9. $-5y = 8.5$                     | 10. $-2.7t = -21.6$                              | 11. $4.2d = -10.5$                   |
| 12. $9z = \frac{3}{4}$             | 13. $\frac{m}{5} = -\frac{1}{10}$                | 14. $-\frac{5}{6}a = 20$             |

15. **Standardized Test Practice** Solve for the measure of  $x$ .

- |                |                |
|----------------|----------------|
| <b>A</b> 4.5 m | <b>B</b> 4.4 m |
| <b>C</b> 3.5 m | <b>D</b> 3.4 m |



15. C
Answers: 1. $\frac{40}{29}$ 2. 3 3. 1.3 4. 61.35 5. 23.1 6. $\frac{8}{3}$ 7. $\frac{18}{1}$ 8. $4\frac{5}{1}$ 9. -1.7 10. 8 11. -2.5 12. $\frac{12}{1}$ 13. $\frac{2}{1}$ 14. -24

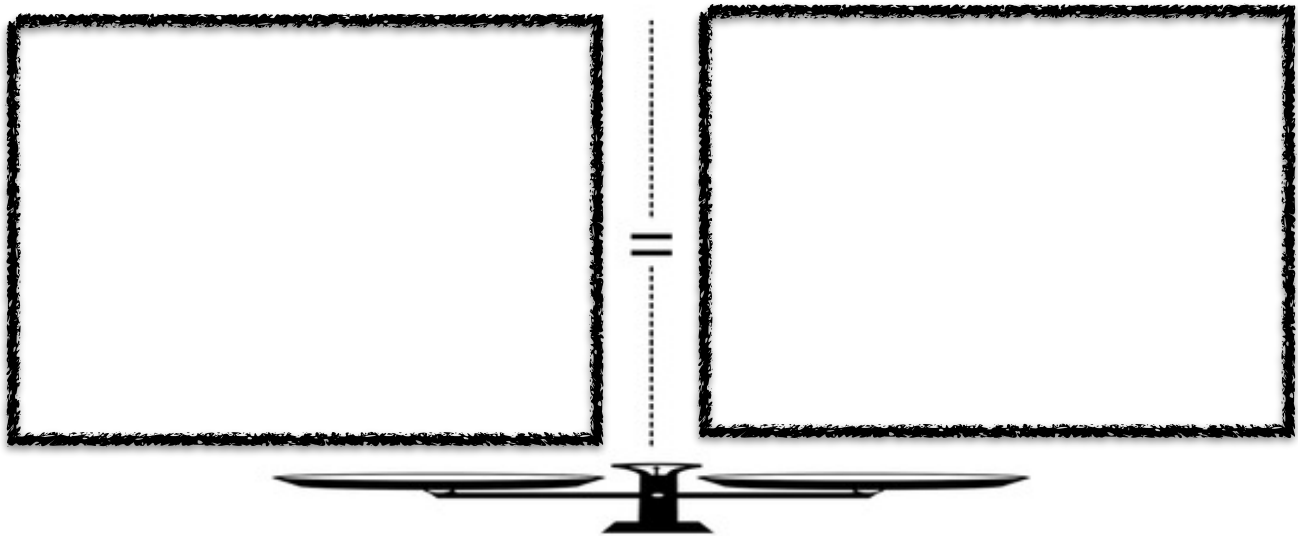
# Solving Multi-Step Equations

Solving Multi-Step  
Equations: Combining  
Like Terms

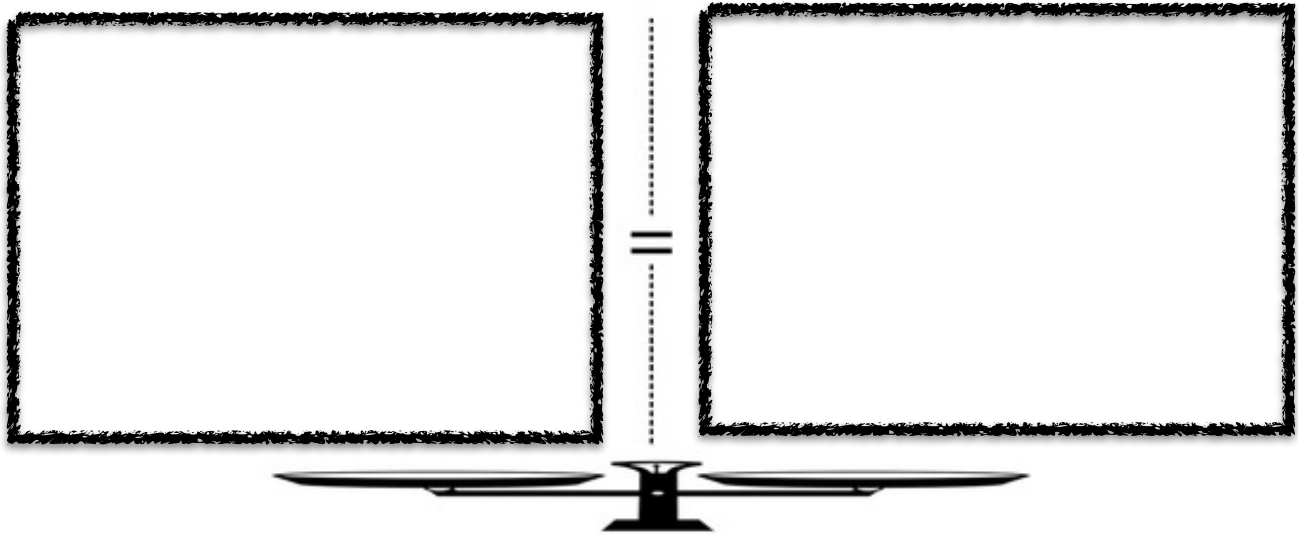
Solving Multi-Step  
Equations: Distributive  
Property

Solving Multi-Step  
Equations: Simplifying  
Before Solving

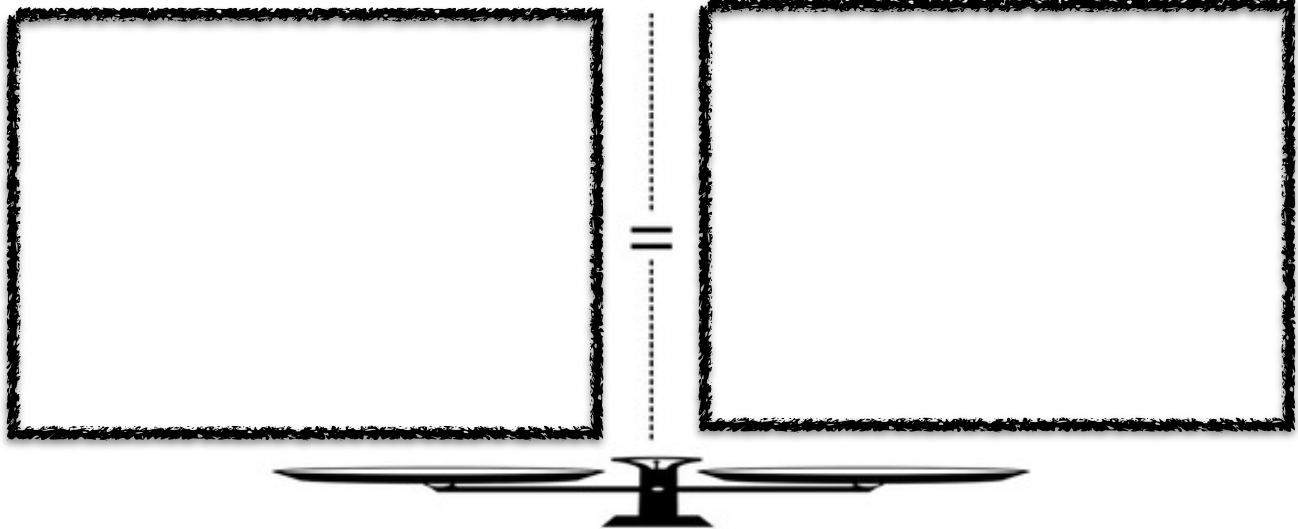
Set up and solve using algebra tiles:  $2x - 1 = -x + 8$



Set up and solve using algebra tiles:  $2x - 1 = -x + 8$



Set up and solve using algebra tiles:  $2x - 1 = -x + 8$





## Solving Equations with Variables on Both Sides

$2x - 1 = -x + 8$	$4x - 15 = 17 - 4x$	$10x - 22 = 29 - 7x$

## Solving Equations with Variables on Both Sides

$2x - 1 = -x + 8$	$4x - 15 = 17 - 4x$	$10x - 22 = 29 - 7x$

# Things to Remember!



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# Things to Remember!



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Demo Problems: Solving Inequalities in One Variable

**A)**  $7 + \frac{x}{3} \geq 10$

**T)**  $8x + 6 > 142$

**U)**  $-8 + \frac{x}{-6} \geq -9$

**E)**  $-2 + \frac{x}{9} > -1$

Demo Problems: Solving Inequalities in One Variable

**A)**  $7 + \frac{x}{3} \geq 10$

**T)**  $8x + 6 > 142$

**U)**  $-8 + \frac{x}{-6} \geq -9$

**E)**  $-2 + \frac{x}{9} > -1$

## Writing and Solving Multi-Step Inequalities in One Variable

$$-7x + 4 \geq 18$$

$$-10 + \frac{x}{3} > -12$$

Canyu Canoe Co. rents canoes for \$8 plus \$3 per hour or any part of an hour. For how many hours can you rent a canoe if you want to spend no more than \$25?

The Mega Middle School Carnival charges \$4 for admission plus \$0.75 for each ride ticket. How many ride tickets can you buy if you want to spend at most \$20?

## Inequalities with Variables on Both Sides

$$5x + 2 > 3x + 10$$

$$8 + 2x \leq 6x - 20$$

$$4x + 49 < 9 - x$$

$$2(7n - 1) \geq 3(5 - n)$$

$$7n - 2(n + 5) < 3n - 16$$

$$4(1 - 3n) - 14 > 4(2n + 3) - 9n$$

## PROBLEM SOLVING WITH EQUATIONS AND INEQUALITIES

Name \_\_\_\_\_

Date \_\_\_\_\_

- 1) In the inequality below,  $h$  represents the maximum number of hours a family can rent a moving truck while staying within their budget of \$300.

$$20h + 100 \leq 300$$

What is  $h$ , the maximum number of hours the family can rent the truck while staying within their budget?

- A. 5
  - B. 10
  - C. 15
  - D. 20
- 2) A monthly phone bill consists of a fixed monthly fee of \$19 and a charge of \$0.25 per minute of use. Which of the following equations can be used to determine the total monthly bill,  $t$ , for  $m$  minutes of use?
- A.  $t = 0.25m + 19$
  - B.  $t = 0.25m - 19$
  - C.  $t = 19m + 0.25$
  - D.  $t = 19m - 0.25$
- 3) Bobby has \$250 in his bank account. He withdraws \$25 each week. How many weeks can he withdraw funds, yet keep at least \$100 in his bank account? Write and solve an inequality to represent this situation. Let  $w$  represent the number of weeks in your inequality.

- 4) A company packages barbeque sauce in two different-sized bottles, small and large. Although the label on each small bottle states that the bottle contains 18 ounces of sauce, the company allows a tolerance of plus or minus 0.25 ounce for the amount of sauce in each small bottle. In manufacturing, tolerance is the amount of error that is allowed in packaging a product.
- a. What is the maximum amount of sauce, in ounces, the company allows in each small bottle? Show or explain how you got your answer.

In the absolute-value inequality below,  $x$  represents the amount of sauce, in ounces, the company allows in each small bottle.

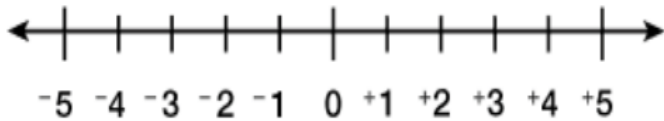
$$|x - 18| \leq 0.25$$

- b. Solve the absolute-value inequality. Show or explain how you got your answer.

The company also makes a large bottle of barbeque sauce.

- The label on the large bottle states that each bottle contains 24 ounces of sauce.
  - The minimum amount of sauce allowed in each large bottle is 23.55 ounces.
  - The maximum amount of sauce allowed in each large bottle is 24.45 ounces.
- c. What is the tolerance, in ounces, the company allows for the large bottle? Show or explain how you got your answer.
- d. Write an absolute-value inequality that represents  $y$ , the amount of sauce, in ounces, the company allows in the large bottle.

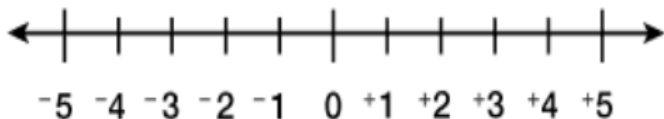
# Compound Inequalities



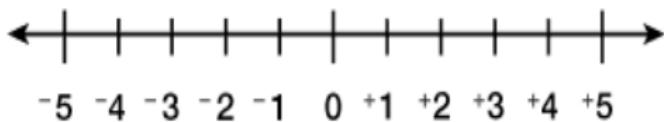
$$5(w + 4) \geq 5 \text{ and } 2(w + 4) < 12$$



$$3(6 - y) \leq 6 \text{ and } 6 - y \geq 8$$



$$3x < 2x - 3 \text{ or } 7x > 4x - 9$$



$$x/2 \leq -2 \text{ or } -(x/2) \geq 0$$



# Solving Absolute Value Equations

D.  $|x+2|=7$

R.  $|2x+1|=7$

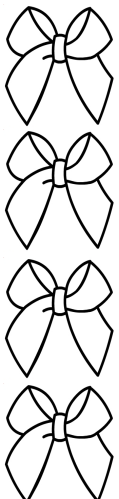
A.  $7=|x|$

H.  $|x|-3=5$

E.  $-2|7x|=-14$

R.  $|2x-3|-4=3$

## Things to Remember!



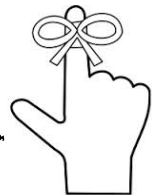
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Absolute Value Equations  
Scavenger Hunt  
TAKE A VACATION

$$|x| = 5$$

-5, 5

-5

5

M

N

P

$$-2|x| = -12$$

No Solution

-6

6, -6

B

O

A

Absolute Value Equations  
Scavenger Hunt  
TAKE A VACATION

$$4 - |x| = 10$$

4 -  x  = 10		
No Solution	-6	6, -6
I	H	O

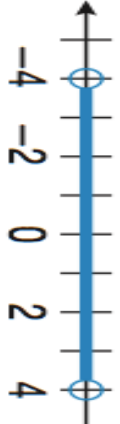
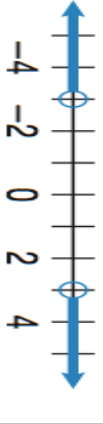
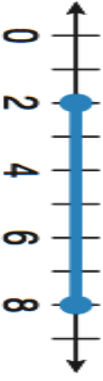
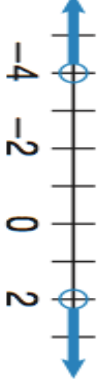
$$3|x - 2| = 15$$

3 x - 2  = 15		
-5, 5	7, -7	7, -3
L	J	N

Absolute Value Equations  
Scavenger Hunt  
TAKE A VACATION

$ x - 2  > 0$		
$x = 2$	$-2, 2$	All Real Numbers
N	T	E

## Card Sort: Absolute Value Inequality

$ x  < 4$		$ x  > 7$	$x > 7$ OR $x < -7$
$ x  + 7.4 \leq 9.8$	$x \geq -2.4$ AND $x \leq 2.4$	$\frac{ x }{4} > 2$	$x > 8$ OR $x < -8$
$-2 x  < -6$		$ x - 5  \leq 3$	
$ x  + 6 > 1$	identity	$ x  + 6 \leq 4$	$\emptyset$ , the empty set
$ g - 46  \leq 3$	$43 \leq g \leq 49$	$ x + 1  > 3$	

# 1-6 Study Guide and Intervention *(continued)*

## Solving Compound and Absolute Value Inequalities

**Absolute Value Inequalities** Use the definition of absolute value to rewrite an absolute value inequality as a compound inequality.

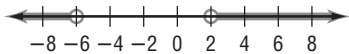
For all real numbers  $a$  and  $b$ ,  $b > 0$ , the following statements are true.

1. If  $|a| < b$ , then  $-b < a < b$ .
2. If  $|a| > b$ , then  $a > b$  or  $a < -b$ .

These statements are also true for  $\leq$  and  $\geq$ .

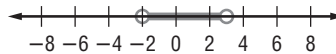
**Example 1** Solve  $|x + 2| > 4$ . Graph the solution set on a number line.

By statement 2 above, if  $|x + 2| > 4$ , then  $x + 2 > 4$  or  $x + 2 < -4$ . Subtracting 2 from both sides of each inequality gives  $x > 2$  or  $x < -6$ .



**Example 2** Solve  $|2x - 1| < 5$ . Graph the solution set on a number line.

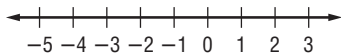
By statement 1 above, if  $|2x - 1| < 5$ , then  $-5 < 2x - 1 < 5$ . Adding 1 to all three parts of the inequality gives  $-4 < 2x < 6$ . Dividing by 2 gives  $-2 < x < 3$ .



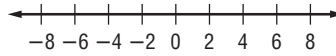
### Exercises

Solve each inequality. Graph the solution set on a number line.

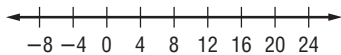
1.  $|3x + 4| < 8$



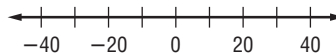
2.  $|4s| + 1 > 27$



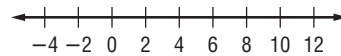
3.  $\left| \frac{c}{2} - 3 \right| \leq 5$



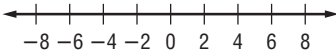
4.  $|a + 9| \geq 30$



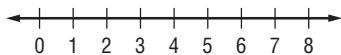
5.  $|2f - 11| > 9$



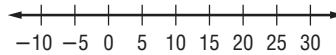
6.  $|5w + 2| < 28$



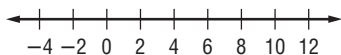
7.  $|10 - 2k| < 2$



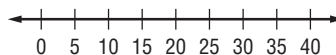
8.  $\left| \frac{x}{2} - 5 \right| + 2 > 10$



9.  $|4b - 11| < 17$

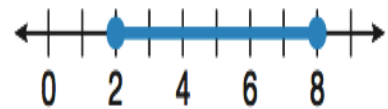
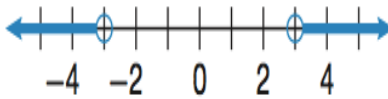
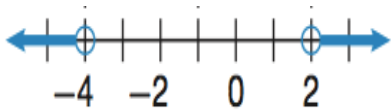


10.  $|100 - 3m| > 20$



Absolute Value Equations and Inequality  
Scavenger Hunt  
"Famous Football Player"

$$|x + 1| > 3$$

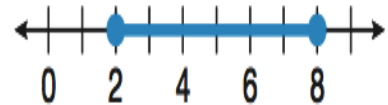
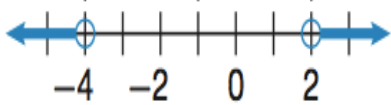


**B**

**S**

**W**

$$|x - 5| \leq 3$$



**L**

**H**

**R**

Absolute Value Equations and Inequality  
Scavenger Hunt  
"Famous Football Player"

$ x  + 6 \leq 4$		
$\emptyset$ , the empty set	$x \leq -2$ or $x \geq 2$	identity
A	E	I

$ x - 2  = 12$		
$x = 12$ or $x = -12$	$x = 14$ or $x = -10$	$x = 10$ or $x = -14$
C	D	F



Absolute Value Equations and Inequality  
Scavenger Hunt  
"Famous Football Player"

$$5 - |x - 2| = 0$$

$x = 7$

No Solution

$x = 7 \text{ or } x = -3$

M

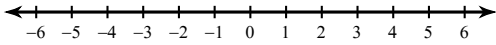
K

Y

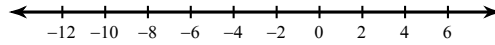
## Absolute Value Inequalities

Solve each inequality and graph its solution.

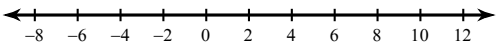
1)  $|6n| \leq 18$



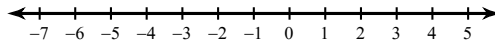
2)  $|p + 4| \leq 8$



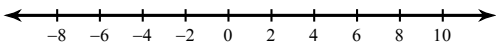
3)  $|m - 2| < 8$



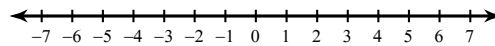
4)  $|5x| \leq 10$



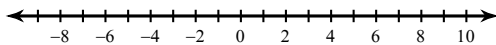
5)  $|x| + 5 \geq 11$



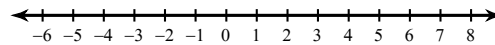
6)  $|m| - 2 > 0$



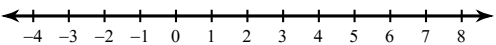
7)  $|r| - 3 > 2$



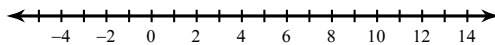
8)  $|n| + 2 \geq 5$



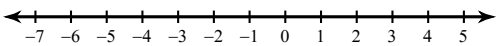
9)  $|x - 2| - 5 < -2$



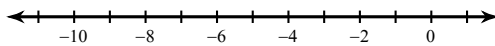
10)  $|x - 4| - 3 < 5$



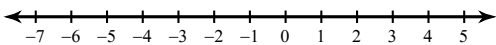
11)  $1 + |1 + b| < 4$



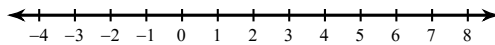
12)  $|v + 5| - 6 < -5$



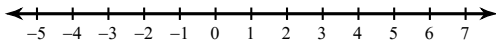
13)  $|10p - 4| < 34$



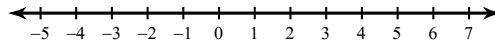
14)  $|6 + 9x| \leq 24$



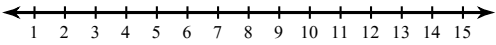
$$15) \quad |-8a - 3| > 11$$



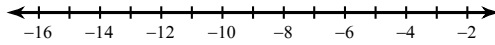
$$16) \quad |1 - 4k| \geq -11$$



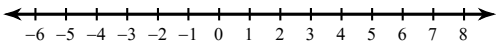
$$17) \quad 9|m - 8| - 10 < 26$$



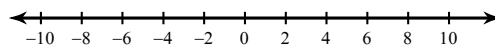
$$18) \quad 9|x + 8| + 10 < 55$$



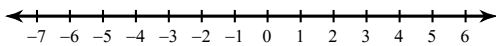
$$19) \quad 9|r - 2| - 10 < -73$$



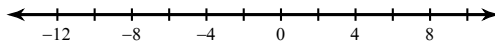
$$20) \quad 7\left|\frac{n}{3}\right| - 9 < 12$$



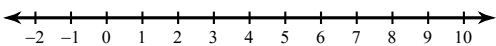
$$21) \quad 2|10b + 7| - 1 > 73$$



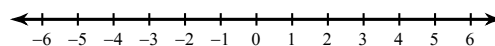
$$22) \quad 7 + |6v + 7| \leq 60$$



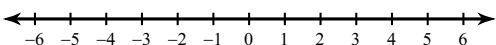
$$23) \quad 4|6 - 2a| + 8 \leq 24$$



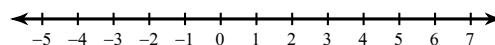
$$24) \quad 9|3n - 2| + 6 > 51$$



$$25) \quad 3 + 4|3x + 7| \geq -89$$



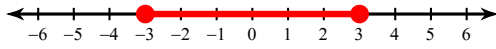
$$26) \quad 9|1 + 8n| - 3 \geq 78$$



## Absolute Value Inequalities

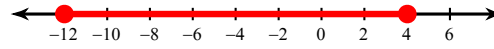
Solve each inequality and graph its solution.

1)  $|6n| \leq 18$



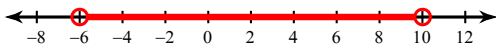
$-3 \leq n \leq 3$

2)  $|p + 4| \leq 8$



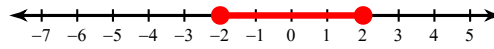
$-12 \leq p \leq 4$

3)  $|m - 2| < 8$



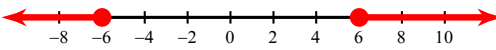
$-6 < m < 10$

4)  $|5x| \leq 10$



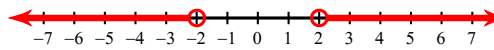
$-2 \leq x \leq 2$

5)  $|x| + 5 \geq 11$



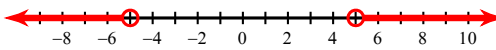
$x \geq 6 \text{ or } x \leq -6$

6)  $|m| - 2 > 0$



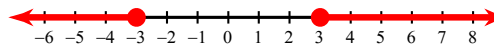
$m > 2 \text{ or } m < -2$

7)  $|r| - 3 > 2$



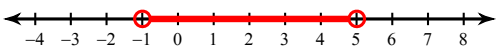
$r > 5 \text{ or } r < -5$

8)  $|n| + 2 \geq 5$



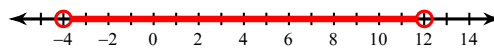
$n \geq 3 \text{ or } n \leq -3$

9)  $|x - 2| - 5 < -2$



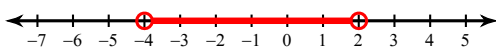
$-1 < x < 5$

10)  $|x - 4| - 3 < 5$



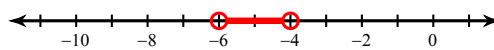
$-4 < x < 12$

11)  $1 + |1 + b| < 4$



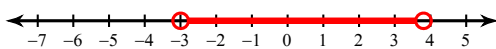
$-4 < b < 2$

12)  $|v + 5| - 6 < -5$



$-6 < v < -4$

13)  $|10p - 4| < 34$



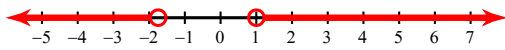
$-3 < p < \frac{19}{5}$

14)  $|6 + 9x| \leq 24$



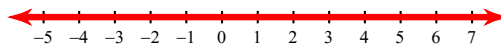
$-\frac{10}{3} \leq x \leq 2$

$$15) \quad |-8a - 3| > 11$$



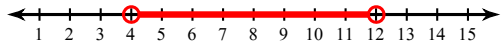
$$a < -\frac{7}{4} \text{ or } a > 1$$

$$16) \quad |1 - 4k| \geq -11$$



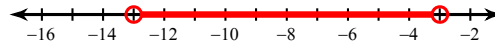
$$\{ \text{All real numbers.} \}$$

$$17) \quad 9|m - 8| - 10 < 26$$



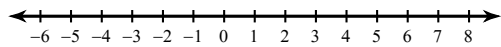
$$4 < m < 12$$

$$18) \quad 9|x + 8| + 10 < 55$$



$$-13 < x < -3$$

$$19) \quad 9|r - 2| - 10 < -73$$



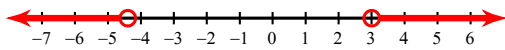
No solution.

$$20) \quad 7\left|\frac{n}{3}\right| - 9 < 12$$



$$-9 < n < 9$$

$$21) \quad 2|10b + 7| - 1 > 73$$



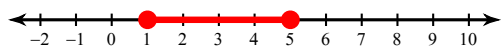
$$b > 3 \text{ or } b < -\frac{22}{5}$$

$$22) \quad 7 + |6v + 7| \leq 60$$



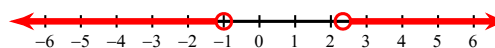
$$-10 \leq v \leq \frac{23}{3}$$

$$23) \quad 4|6 - 2a| + 8 \leq 24$$



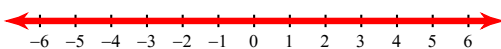
$$1 \leq a \leq 5$$

$$24) \quad 9|3n - 2| + 6 > 51$$



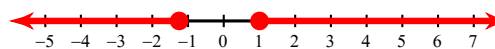
$$n > \frac{7}{3} \text{ or } n < -1$$

$$25) \quad 3 + 4|3x + 7| \geq -89$$



{ All real numbers. }

$$26) \quad 9|1 + 8n| - 3 \geq 78$$



$$n \geq 1 \text{ or } n \leq -\frac{5}{4}$$

## Multi Step Absolute Value Inequalities

$ -8a - 3  > 11$	$ 1 - 4k  \geq -11$
$9 m - 8  - 10 < 26$	$9 x + 8  + 10 < 55$

## Algebra 1: Unit 1 Assessment Test Topics

$n + 12 = -7$	$27 = m + 10$
$160 = -10x$	$2n + 11 = -13$
$n + 1.25 = 5.3$	$0.5n + 1.2 = 3.7$
$-5(x - 2) + 30 = 60$	$45 = 30 - 3(x + 3)$
$-50 + 10x = -20(x + 3)$	$x < -10$
$x - 15 < -18$	$-10 > n + 16$
$x - 20 < -18$ or $-3x < -21$	$x - 2 < 3$ and $2x > -10$

## Algebra 1: Unit 1 Assessment Test Topics

$$|2x| = 16$$

$$3|x - 5| = 21$$

$$5(x - 2) + 25 < -50$$

$$-90 > -3(5x + 20)$$

$$-28 - 6x > -3x + 2$$

$$4(x - 2) > -3x + 6$$

$$\begin{aligned} -6x &> -30x + 8 \\ \text{or} \\ -2x &< -14 \end{aligned}$$

$$\begin{aligned} -8x &> 4 \\ \text{and} \\ x - 15 &> -11 \end{aligned}$$

$$|2x| < 14$$

$$5 + |3x| > 17$$

$$|3x| - 12 = 18$$

$$5|x - 2| - 12 = 8$$

$$3|x - 1| + 17 < 21$$

$$\frac{|x - 1| + 3}{4} > 2$$



Algebra 1: Unit 1 Assessment Test Topics

$$-28 - 6x > -3x + 2$$

$+6x \quad +6x$

$$-28 > 3x + 2$$

$-2 \quad -2$

$$-30 > \frac{3x}{3}$$

$$-10 > x$$

$$x < -10$$

$$4(x - 2) > -3x + 6$$

$$4x - 8 > -3x + 6$$

$$7x > 14$$

$$x > 2$$

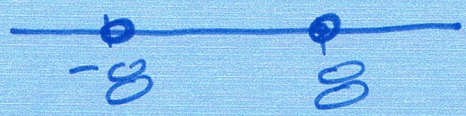
$$|2x| = 16$$

$$2x = 16$$

$$x = 8$$

$$2x = -16$$

$$x = -8$$



$$\frac{3|x - 5|}{3} = \frac{21}{3}$$

$$|x - 5| = 7$$

$$x - 5 = 7$$

$$x = 12$$

$$x - 5 = -7$$

$$x = -2$$



$$|2x| < 14$$

$$2x < 14 \quad \text{and} \quad 2x > -14$$

$$x < 7 \quad \quad \quad x > -7$$

barbells



$$5 + |3x| > 17$$

$$|3x| > 12$$

$$3x > 12 \quad \text{or} \quad 3x < -12$$

$$x > 4$$

$$x < -4$$



Algebra 1: Unit 1 Assessment Test Topics

$$3|x-1|+17 < 21$$

$$3|x-1| < 4$$

$$|x-1| < \frac{4}{3}$$

$$x-1 < \frac{4}{3} \quad \text{and} \quad x-1 > -\frac{4}{3}$$

$$x < \frac{7}{3} \quad \quad \quad x > -\frac{1}{3}$$

$$\frac{|x-1|+3}{4} > 2$$

$$|x-1|+3 > 8$$

$$|x-1| > 5$$

$$x-1 > 5 \quad \text{or} \quad x-1 < -5$$

$$x > 6 \quad \quad \quad x < -4$$

$$|3x|-12=18$$

$$|3x|=40$$

$$3x=40 \quad \text{or} \quad 3x=-40$$

$$x=\frac{40}{3} \quad \quad \quad x=-\frac{40}{3}$$

$$5|x-2|-12=8$$

$$5|x-2|=20$$

$$|x-2|=4$$

$$x-2=4 \quad \text{or} \quad x-2=-4$$

$$x=6 \quad \quad \quad x=-2$$

$$-6x > -30x+8 \quad \text{or} \quad -2x < -14$$

$$24x > 8 \quad \quad \quad \cdot \frac{-2}{-2} \quad \frac{-2}{-2}$$

$$x > \frac{1}{3} \quad \text{or} \quad x > 7$$

Solution!

$$\frac{-8x}{-8} > \frac{4}{-8} \quad \text{and} \quad x-15 > -11$$

$$x < -\frac{1}{2} \quad \text{and} \quad x > 4$$

barbells

No solution!  
Barbells are not possible

Algebra 1: Unit 1 Assessment Test Topics

$$5(x-2)+25 < -50$$

$$5x - 10 + 25 < -50$$

$$5x + 15 < -50$$

$$5x < -65$$

$$x < -13$$

$$-90 > -3(5x+20)$$

$$\begin{array}{r} -90 > -15x - 60 \\ +60 \qquad +60 \end{array}$$

$$\begin{array}{r} -30 > -15x \\ \hline -15 \qquad -15 \end{array}$$

$$2 < x$$

$$x > 2$$

**Unit 1. Review Problems – Page #1:**

**Solve each equation. Check your solution. Show your work!**

1)  $x + 23 = 9$

2)  $18 - x = 24$

**Solve each equation. Check your solution. Show your work!**

3)  $7x = -63$

4)  $-8x = 96$

**Solve each equation. Check your solution. Show your work!**

5)  $3(2x - 1) = 21$

6)  $4(3x + 2) = -4$

7)  $2(5x + 1) = 4(3x - 1)$

8)  $6(x - 6) = 9(2x - 3)$

**Solve each equation. Check your solution. Show your work!**

9)  $1.1x - 1.0 = 2.2x - 3.2$

10)  $\frac{3}{4}x + 6 = \frac{1}{2}x + 3$

**Solve each inequality. Then, graph its solution set on the given number line.**

11)  $x + 7 < -2$

12)  $x - 9 \geq 4$

13)  $-8 < x + 3$

14)  $\frac{3}{5}x > -9$

**Unit 1, Review Problems – Page #2:**

**Solve each inequality and graph the solution set. Show your work!**

15)  $6x - 9 > 33$

16)  $4x + 3x - 7 < -28$

17)  $3(4x - 4) \geq 2(5x - 4)$

18)  $6(3x - 4) < 21(x - 1)$

**Solve each inequality. Graph the solution set.**

19)  $4x - 3 < 5$  or  $7x + 6 \geq 41$

20)  $8x + 4 \leq 4$  or  $2x - 16 > -6$

**Solve each inequality. Graph the solution set.**

21)  $-5 < 2x + 9 \leq 13$

22)  $-24 \leq -5x + 11 \leq -9$

**Graph each absolute value equation. Graph the solution set.**

33)  $|5x - 8| = 27$

34)  $|7x - 19| + 4 = 13$

**Graph each absolute value inequality. Graph the solution set.**

35)  $|9x - 6| > 12$

36)  $|3x + 3| - 8 \geq 10$

**Graph each absolute value inequality. Graph the solution set.**

37)  $|3x - 4| \leq 17$

38)  $|7x + 3| - 11 < 20$

Unit 1, Review Problems – Page #1:

Solve each equation. Check your solution. Show your work!

1)  $x + 23 = 9$

$x = -14$

$\begin{array}{r} 23 \\ -23 \\ \hline -9 \\ +23 \\ \hline 14 \end{array}$

2)  $18 - x = 24$

$\begin{array}{r} 18 - 24 = x \\ -6 = x \end{array}$   $x = -6$

Solve each equation. Check your solution. Show your work!

3)  $7x = -63$

$x = -9$

4)  $-8x = 96$

Solve each equation. Check your solution. Show your work!

5)  $3(2x - 1) = 21$

$\begin{array}{r} 2x - 1 = 7 \\ +1 \quad +1 \\ \hline 2x = 8 \\ \frac{2x}{2} = \frac{8}{2} \\ x = 4 \end{array}$

6)  $4(3x + 2) = -4$

7)  $2(5x + 1) = 4(3x - 1)$

$\begin{array}{r} 10x + 2 = 12x - 4 \\ -10x \quad -10x \\ \hline 2 = 2x - 4 \\ +4 \quad +4 \\ \hline 6 = 2x \\ \frac{6}{2} = \frac{2x}{2} \\ 3 = x \end{array}$

8)  $6(x - 6) = 9(2x - 3)$

Solve each equation. Check your solution. Show your work!

9)  $1.1x - 1.0 = 2.2x - 3.2$

$\begin{array}{r} 1.1x - 1.0 = 2.2x - 3.2 \\ \times 10 \\ 11x - 10 = 22x - 32 \\ -11x \quad +32 \quad -11x \quad +32 \\ \hline 22 = 11x \rightarrow x = 2 \end{array}$

10)  $\frac{3}{4}x + 6 = \frac{1}{2}x + 3$

Solve each inequality. Then, graph its solution set on the given number line.

11)  $x + 7 < -2$

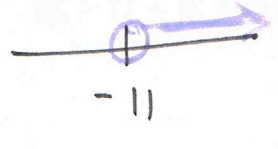
$x < -9$



12)  $x - 9 \geq 4$

13)  $-8 < x + 3$

$x > -11$



14)  $\frac{3}{5}x > -9$

Unit 1, Review Problems – Page #2:

Solve each inequality and graph the solution set. Show your work!

15)  $6x - 9 > 33$

$6x > 42$

$x > 7$

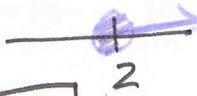


16)  $4x + 3x - 7 < -28$

17)  $3(4x - 4) \geq 2(5x - 4)$

$12x - 12 \geq 10x - 8$

$2x \geq 4 \rightarrow x \geq 2$



18)  $6(3x - 4) < 21(x - 1)$

Solve each inequality. Graph the solution set.

19)  $4x - 3 < 5$  or  $7x + 6 \geq 41$

*whiskers!*

20)  $8x + 4 \leq 4$  or  $2x - 16 > -6$

$4x < 8$

$7x \geq 35$

$x < 2$  or  $x \geq 5$



Solve each inequality. Graph the solution set.

21)  $-5 < 2x + 9 \leq 13$

$-14 < 2x \leq 4$

$-7 < x \leq 2$

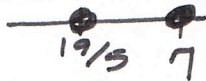


22)  $-24 \leq -5x + 11 \leq -9$

Graph each absolute value equation. Graph the solution set.

23)  $|5x - 8| = 27$

$5x - 8 = 27$   
 $5x = 35$   
 $x = 7$  or  $5x - 8 = -27$   
 $5x = 19$   
 $x = 19/5$



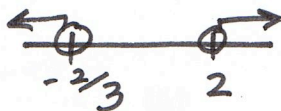
24)  $|7x - 19| + 4 = 13$

Graph each absolute value inequality. Graph the solution set.

25)  $|9x - 6| > 12$

*"whiskers"*

$9x - 6 > 12$  or  $9x - 6 < -12$   
 $9x > 18$   
 $x > 2$  or  $9x < -6$   
 $x < -2/3$



26)  $|3x + 3| - 8 \geq 10$

Graph each absolute value inequality. Graph the solution set.

27)  $|3x - 4| \leq 17$

28)  $|7x + 3| - 11 < 20$

$7x + 3 < 31$   
 $7x < 28$   
 $x < 4$



*"barbells"*  
 $7x + 3 > -31$   
 $7x > -34$   
 $x > -34/7$

Algebra 1: Unit 1 Assessment Topics EQUATIONS AND INEQUALITIES IN ONE VARIABLE

L19: 1 step equations (+ or -)	L21: 1 step equations (x or $\div$ )	L23: Solving 2-step equations
L24: Solving decimal equations	L26: Multi Step Equations	L28: Variables on both sides
L50: Graphing Inequalities	L66: Solving Inequalities (+,-)	L70: Solving Inequalities (x, $\div$ )



## Algebra 1: Unit 1 Assessment Test Topics

L73: Compound inequalities	L74: Absolute value equations	L77: Solving multi-step ineqs
L81: Solving Inequalities, variables on both sides	L82: Solving compound ineqs	L91: Solve abs value ineq
L94: Multi step abs val eqns	L101: Multi step abs val ineqs	