1

Warm-Up 3

1) 3(-5)(-7) =

7.NS.2a

2) What is the sum of 52 and its additive inverse?

7.NS.1b

3) In a survey 80 out of 100 people supported building a new library. If 450 people were asked if they supported building the library, how many would you expect to say yes?

4) Find the area of a rectangular room (in square feet) that is 15 feet by 120 inches.

7.G.6

5) Trent bought five tickets to the movies and spent $12.35 on snacks and drinks. Let t = the cost of one movie ticket and c = the total amount of money that Trent spent. Write an equation that could be used to determine how much money Trent spent.

inequality - a mathematical sentence that states that two expressions are NOT equal

inequality symbol - symbol used to compare both sides of an inequality $<$, $>$, $\leq$, $\geq$

solution set - a list of values that make an inequality true $\{x, y, z \ldots\}$

Algebraic Phrase	Algebraic Inequality	Examples
1. a number is less than 4.		
2. a number is more than 4.		
3. -4 is less than a number.		
4. -4 is greater than a number.		
5. Jason has at least five dollars.		
6. The highest (or most) grade you can get is a ninety-five.		

Translating inequality word phrases

Algebraic Phrase	Algebraic Inequality	Solutions
1. a number is less than 4.	$x < 4$	$\{3, 2, 1...\}$
2. a number is more than 4.	$x > 4$	$\{5, 6, 7...\}$
3. -4 is less than a number.	$-4 < x$	$\{-3, -4, -5...\}$
4. -4 is greater than a number.	$-4 > x$	$\{-5, -6, -7...\}$
5. Jason has at least five dollars.	$d \geq 5$	$\{5, 6, 7...\}$
6. The highest grade you can get is a ninety-five.	$g \leq 95$	$\{95, 94, 93...\}$

TOPIC: Solving Inequalities

Lesson Essential Question:

How can we model real life situations to solve an inequality?

SOLVING One-Step Inequalties *(REVIEW from 6th Grade)*

EXAMPLE:

	$x + 8 < 21$	$3x \leq 21$
1) DRAW your RIVER (a line to separate left-side from the right-side.)	$\boxed{x} + 8 < 21$	$3x \leq 21$
2) Perform inverse (or opposite) operation.	$\boxed{x} + 8 < 21$ $-8 \quad -8$	$\frac{3x}{3} \leq \frac{21}{3}$
3) Box your final answer.	$\boxed{x < 13}$	$\boxed{x \leq 7}$

****ALWAYS CHECK****
Does my answer make sense?

DID MY ANSWER HAVE???
■ VARIABLE TERM ■ an INEQUALITY SIGN ■ CONSTANT

When multiplying or dividing by a negative, switch the inequality symbol to its opposite.

EXAMPLE: $-3x \geq 21$

$$\frac{-3x}{-3} \geq \frac{21}{-3}$$

$$x \leq -7$$

CHECK:

if x = -5

$-3(-5) \geq 21$

$15 \geq 21$ ✗

if x = -9

$-3(-9) \geq 21$

$27 \geq 21$ ✓

Solution Set:

$\{-7, -8, -9...\}$

EXAMPLE: $8 - x > 20$

$$8 - x > 20$$

$$-8 \quad -8$$

$$-x > 12$$

$$-1 \quad -1$$

$$x < -12$$

Solution Set:

$\{-13, -14, -15...\}$

TOPIC: Solving Inequalities

Lesson Essential Question:

How can we model real life situations to solve an inequality?

SOLVING Two-Step Inequalties

EXAMPLE:

$-x + 8 > 21$

1) DRAW your RIVER (a line to separate left-side from the right-side.)

$-x + 8 > 21$

2) Perform inverse (or opposite) operation.

$-x + 8 > 21$

$-8 \quad -8$

3) Flip the symbol.

$\frac{-x}{-1} > \frac{13}{-1}$

$x < -13$

4) Box your final answer.

5) Check your answer.

****ALWAYS CHECK your answer. Does it make sense?**

CHECK

(choose a possibe solution)

DID MY ANSWER HAVE???

■ VARIABLE TERM ■ an INEQUALITY SIGN ■ CONSTANT

TOPIC:
Solving Inequalities

Lesson Essential Question:

How can we model real life situations to solve an inequality?

SOLVING Two-Step Inequalties

EXAMPLE:

$$\frac{-3x}{5} \geq 15$$

1) DRAW your RIVER (a line to separate left-side from the right-side.)

$$\frac{-3x}{5} \geq 15$$

2) Perform inverse operations.

$$\frac{-3x}{5} \geq \frac{15}{5} \quad \begin{matrix} \times 5 & \times 5 \end{matrix}$$

$$\frac{-3x}{-3} > \frac{75}{-3}$$

3) Flip the symbol.

$$x \leq -25$$

4) Box your final answer.

5) Check your answer.

CHECK

(choose a possibe solution)

DID MY ANSWER HAVE???

■ VARIABLE TERM ■ an INEQUALITY SIGN ■ CONSTANT

TOPIC:
Solving Inequalities

Lesson Essential Question:

How can we model real life situations to solve an inequality?

SOLVING Two-Step Inequalties

EXAMPLE: $\frac{x - 3}{4} \geq 1$

1) DRAW your river.

$4 \cdot \frac{x - 3}{4} \geq 1 \cdot 4$

2) Perform inverse operations.

$x - 3 \geq 4$

$+3 \quad +3$

3) Box your final answer.

$\boxed{x \geq 7}$

4) Check your answer.

CHECK:

Solution Set:

DID MY ANSWER HAVE???

■ VARIABLE TERM ■ an INEQUALITY SIGN ■ CONSTANT