MONDAY November 16th

Solving Inequalities

HEADS UP!! Test Friday, Nov. 20th

WARM UP

1) $15 - 4k = -11$

2) $\frac{2}{5}k - 16 = -22$

3) $6x + 7 = 9\frac{1}{4}$

4) $3x + 7 = 13$

5) $\frac{r+4}{3} = -5$

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 $\{x, y, z \ldots\}$

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.)	$x + 8 < 21$	$3x \leq 21$
2) Perform inverse (or opposite) operation.	$x + 8 < 21$ $-8 \quad -8$	$\frac{3x}{3} \leq \frac{21}{3}$
3) Box your final answer.	$x < 13$	$x \leq 7$

****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.

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

$$-3x \geq 75$$

3) Flip the symbol.

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

$$x \leq -25$$

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

TUESDAY November 17th

Graphing Inequalities

HEADS UP!! Test Friday, Nov. 20th

WARM UP

1) $-6m + 2 < -10$

2) $9 - x > 11$

3) Write the solution set for problems 1 and 2.

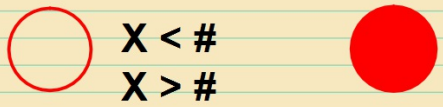
4) Write an inequality to represent the scenario:
An elevator can hold no more than 18 people.

5) Write an inequality to represent the scenario:
There are at least 42 students on our team
would made the honor roll last quarter.

graph of an inequality - a number line that shows the solution to an inequality, since there are infinite solutions

Two steps:

1. choose open or closed circle at first point of solution



X < #
X > #

X ≤ #
X ≥ #

2. choose to shade left or right

X < #

OR

> X

X > #

OR

< X

Solve and Graph each Inequality

Ex 1) $4x + 6 < 12$

Solve and Graph each Inequality

Ex 2) $2x - 3 - 8x \geq 21$

Solve and Graph each Inequality

Ex 3) $7(2x - 4) - 12x > -12$

	SOLVE	GRAPH
$0.5X + 40 < 50$		
$10 - 1.5X \geq 20$		
$\frac{X}{2} + 2.6 > 8.1$		

WEDNESDAY November 18th

Problem Solving with Inequalities & Equations

HEADS UP!! Test Friday, Nov. 20th

WARM UP

1) Emily divided 4 dozen roses into two baskets. The first had (x + 10) and the second had (2x -1). How many roses were in each basket?

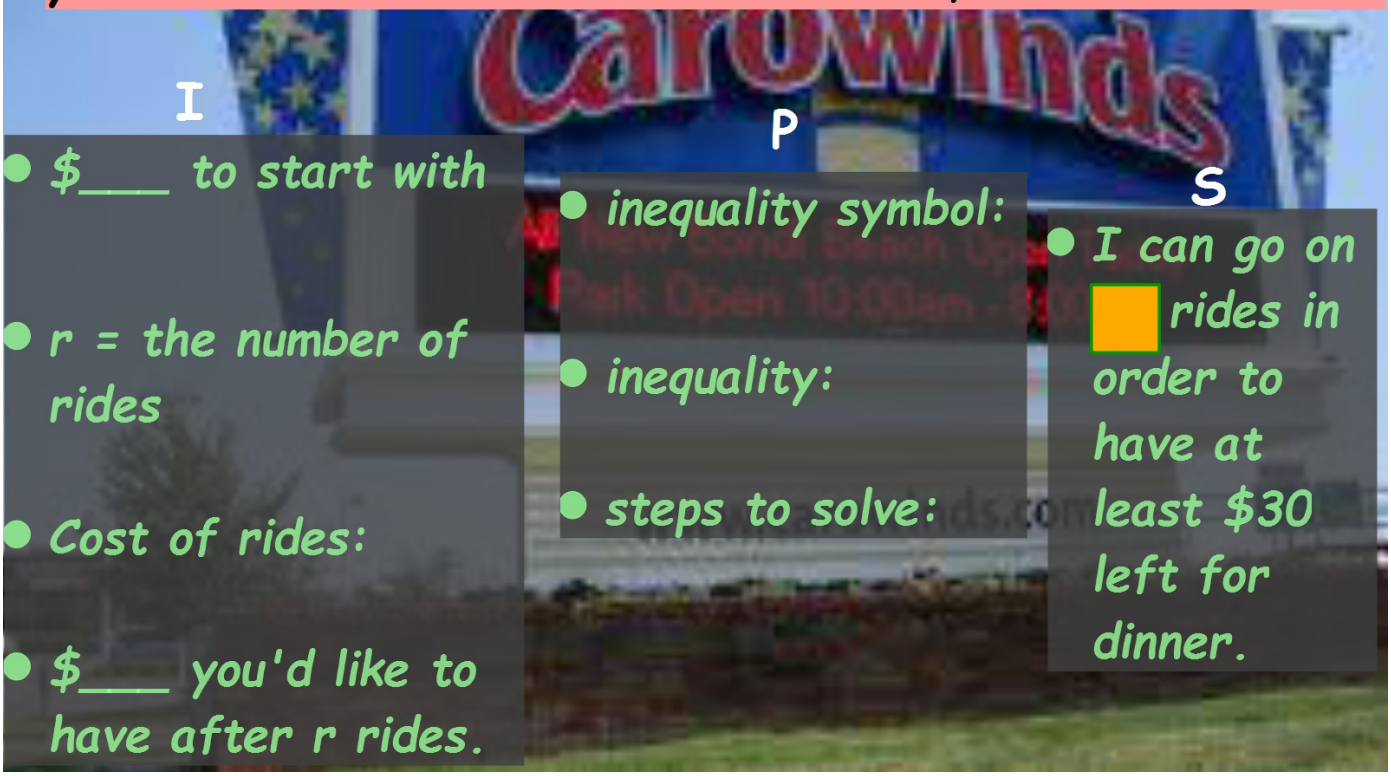
2) If $F = 9/5C + 32$, what is 65°F in °C?

3) $-x - 17 \leq 1$

4) $4x + 9 > 13$

5) Draw a graph of the solution for problem 4.

1) *Suppose your parents gave you $100 to go to Carowinds. But you want to leave the park with at least thirty dollars to go to Red Lobster with friends afterwards. Each ride cost $3.50. How many rides can you ride and still leave with at least $30 for dinner ?*



I

- *$___ to start with*
- *r = the number of rides*
- *Cost of rides:*
- *$___ you'd like to have after r rides.*

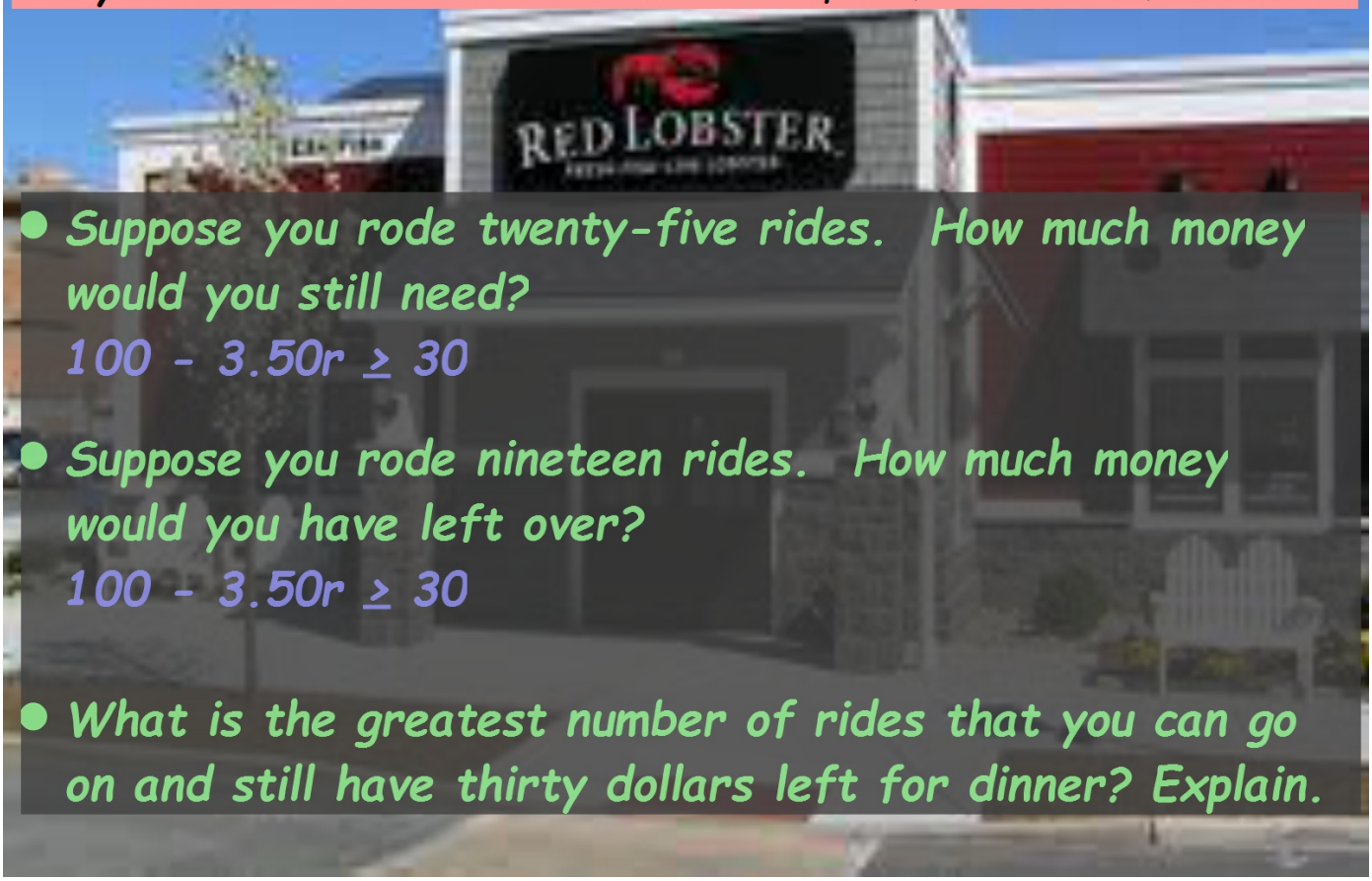
P

- *inequality symbol:*
- *inequality:*
- *steps to solve:*

S

- *I can go on ___ rides in order to have at least $30 left for dinner.*

Suppose your parents gave you $100 to go to Carowinds. But you want to leave the park with at least $30 in your pocket to go to Red Lobster with some friends. Each ride cost $3.50. How many rides can you ride and still leave with at least $30 for dinner afterwards?



- Suppose you rode twenty-five rides. How much money would you still need?
  $100 - 3.50r \geq 30$
- Suppose you rode nineteen rides. How much money would you have left over?
  $100 - 3.50r \geq 30$
- What is the greatest number of rides that you can go on and still have thirty dollars left for dinner? Explain.

Use the I P S strategy

2) Your school wants to raise at least $2,000 for the Pennies for Patients Campaign. How much money should each student contribute if there are 32 classes with 25 students in each class?

A) Write the inequality
B) Solve
C) Write the solution set
D) Graph

Problem solving:

3) Online concert tickets cost $38.95 each, plus a service charge of $2.55 per ticket. The website also charges a transaction fee of $12.99 for the purchase. If you paid $332, how many tickets did you buy?

A) Write a multi-step equation
B) Solve

Problem solving:

Calvin bought 3 pairs of jeans for $21 each and 2 shirts. He spent a total of $82 before tax. What was the cost of 1 shirt?

I	P	S

A) Write a multi-step equation
B) Solve

Exit Ticket:

Elvin bought 3 shirts for $19 each and 2 pair of jeans . He didn't want to spend more than $68 before tax. What was the cost of one pair of jeans?

A) Write the inequality
B) Solve
C) Write the solution set
D) Graph

THURSDAY November 19th

Mixed REVIEW with Inequalities & Equations

HEADS UP!! Test ~~TOMORROW, Nov. 20th~~ MONDAY 11/23

WARM UP

1) Emily divided one more than 2 dozen roses into two baskets. The first had (x - 1) and the second had (2x + 2). How many roses were in each basket?

2) If $F = 9/5C + 32$, what is 105°F in °C?

3) $-x + 26 \geq 30$

4) $5x - 17 < 3$

5) Draw a graph of the solution for problem 4.