Inequalities Quiz Thursday

What's on the quiz

1. Writing and graphing inequalities from statements
2. Solving One-Step Inequalities
3. Solve Two-Step Inequalities
4. Negative coefficients
5. Inequality word problems ***only from the worksheet***
6. Rational Numbers

What's NOT on the quiz

- Solving inequalities with variables on both sides
- Word problems that are **NOT** from the worksheet
- Non-terminating decimals

Writing and Graphing Inequalities

Write an inequality for the following situation:

EX: Lydia has a minimum of 6 credit cards _____

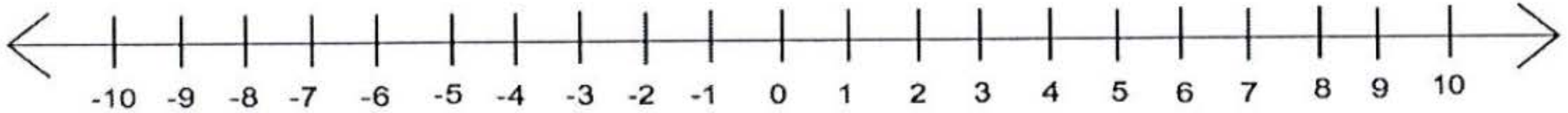
Write an inequality to represent the number line

EX:

_____

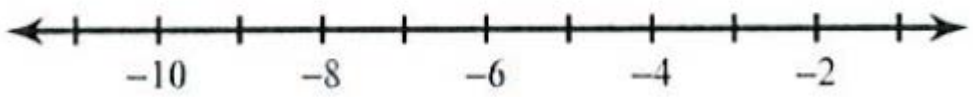
Graph the inequality on the number line

$x > -8$

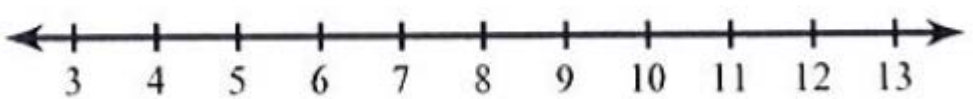


Solving One-Step Inequalities

3) $n - 6 \leq -14$

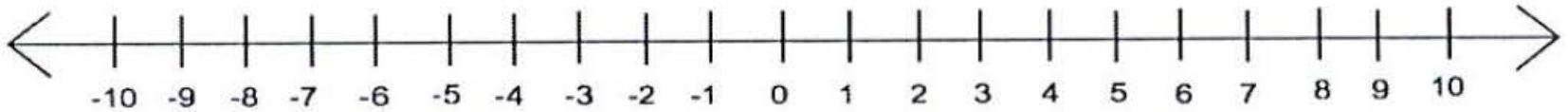


10) $\frac{n}{3} > 3$

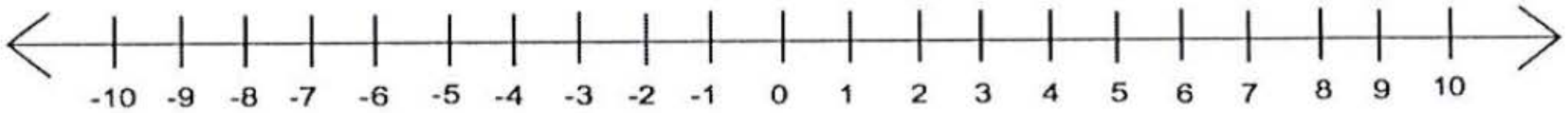


Solving Two-Step Inequalities

$2x - 10 \leq 6$

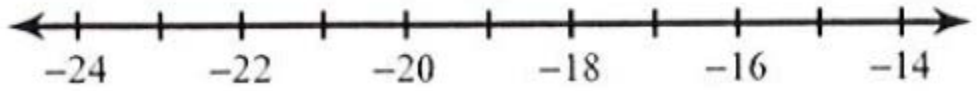


$2 + 3x > 23$

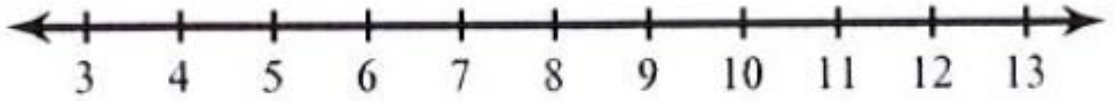


Negative Coefficients

11) $\frac{k}{-4} < 4$



12) $-9x \geq -90$



Solving Two-Step Inequalities

1. Add or subtract to isolate the variable term.
2. Multiply or divide to solve for the variable. If multiply or divide by a negative number then reverse the inequality symbol.

Example:

$$-3x + 5 \leq -16$$
$$-5 \quad -5 \quad \text{Subtract}$$
$$-3x \leq -21$$
$$\frac{-3x}{-3} \geq \frac{-21}{-3} \quad \text{Divide by -3, reverse inequality}$$
$$x \geq 7$$

Word Problems

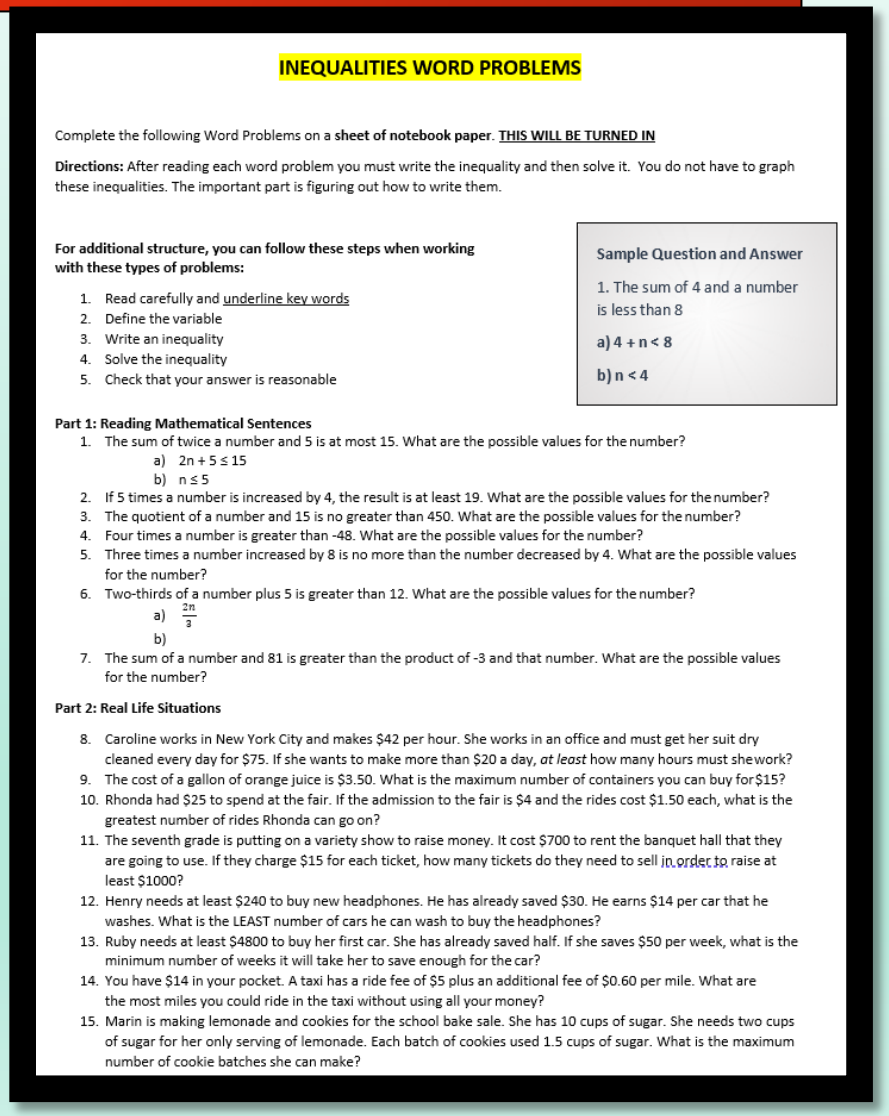
There will be word problems on the quiz related to inequalities.

To make things easier on you, the only questions you will see are questions "nearly identical" to the word problems we've worked on for the past week.

They're "nearly identical" because some of the numbers may be switched around so we can have terminating decimals and NOT non-terminating decimals.

3.75

1.1947443...



INEQUALITIES WORD PROBLEMS

Complete the following Word Problems on a **sheet of notebook paper**. **THIS WILL BE TURNED IN**

Directions: After reading each word problem you must write the inequality and then solve it. You do not have to graph these inequalities. The important part is figuring out how to write them.

For additional structure, you can follow these steps when working with these types of problems:

1. Read carefully and underline key words
2. Define the variable
3. Write an inequality
4. Solve the inequality
5. Check that your answer is reasonable

Sample Question and Answer

1. The sum of 4 and a number is less than 8

a) $4 + n < 8$

b) $n < 4$

Part 1: Reading Mathematical Sentences

1. The sum of twice a number and 5 is at most 15. What are the possible values for the number?
   a) $2n + 5 \leq 15$
   b) $n \leq 5$
2. If 5 times a number is increased by 4, the result is at least 19. What are the possible values for the number?
3. The quotient of a number and 15 is no greater than 450. What are the possible values for the number?
4. Four times a number is greater than -48. What are the possible values for the number?
5. Three times a number increased by 8 is no more than the number decreased by 4. What are the possible values for the number?
6. Two-thirds of a number plus 5 is greater than 12. What are the possible values for the number?
   a) $\frac{2n}{3}$
   b)
7. The sum of a number and 81 is greater than the product of -3 and that number. What are the possible values for the number?

Part 2: Real Life Situations

8. Caroline works in New York City and makes $42 per hour. She works in an office and must get her suit dry cleaned every day for $75. If she wants to make more than $20 a day, *at least* how many hours must she work?
9. The cost of a gallon of orange juice is $3.50. What is the maximum number of containers you can buy for $15?
10. Rhonda had $25 to spend at the fair. If the admission to the fair is $4 and the rides cost $1.50 each, what is the greatest number of rides Rhonda can go on?
11. The seventh grade is putting on a variety show to raise money. It cost $700 to rent the banquet hall that they are going to use. If they charge $15 for each ticket, how many tickets do they need to sell in order to raise at least $1000?
12. Henry needs at least $240 to buy new headphones. He has already saved $30. He earns $14 per car that he washes. What is the LEAST number of cars he can wash to buy the headphones?
13. Ruby needs at least $4800 to buy her first car. She has already saved half. If she saves $50 per week, what is the minimum number of weeks it will take her to save enough for the car?
14. You have $14 in your pocket. A taxi has a ride fee of $5 plus an additional fee of $0.60 per mile. What are the most miles you could ride in the taxi without using all your money?
15. Marin is making lemonade and cookies for the school bake sale. She has 10 cups of sugar. She needs two cups of sugar for her only serving of lemonade. Each batch of cookies used 1.5 cups of sugar. What is the maximum number of cookie batches she can make?

Answer Key

Writing and Graphing Inequalities

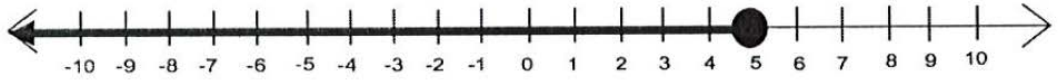
Write an inequality for the following situation:

EX: Lydia has a minimum of 6 credit cards

$x \geq 6$

Write an inequality to represent the number line

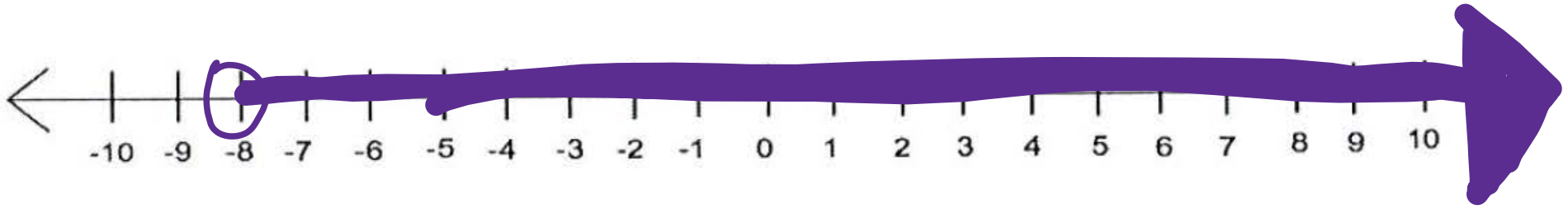
EX:



$x \leq 5$

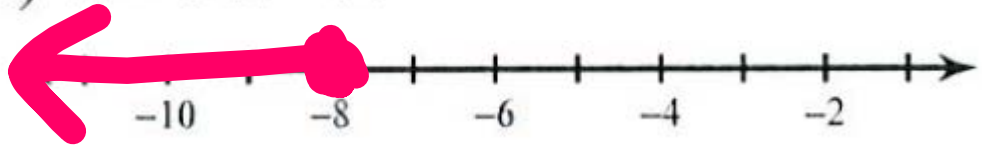
Graph the inequality on the number line

$x > -8$



Solving One-Step Inequalities

3) $n - 6 \leq -14$

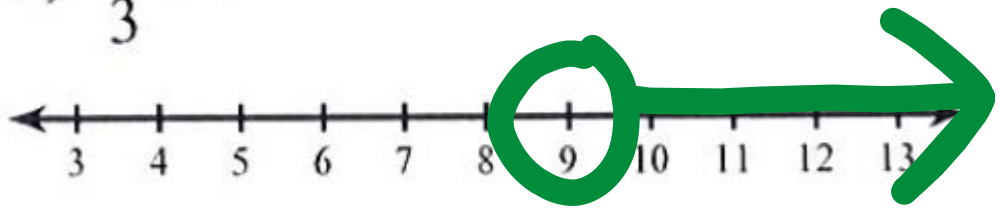


$n - 6 \leq -14$

$+6 \quad +6$

$n \leq -8$

10) $\frac{n}{3} > 3$



$3\left(\frac{n}{3}\right) > 3 \times 3$

$n > 9$

Solving Two-Step Inequalities

$2x - 10 \leq 6$

$+10 \quad +10$

$\frac{2x}{2} \leq \frac{16}{2}$

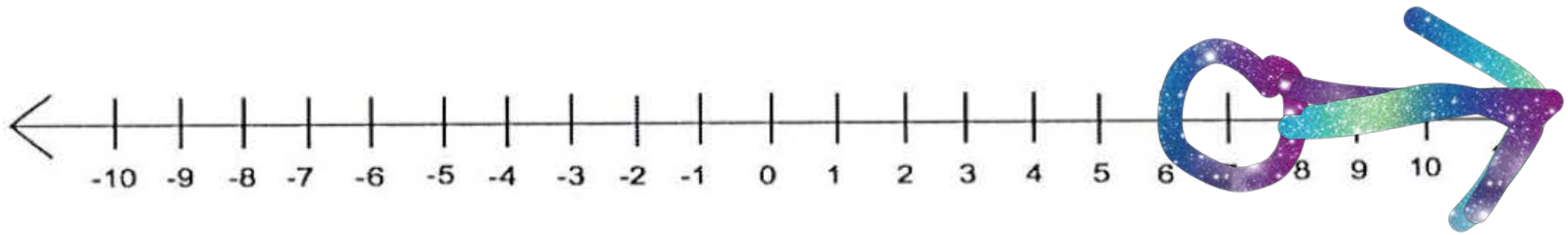
$x \leq 8$

$2 + 3x > 23$

$-2 \quad -2$

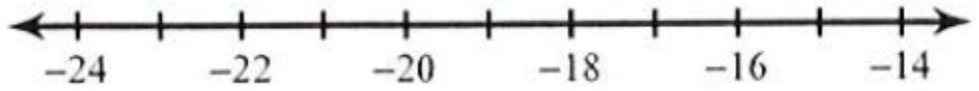
$\frac{3x}{3} > \frac{21}{3}$

$x > 7$



Negative Coefficients

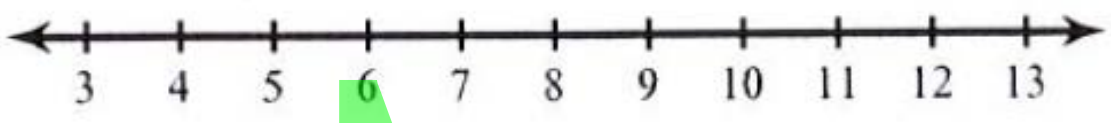
11) $\frac{k}{-4} < 4$



$-4 \times \frac{k}{-4} < 4 \times -4$

$k > -16$

12) $-9x \geq -90$



$\frac{-9x}{-9} \geq \frac{-90}{-9}$

$x \leq 10$