

Inequality Word Problems

Represent each of the following as an algebraic inequality.

- 1) x is at most 30 _____
- 2) the sum of 5x and 2x is at least 14 _____
- 3) the product of x and y is less than or equal to 4 _____
- 4) 5 less than a number y is under 20 _____

<p>1st: Read carefully and <u>underline key words</u></p> <p>2nd: Write a let statement</p> <p>3rd: Determine whether to use $<$, \leq, $>$, or \geq</p> <p>4th: Write and solve the inequality</p>



- 5) If 5 times a number is increased by 4, the result is at least 19. Find the least possible number that satisfies these conditions.

- 6) The sum of twice a number and 5 is at most 15. What are the possible values for the number?

- 7) The cost of a gallon of orange juice is \$3.50. What is the maximum number of containers you can buy for \$15?



- 8) Three times a number increased by 8 is no more than the number decreased by 4. Find the number.

- 9) Two-thirds of a number plus 5 is greater than 12. Find the number.

Inequality Word Problem Homework
Integrated Algebra

Name _____

____1) In order to be admitted for a certain ride at an amusement park, a child must be greater than or equal to 36 inches tall and less than 48 inches tall. Which graph represents these conditions?



____2) Which statement is modeled by $2p + 5 < 11$?



- (1) The sum of 5 and 2 times p is at least 11.
- (2) Five added to the product of 2 and p is less than 11.
- (3) Two times p plus 5 is at most 11.
- (4) The product of 2 and p added to 5 is 11.



____3) Which is NOT a solution of the inequality $5 - 2x \geq -3$?

- (1) 0
- (2) 2
- (3) 4
- (4) 5

____4) Which statement can be modeled by $x + 3 \leq 12$?

- (1) Sam has 3 bottles of water. Together, Sam and Dave have at most 12 bottles of water.
 - (2) Jennie sold 3 cookbooks. To earn a prize, Jennie must sell at least 12 cookbooks.
 - (3) Peter has 2 baseball hats. Peter and his brothers have fewer than 12 baseball hats.
 - (4) Kathy swam 3 laps in the pool this week. She must swim more than 12 laps.
- 5) 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?
- 6) Four times a number is greater than -48 . What are the possible values for the number?

Inequality Word Problems

Recall four steps to help solve these types of problems:

1. Read carefully and underline key words
2. Write a Let statement [e.g. let $x = \dots$]
3. Determined whether to use the $=$, $>$, $<$, \geq or \leq sign
4. Write and solve the inequality



1. The quotient of a number and 15 is no greater than 450. What are the possible values for the number?
2. Keith and Michelle went out to dinner. The total cost of the meal, including the tip, came to \$53.70. If the combined tip came out to \$9.60, and each friend spent an equal amount, how much did each friend pay not including the tip?
3. Jason is saving up to buy a digital camera that costs \$490. So far, he saved \$175. He would like to buy the camera 3 weeks from now. What is the equation used to represent how much he must save every week to have enough money to purchase the camera?



4. Adrian works in New York City and makes \$42 per hour. She works in an office and must get her suit dry cleaned everyday for \$75. If she wants to make more than \$260 a day, *at least* how many hours must she work?

5. Your brother has \$2,000 saved for a vacation. His airplane ticket is \$637. Write and solve an inequality to find out how much he can spend for everything else.



6. Your local bank offers free checking for accounts with a balance of at least \$500. Suppose you have a balance of \$516.46 and you write a check for \$31.96. How much do you need to deposit to avoid being charged a service fee?

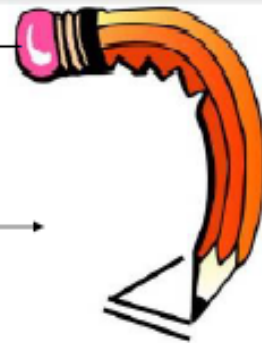


- 7) Lexi wants to spend no more than \$300 on school clothes. She spends \$75 on a coat and then wants to buy some sweaters that are on special for \$10 each. Write and solve the inequality to find the greatest number of sweaters she can buy.

- 8) A small airplane can carry no more than 1,050 pounds of luggage and mail. The mail for the day weighs 490 pounds. If each passenger brings 70 pounds of luggage, what is the greatest possible number of passengers that can be taken?

Linear Inequalities

Name _____



Directions: Solve and graph the solution set. Indicate a scale.

1. $3x \leq 9$ 

2. $4x - 3 \geq 13$ 

3. $4x - 3 < 13$ 

4. $5x + 10 > 14x - 8$ 

5. $2x - 6 < 2$ 

6. $2x - 5 \leq x - 2$ 

7. $3x - 14 \geq 2 - 5x$ 

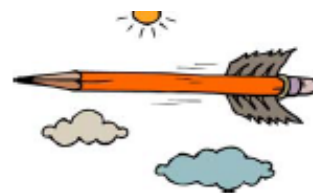
8. $-2x + 5 < 17 + x$ 

9. $-x \leq 15 - 2x$ 

10. $5x \geq -35$ 

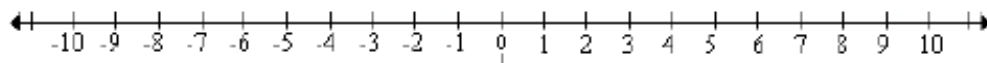
Inequalities

Name _____

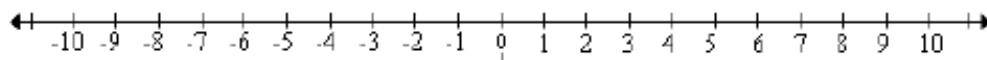


Solve the following inequalities and graph the solution sets on the number lines.
Please show work.

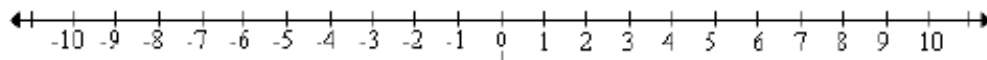
1. $x - 4 > 1$



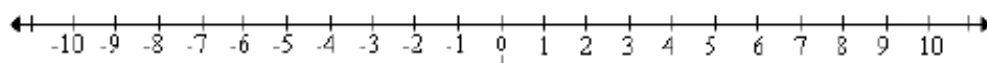
2. $x + 1 \leq 4$



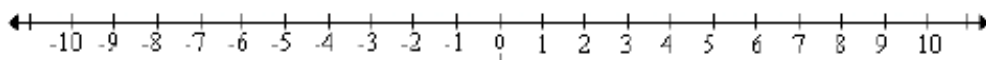
3. $4y \geq 8$



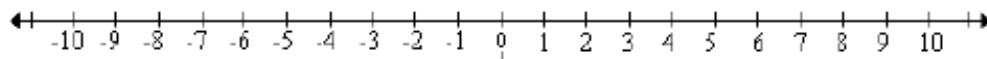
4. $-5w < 10$



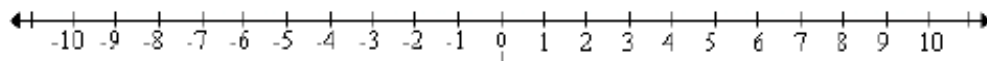
5. $4x > -28$



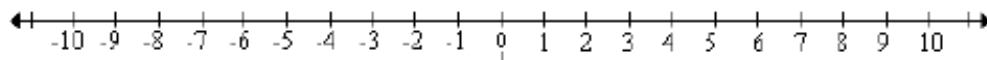
6. $27 > -9y$



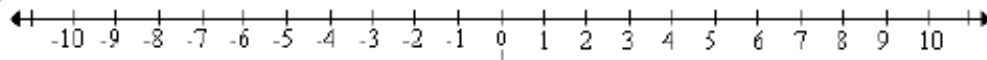
7. $2y + 7 < 17$



8. $2(2x - 8) - 8x \leq 0$



9. $5x + 4 \leq 11 - 2x$



10. $5x - (x - 8) > 9 + 3(2x - 3)$

