Inequality Word Problems

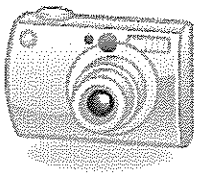
Recall four steps to help solve these types of problems:

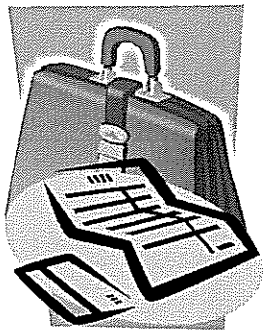
1. Read carefully and underline key words
2. Write a Let statement [e.g. let x = …]
3. Determined whether to use the =, >, <, ≥ *or* ≤ sign
4. Write and solve the inequality

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?

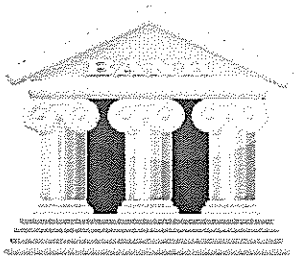




4. Adrian works in New York City and makes $42 per hour. She works in an office and must get her suit dry cleaned everyday for $75. If she wants to make more than $260 a day, *at least* how many hours must she work?

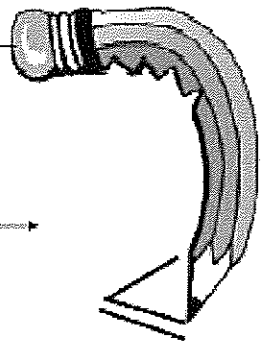
5. Your brother has $2,000 saved for a vacation. His airplane ticket is $637. Write and solve an inequality to find out how much he can spend for everything else.

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?



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

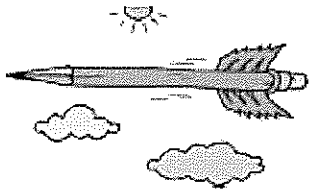
8. $-2x + 5 < 17 + x$

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

10. $5x \geq -35$

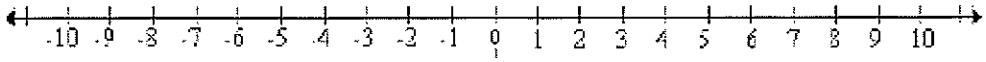
Inequalities

Name_____

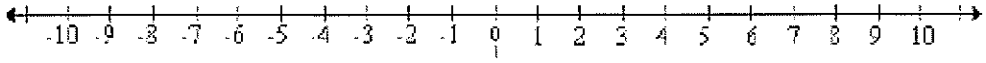


Solve the following inequalities and graph the solution sets on the number lines. Please show work.

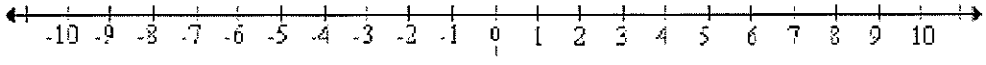
1. $x - 4 > 1$



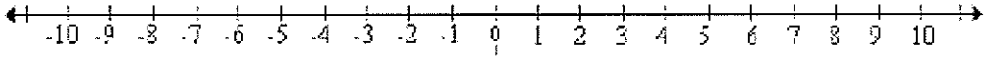
2. $x + 1 \leq 4$



3. $4y \geq 8$

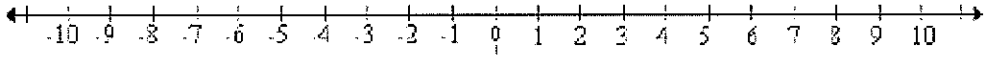


4. $-5w < 10$

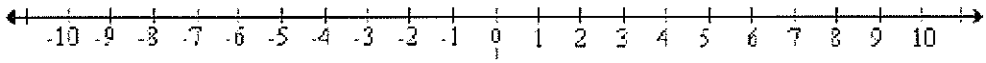


5. $4x > -28$

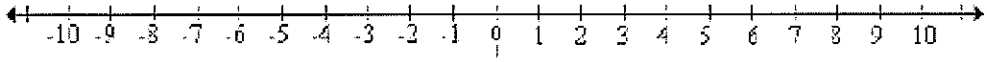
6. $27 > -9y$



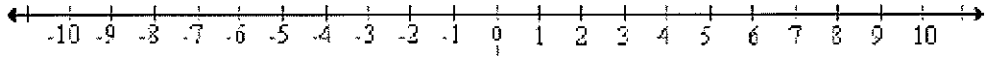
7. $2y + 7 < 17$



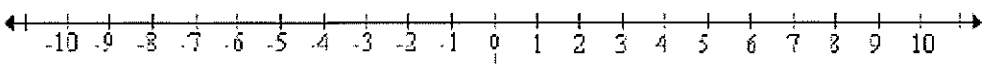
8. $2(2x - 8) - 8x \leq 0$



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

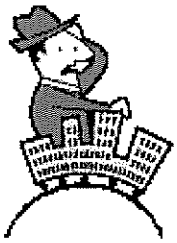


10. $5x - (x - 8) > 9 + 3(2x - 3)$



Inequality Word Problem Homework Name_____
Integrated Algebra

_____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?



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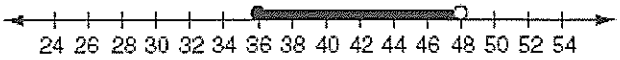

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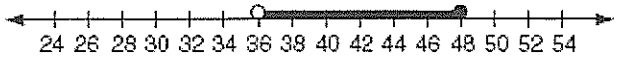
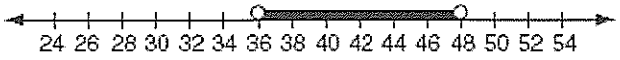


(3)


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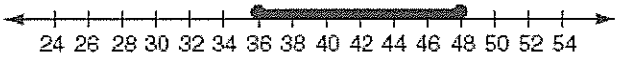
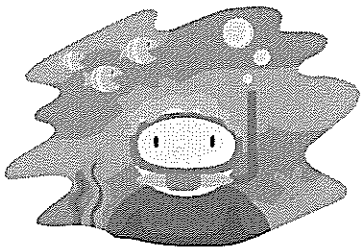


_____2) Which statement is modeled by $2p + 5 < 11$?

(1) The sum of 5 and 2 times p is at 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.

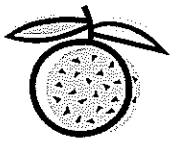
(3) Peter has 2 baseball hats. Peter and his brothers have fewer than 12 baseball hats.

(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?

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.

Algebra 1 Name_____

One-variable Inequality Word Problems

Period____

1) Elisa won 40 lollipops playing basketball at the school fair. She gave two to every student in her math class. She has at least 7 lollipops left.

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality to find the maximum number of students in her class.

2) More than 450 students went on a field trip. Ten buses were filled and 5 more students traveled in a car.

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality to find the minimum number of people on each bus.

3) Bill spent less than $26 on a magazine and five composition books. The magazine cost $4.

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality to find the maximum cost of each composition book.

4) Amanda rented a bike from Shawna's Bikes. They charged her $2 per hour, plus a $10 fee. Amanda paid less than $27.

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality to find the maximum number of hours Amanda rented the bike.

5) You need to buy some pencils and an eraser. You can spend no more than $5. The eraser costs $1 and the pencils cost $0.25 each.

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality to find the maximum number of pencils you can buy.

6) Mark's Canoes rents canoes for $20 plus $35 per hour. You do not want to spend more than $150. For how many hours can you afford to rent the canoe?

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality and answer the question.

7) For a field trip 18 students rode in cars and the rest filled five buses. How many students were in each bus if no more than 250 students went on the trip?

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality and answer the question.

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8) Charles is saving $5 each week. He earns an extra $15 by mowing his neighbor's lawn. How many weeks will he need to save in order to have at least $75?

   a) Write an inequality to represent the situation. Be sure to define your variable.

   b) Solve the inequality and answer the question.

Name: _____ Class: _____ Date: _____ ID: A

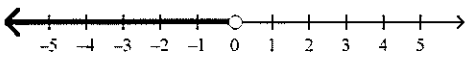
Inequalities Word Problems

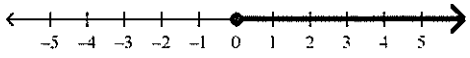
Multiple Choice

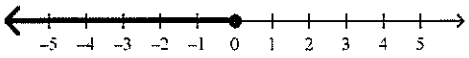
Identify the choice that best completes the statement or answers the question.

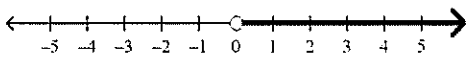
Identify the graph of the inequality from the given description.

____ 1. x is negative.

a. 

c. 

b. 

d. 

Short Answer

Write the inequality in words.

2. $3n < 52$

3. $5n - 10 > 26$

4. Tina can type at least 60 words per minute. Write and graph an inequality to model this situation.

Write an inequality to model the situation.

5. Thomas earned $44 or more.

6. A number exceeds 21.

7. Suppose you had d dollars in your bank account. You spent \$22 but have at least \$28 left. How much money did you have initially? Write and solve an inequality that represents this situation.

8. Jeanette wants to tile the floor of a room in her house. The square tiles measure $\frac{3}{4}$ ft on each side. The room is 10 ft wide.
   a. Write an inequality to describe how many tiles are needed to make one row of tiles across the width of the room.
   b. Solve the inequality.
   c. How many tiles should Jeanette buy to form one row?

9. The French club is sponsoring a bake sale. If their goal is to raise at least \$140, how many pastries must they sell at \$3.50 each in order to meet that goal? Write and solve an inequality.

10. The width of a rectangle is 33 centimeters. The perimeter is at least 776 centimeters.
    a. Write and solve an inequality to find the length of the rectangle.
    b. Write an inequality to find the area of the rectangle.

Solve the equation.

11. $78 = -2(m + 3) + m$

12. $6 = 2(x + 8) - 5x$

13. Melissa 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. Solve the inequality $75 + 10s \leq 300$ to find the greatest number of sweaters s she can buy.

14. A small airplane can carry less 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?

15. Four times the sum of a number and 15 is at least 120. Let x represent the number. Find all possible values for x.