

Inequality Word Problems Worksheet

Name: _____

1. The low temperatures for the previous two days were 62 and 58 degrees. We would like to find all temperatures for the third day such that the average daily temperature is at least 64 degrees.
 - a. Determine which of the following temperatures for the third day would yield an average daily temperature of at least 64 degrees
60 degrees 70 degrees 80 degrees
 - b. Solve for the exact temperature, x , that gives a three-day average of 64 .
 - c. State the inequality that represents all temperatures for the third day that result in an average daily temperature of at least 64 degrees. Also graph the solution set.

2. Gabriella is a waitress at the Hampton Grille. In one night she earned at least \$75 while working a six-hour shift. If Gabriella earned \$31.50 in tips, find all possibilities for the amount she earned in wages per hour. Represent your answer both algebraically and graphically.

3. Ike's age is three years more than twice his younger brother's age. If the sum of their ages is at most 18, then find:
 - a. The greatest age that Ike's brother could be.
 - b. An inequality that represents all possible values of Ike's age (allowing for fractional years), given that his younger brother is at least 2 years old.

4. Jabari is training for a marathon and is using a Pyramid training pattern for the next five days. He plans to increase the number of miles he runs by a single mile each day from the first to the third day, peaking on the third day, and then decreasing the number of miles run by a single mile per day for the last two days.
- If x represents the number of miles Jabari runs on Day 1, write expressions for how many miles, in terms of x , he runs for Days 2 through 5.

Day 1 = x

Day2=

Day3=

Day4=

Day5=

- Find all possible values that Jabari can run on Day 1 such that his total number of miles run over the five days is at least 55. Represent your answer algebraically and graphically.
 - Assuming Jabari runs a whole number of miles on Day 1, what is the least number of miles he can run on Day 1 to meet his goal of at least 55 miles.
5. Keith plans to buy a car two years from now. He currently has \$3,000 saved up to buy the car.
- From all the cars that Keith is considering buying, how much money does he need to save per month over the two years if the least expensive car he wants to buy is \$15,000?
 - From all the cars that Keith is considering buying, how much money does he need to save per month over the two years if the most expensive car he wants to buy is \$25,800?
 - Considering all of Keith's options, represent all possible amounts that he must save per month as an algebraic inequality. Also graph the inequality.

6. Your school is sponsoring a pancake dinner to raise money for a field trip. You estimate that 200 adults and 250 children will attend. Let x be the cost of an adult ticket and let y be the cost of a child ticket.
- Write an equation to find out what price to make the adult and child ticket if we want to raise at least \$3800.
 - Using the equation above, if the cost of an adult ticket is \$10 what was the cost of child ticket? Does this make sense?
7. You are running a concession stand at the basketball game. You sell hot dogs for \$1 and sodas for \$0.50. At the end of the night, you estimate you made less than or equal to \$200. Let x represent the number of hotdogs sold and y represent the number of sodas sold.
- Write an equation that can be used to find out how many hot dogs and sodas were sold.
 - Using the equation above, if you sold 100 hotdogs how many sodas were sold? Does this answer make sense?
8. John is an insurance salesman who works on commission. Each time he gets a new client, who purchases car insurance, he earns \$100 in commission. Each time he gets a client who purchases homeowners insurance, he earns \$50 in commission. Let x represent the number of clients who purchase car insurance and let y represent the number of clients who purchase homeowners insurance.
- Write an equation that you could use to find out how many clients, for each type of insurance, John would sell to earn more than \$3000 in commission.
 - Using the equation above, if he had 40 clients that purchased homeowners insurance, how many have car insurance? Does this answer make sense?

Inequality Word Problems Worksheet

Name: _____ **KEY** _____

1. The low temperatures for the previous two days were 62 and 58 degrees. We would like to find all temperatures for the third day such that the average daily temperature is at least 64 degrees.

- a. Determine which of the following temperatures for the third day would yield an average daily temperature of at least 64 degrees

60 degrees

70 degrees

80 degrees

Average is 60

Average is 63.33

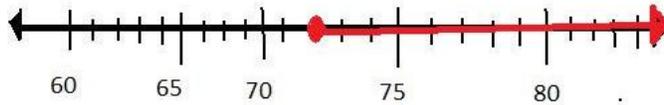
Average is 66.7

- b. Solve for the exact temperature, x , that gives a three-day average of 64 .

$$(120 + x) / 3 = 64 \quad x = 72 \text{ degrees}$$

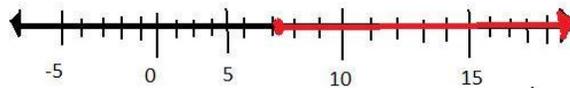
- c. State the inequality that represents all temperatures for the third day that result in an average daily temperature of at least 64 degrees. Also graph the solution set.

$$\frac{(120 + x)}{3} \geq 64 \quad ; \quad x \geq 72$$



2. Gabriella is a waitress at the Hampton Grille. In one night she earned at least \$75 while working a six-hour shift. If Gabriella earned \$31.50 in tips, find all possibilities for the amount she earned in wages per hour. Represent your answer both algebraically and graphically.

$$x \geq 7.25$$



3. Ike's age is three years more than twice his younger brother's age. If the sum of their ages is at most 18, then find:

- d. The greatest age that Ike's brother could be.

$$B < 5$$

- e. An inequality that represents all possible values of Ike's age (allowing for fractional years), given that his younger brother is at least 2 years old.

$$I < 16$$

4. Jabari is training for a marathon and is using a Pyramid training pattern for the next five days. He plans to increase the number of miles he runs by a single mile each day from the first to the third day, peaking on the third day, and then decreasing the number of miles run by a single mile per day for the last two days.

- f. If x represents the number of miles Jabari runs on Day 1, write expressions for how many miles, in terms of x , he runs for Days 2 through 5.

Day 1 = x

Day 2 = $x+1$

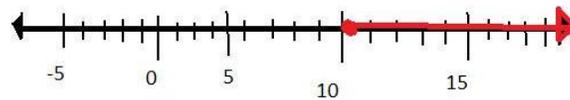
Day 3 = $x+2$

Day 4 = $x+1$

Day 5 = x

- g. Find all possible values that Jabari can run on Day 1 such that his total number of miles run over the five days is at least 55. Represent your answer algebraically and graphically.

$$x \geq 10.2 \text{ miles}$$



- h. Assuming Jabari runs a whole number of miles on Day 1, what is the least number of miles he can run on Day 1 to meet his goal of at least 55 miles.

11 miles

5. Keith plans to buy a car two years from now. He currently has \$3,000 saved up to buy the car.
- i. From all the cars that Keith is considering buying, how much money does he need to save per month over the two years if the least expensive car he wants to buy is \$15,000

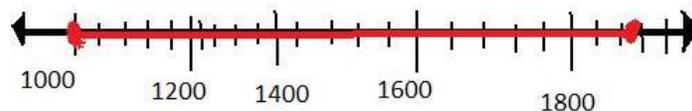
$$x \geq 1000$$

- j. From all the cars that Keith is considering buying, how much money does he need to save per month over the two years if the most expensive car he wants to buy is \$25,800

$$x \leq 1900$$

- k. Considering all of Keith's options, represent all possible amounts that he must save per month as an algebraic inequality. Also graph the inequality.

$$1000 \leq x \leq 1900$$



6. Your school is sponsoring a pancake dinner to raise money for a field trip. You estimate that 200 adults and 250 children will attend. Let x be the cost of an adult ticket and let y be the cost of a child ticket.
- g. Write an equation to find out what price to make the adult and child ticket if we want to raise at least \$3800.

$$200x + 250y < 3800$$

- h. Using the equation above, if the cost of an adult ticket is \$10 what was the cost of child ticket? Does this make sense?

$$y < 7.2 \text{ dollars}$$

7. You are running a concession stand at the basketball game. You sell hot dogs for \$1 and sodas for \$0.50. At the end of the night, you estimate you made less than or equal to \$200. Let x represent the number of hotdogs sold and y represent the number of sodas sold.
- i. Write an equation that can be used to find out how many hot dogs and sodas were sold.

$$x + .5y \geq 200$$

- j. Using the equation above, if you sold 100 hotdogs how many sodas were sold? Does this answer make sense?

$$y \geq 200 \text{ sodas}$$

8. John is an insurance salesman who works on commission. Each time he gets a new client, who purchases car insurance, he earns \$100 in commission. Each time he gets a client who purchases homeowners insurance, he earns \$50 in commission. Let x represent the number of clients who purchase car insurance and let y represent the number of clients who purchase homeowners insurance.
- k. Write an equation that you could use to find out how many clients, for each type of insurance, John would sell to earn more than \$3000 in commission.

$$100x + 50y > 3000$$

- l. Using the equation above, if he had 40 clients that purchased homeowners insurance, how many have car insurance? Does this answer make sense?

$$x > 10 \text{ clients}$$

**Problems 1-5 came from (Inequality Word Problems Algebra 1, pages 1-2)

And 6-8 came from (Solving Word Problems in Algebra)

