

Name: _____

Date: _____

Inequality Word Problems Algebra 1

In this lesson we will gain an idea of how the inequalities that we have discussed over the previous two lessons have meaning in our lives. Often, people unwittingly use the concept of inequalities in their everyday lives.

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

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

60°

70°

80°

(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° . Also graph the solution set.

Exercise #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.

Exercise #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.

Exercise #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.

- (a) 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 =

Day 3 =

Day 4 =

Day 5 =

- (b) 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.

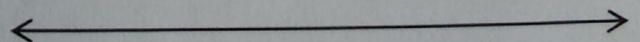
- (c) Assuming Jabari runs a whole number of miles on Day 1, what is the least number of miles he can run on Day 1 to meet his goal of at least 55 miles.

Exercise #5: Keith plans to buy a car two years from now. He currently has \$3,000 saved up to buy the car.

- (a) 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?

- (b) 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?

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



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Inequality Word Problems Algebra 1 Homework

Skills

1. Which of the following values is in the solution set of the inequality $5x + 3 > 38$?

(1) 5 (3) 7

(2) 6 (4) 8

2. Using the set of positive integers, what is the solution set of the inequality $2x - 3 < 6$?

(1) {0, 1, 2, 3} (3) {0, 1, 2, 3, 4}

(2) {1, 2, 3} (4) {1, 2, 3, 4}

Applications

3. On a day in June, the temperature in New York City ranged from 75° and 90° while the temperature in Albany ranged from 68° to 84° . The positive difference in the temperature between the two cities must be between what two values?

(1) 9° and 22° (3) 0° and 17°

(2) 15° and 16° (4) 6° and 23°

4. There are 40 children and 12 adults going on a trip to New York City by car. Each car can hold a maximum of 5 people. What is the least number of cars needed for the trip?

(1) 9 (3) 11

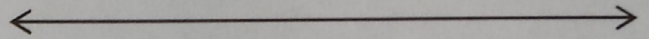
(2) 10 (4) 12

5. DJ Joe wants to organize 127 CD's into storage boxes. Each storage box can hold a maximum of 10 CD's. What is the least number of storage boxes needed?

(1) 10 (3) 12

(2) 11 (4) 13

6. On her last two math tests, Larisa had scores of 83 and 92. Assuming that Larisa cannot score above a 100 on any given test, determine all possible scores Larisa can score to average at least a 90 on all three tests. Represent your answer both algebraically and graphically.



7. A maple syrup producer would like to increase production by 500 gallons per year with a goal of producing at least 20,000 gallons of syrup over the first five year period of production.

(a) If the first year's production, in gallons, is given by x , write expressions for each of the other years' productions.

Year 1 = x

Year 2 =

Year 3 =

Year 4 =

Year 5 =

(b) Find all possible values of syrup that could be produced in the first year to meet the goal of at least 20,000 gallons total over the five-year period.

8. Makaila would like to walk at least 70 blocks over the next five days. She would like to increase the number of blocks she walks by two per day for each of the second and third days. Then, she wishes to level off so that the fourth and fifth days she walks only as far as she did on the third day.

(a) If the amount that Makaila walks the first day is represented by x , then write expressions for each distance she walks the other four days.

Day 1 = x

Day 2 =

Day 3 =

Day 4 =

Day 5 =

(b) Find all possible values that Makaila could walk on the first day to reach her goal.

(c) Assuming that Makaila walks a whole number of blocks on Day 1, what is the fewest number of blocks she could walk on this day and still meet her goal?