

Linear Inequalities & System of Inequalities - Word Problems

Real World Math Problems

Linear Inequalities

Define the variables. Write an inequality to model the problem situation. Find the solutions that make the inequality true.

1. You're buying snacks for a get together with friends. The budget allows you to spend *no more than* \$12 on peanuts and cashews. Peanuts cost \$2/lb and cashews cost \$4/lb. Find two possible combination of peanuts and cashews you can buy.

$$\text{Cost of the Peanuts} + \text{Cost of the Cashews} \leq \text{Total Budget}$$

- a. Define the variables.

i. $x =$ _____

ii. $y =$ _____

- b. Write the inequality.

- c. Possible solutions.

2. North Face makes nylon and canvas backpacks. The profit for a nylon backpack is \$3 and the profit for a canvas backpack is \$10. How many backpacks must the company sell to make a profit of *more than* \$250.

- a. Define the variables.

i. $x =$ _____

ii. $y =$ _____

- b. Write the inequality.

- c. Is the point $(-10, 28)$ a solution for the inequality? Is it a solution for the problem situation?

3. You are on the homecoming committee and need to shop for crepe paper to decorate the school cafeteria for the dance. Orange crepe paper costs \$5 per roll, and black crepe paper costs \$3 per roll. Your budget allows you to spend *at most* \$48 on crepe paper.

a. Define the variables.

i. $x =$ _____

ii. $y =$ _____

b. Write the inequality.

c. What values are reasonable for the domain and range of the problem situation?

Systems of Linear Inequalities

Define the variables. Write a system of inequalities to model the problem situation.

1. For Freshman Service Day, you volunteer at the Birmingham Humane Society. You are asked to help build a fence around their dog park. The length of the dog park should be *at least* 80 ft. The distance around it should be *no more than* 310 ft. What are the possible dimensions of the dog park?

Length of the Dog Park \geq 80 feet

The Perimeter of the Dog Park \leq 310 feet

a. Define the variables.

i. $x =$ _____

ii. $y =$ _____

b. Write the inequalities.

2. Jamal runs the bouncy house at the HHS End of School Year Party in the courtyard. The bouncy house can hold *a maximum of* 1,200 pounds at one time. He estimates that adults weigh approximately 200 pounds and students weigh approximately 100 pounds. He charges adults \$3 each and students \$2 each for 5 minutes of bouncing. Jamal hopes to make *at least* \$24 per session.

a. Define the variables.

i. $x =$ _____

ii. $y =$ _____

b. Write the inequalities.

3. Carlos works at the AMC Patton Creek 15 Movie Theater selling tickets. The theater has 300 seats and charges \$7.50 for adults and \$5.50 for children. The theater expects to make *at least* \$2,000 for each showing.

a. Define the variables.

i. $x =$ _____

ii. $y =$ _____

b. Write the inequalities.

4. Julie is redecorating her bedroom and bathroom. She wants to install carpet in her bedroom and tile in the bathroom. The maximum amount of floor area that needs to be covered is 1,500 square feet. The carpet that Julie wants is \$5.25 per square foot and the tile is \$7.50 per square foot. She has budgeted \$8,000 for the cost of flooring and will install the flooring herself.

a. Define the variables.

i. $x =$ _____

ii. $y =$ _____

b. Write the inequalities.

