
Essential Question: How can we model situations using inequalities?
Do Now:

Students at Roslyn Middle School are having a car wash in order to raise money. They need to raise at least \$300 for disaster relief work. They have estimated their profit per car is \$7. How many cars must they wash to meet their fundraising goal?

Inequality Words

What words translate into what inequality symbols?

is more than	Boston is more than 200 miles away	
is greater than	New York's population is greater than Rhode Island's population	
must exceed	The speed must exceed 15 mph	
is less than	Spot's weight is less than 50 lbs	
is less than or equal to	Sam's test score is less than or equal to mine	
is at most/maximum	At most, 5 students dropped the course	
cannot exceed	Earnings cannot exceed \$1200	
is greater than or equal to	My quarter average is greater than or equal to yours	
is at least/minimum	Bring at least \$10 to the movies	



When solving "word problems"...

- 1) Define all unknowns algebraically
- 2) Use key words in the problem to set up an inequality relating all unknowns
- 3) Solve the inequality
- 4) Answer the question and make sure your answer is complete, reasonable and makes sense

Modeling Situations with Inequality Statements

1. Lior and Ella volunteer at an animal shelter. Ella worked 3 more hours than Lior. Together they worked more than 27 hours. What is the least number of *whole number* hours each person worked?
2. A taxi charges an initial fee of \$6.00 and \$0.70 for each mile. How far can a person travel before the cost exceeds \$13.00?
3. Tacky Times charges \$2500 plus \$45 per person for a party. Perfect Party charges \$3200 plus \$40 per person. How many people must attend a party for Perfect Party to be less expensive?
4. A checking account is set up with an initial balance of \$9400, and \$800 is removed from the account at the end of each month for rent (no other transactions occur on the account).
 - (a) Write and solve an inequality to represent the number of months, m , in which the account balance is greater than \$3000.
 - (b) What is the greatest number of months for which the balance exceeds \$3,000?



When solving inequality word problems, check to see if your answer makes _____ given the context of the problem.

Match each statement with an inequality.**Inequality**

- | | | |
|--------------------------|---|--------------------------|
| <input type="checkbox"/> | 1. The sum of a number and seven is at most fifteen. | a. $\frac{n}{3} < 20$ |
| <input type="checkbox"/> | 2. One-third the price of a haircut at Vidal Sassoon is less than twenty dollars. | b. $n + 7 \geq 15$ |
| <input type="checkbox"/> | 3. Seven more than a number is at least fifteen. | c. $7 + n > 15$ |
| <input type="checkbox"/> | 4. No more than twenty calories are consumed from a bag of chips split evenly among three people. | d. $\frac{n}{3} \leq 20$ |
| <input type="checkbox"/> | 5. Fifteen is less than a number increased by seven. | e. $n + 7 \leq 15$ |

Directions: Solve each word problem below by writing an inequality to represent the scenario.

6. There are 40 children and 12 adults going on a trip to New York City by car. Each car can hold up to 5 people. What is the minimum number of cars needed for the trip?
7. 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?
8. Games Works sells vintage video games for \$15 each. Buyer's Warehouse sells the same games for only \$12.00 each, but to purchase from Buyer's Warehouse, you have to pay an annual membership fee of \$25. In one year, how many video games would you have to purchase for Buyer's Warehouse to be more cost effective?