

Unit 6 Lesson 14: Finding Solutions to Inequalities in Context

1 Solutions to Equations and Solutions to Inequalities (Warm up)

Student Task Statement

1. Solve $-x = 10$
2. Find 2 solutions to $-x > 10$
3. Solve $2x = -20$
4. Find 2 solutions to $2x > -20$

2 Earning Money for Soccer Stuff

Student Task Statement

1. Andre has a summer job selling magazine subscriptions. He earns \$25 per week plus \$3 for every subscription he sells. Andre hopes to make at least enough money this week to buy a new pair of soccer cleats.
 - a. Let n represent the number of magazine subscriptions Andre sells this week. Write an expression for the amount of money he makes this week.
 - b. The least expensive pair of cleats Andre wants costs \$68. Write and solve an equation to find out how many magazine subscriptions Andre needs to sell to buy the cleats.
 - c. If Andre sold 16 magazine subscriptions this week, would he reach his goal? Explain your reasoning.
 - d. What are some other numbers of magazine subscriptions Andre could have sold and still reached his goal?
 - e. Write an *inequality* expressing that Andre wants to make at least \$68.
 - f. Write an inequality to describe the number of subscriptions Andre must sell to reach his goal.
2. Diego has budgeted \$35 from his summer job earnings to buy shorts and socks for soccer. He needs 5 pairs of socks and a pair of shorts. The socks cost different amounts in different stores. The shorts he wants cost \$19.95.
 - a. Let x represent the price of one pair of socks. Write an expression for the total cost of the socks and shorts.
 - b. Write and solve an equation that says that Diego spent exactly \$35 on the socks and shorts.
 - c. List some other possible prices for the socks that would still allow Diego to stay within his budget.
 - d. Write an inequality to represent the amount Diego can spend on a single pair of socks.

3 Granola Bars and Savings

Student Task Statement

1. Kiran has \$100 saved in a bank account. (The account doesn't earn interest.) He asked Clare to help him figure out how much he could take out each month if he needs to have at least \$25 in the account a year from now.
 - a. Clare wrote the inequality $-12x + 100 \geq 25$, where x represents the amount Kiran takes out each month. What does $-12x$ represent?
 - b. Find some values of x that would work for Kiran.
 - c. We could express *all* the values that would work using either $x \leq \underline{\quad}$ or $x \geq \underline{\quad}$. Which one should we use?
 - d. Write the answer to Kiran's question using mathematical notation.

2. A teacher wants to buy 9 boxes of granola bars for a school trip. Each box usually costs \$7, but many grocery stores are having a sale on granola bars this week. Different stores are selling boxes of granola bars at different discounts.
 - a. If x represents the dollar amount of the discount, then the amount the teacher will pay can be expressed as $9(7 - x)$. In this expression, what does the quantity $7 - x$ represent?
 - b. The teacher has \$36 to spend on the granola bars. The equation $9(7 - x) = 36$ represents a situation where she spends all \$36. Solve this equation.
 - c. What does the solution mean in this situation?
 - d. The teacher does not have to spend all \$36. Write an inequality relating 36 and $9(7 - x)$ representing this situation.
 - e. The solution to this inequality must either look like $x \geq 3$ or $x \leq 3$. Which do you think it is? Explain your reasoning.