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Lesson 3.05 Modeling Linear Inequalities

Students will be able to:

- ▪ <u>Content Objective:</u> Model real life scenarios using linear inequalities.
- ▪ <u>Language Objective</u>: Read a scenario and write an inequality that models the situation.

🏋 Warm Up

Jayden wants to purchase a new bike that costs $225. If she saves $80 a week babysitting, set up and solve an inequality to determine how many full weeks, w, it will take for her to have enough money to buy the bike?

📋 Vocabulary Review

Use the word bank to fill in the blanks below with the appropriate phrase.

$x \leq 3$	$y \geq -4$
x is _____ 3	y is _____ −4
x is _____ 3	y is _____ −4
x is _____ 3	y is _____ −4

Word Bank

No more than
At least
Greater than or equal to
At most
No less than
Less than or equal to

👨‍🏫 Skill 1: Writing Linear Inequalities

Write an inequality using the variable x that represents each scenario below.

a. In the United States, most people need to be at least 16 years old to obtain a driver's license.

Let $x = $ _____

Inequality: _____

b. Children who are at most 48 inches can ride the tilt a world at Six Flags amusement park.

Let $x = $ _____

Inequality: _____

💡 Exercise 1: Writing Linear Inequalities

Write an inequality using the variable x that represents each scenario below.

a. The speed limit when driving on Sunrise highway on Long Island, NY is 55mph.

Let $x = $ _____

Inequality: _____

b. You must be no less than 18 years of age to vote in the United States

Let $x = $ _____

Inequality: _____

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Skill 2: Writing & Solving Linear Inequalities

You and your friends go to a baseball game at Yankee Stadium and want to buy hotdogs and soda. Each hotdog costs $6.75 and one large soda costs $3. Combined, you and your friends want to buy twice as many hotdogs as you do sodas, s and can spend no more than $50.

a. Write an algebraic expression that represents the number of hotdogs you and your friends want to buy.

b. Write an inequality that represents the number of hotdogs and sodas you and your friends can buy.

c. Solve your inequality from part b. and state the maximum number of sodas that can be purchased.

Exercise 2: Writing & Solving Linear Inequalities

Josh wants to rent skis for his trip to Park City, Utah. He decides to look up some rental shops and learns the following information:

Jakes Ski & Snowboard: One-time fee of $15 and $20 each day, d.

Town Lift Ski: One-time fee of $65 and $16 each day, d.

a. Write an expression for each Ski rental shop below.

b. Which Ski shop has a better deal if you plan to rent for a total of 4 days? Explain

Jakes Ski & Snowboard: _____

Town Lift Ski: _____

c. Set up and solve an inequality to find how many days you need to rent for Town Lift Ski to be cheaper.

Read it Out

Benita and her dad opened up a Cuban food truck. Their most popular items sold are Cubanos and Tostones. Cubanos are sold for $8.50 a serving and Tostones are sold for $4.75 a serving. If they want to make at least $400 in sales, write an inequality that represents this situation, **do not solve**.

Check Point

If Benita sells 6 more servings of Tostones than Cubanos, c, which inequality below can be used to determine the minimum number of Cubanos sold to reach her goal of $400?

1) $c + (c + 6) > 400$
2) $c + (c + 6) \geq 400$
3) $8.50c + 4.75(c + 6) \geq 400$
4) $8.50c + 4.75(c + 6) \leq 400$

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3.05- Problem Set

Name: _____

1. Write an inequality using the variable x that represents each scenario below.

a. An elevator holds no more than 2500 lbs.

Let $x =$ _____

Inequality: _____

b. A person must be at least 52 in tall to ride a roller coaster.

Let $x =$ _____

Inequality: _____

c. A school must have a minimum of 8 fire drills throughout the school year.

Let $x =$ _____

Inequality: _____

d. Airplanes are restricted to traveling a maximum speed of 20 knots.

Let $x =$ _____

Inequality: _____

2. Maya works two jobs over the summer as a camp counselor and a babysitter. She makes $22 an hour as a camp counselor and $16 an hour as a babysitter. At the end of the week, Maya worked 30 hours as a camp counselor. She hopes to earn at least $1000.

a. Define a variable to represent the number of hours Maya babysat at the end of the week.

b. Write an in inequality using your answer to part a. that represents the scenario above. Do not solve!

c. Solve your inequality from part b. and state the minimum number of full hours Maya needed to have worked as a babysitter to reach her goal of $1000.