Independent and Dependent Variables

STRAND: Patterns, Functions, and Algebra

STRAND CONCEPT: Proportional and Additive Relationships; Slope; Linear Functions

SOL 8.16c

Remediation Plan Summary

Students will determine the independent and dependent variable, given a practical situation modeled by a linear function.

Common Errors and Misconceptions

- Students may confuse the independent and dependent variables in a practical situation.

Materials

- Matching Activity - Independent vs. Dependent Variables
- Independent vs. Dependent Variables Identification Chart

Introductory Activity

Have a large group discussion with students regarding independent and dependent variables given a practical situation. For example, if we wish to determine the type of fertilizer that helps plants grow the tallest, then the independent variable would be the type of fertilizer used and the dependent variable would be the height of the plants at a given time.

Plan for Instruction

1. Students may need to be reminded that a variable represents something that can be measured, typically by a value. For example, the number of objects, the amount of time, or how many people might be represented as a variable. Ask students to determine other situations in which they can identify an independent and dependent variable. Post a chart of the pairs of independent and dependent variables and have students discuss what the independent variables have in common and what the dependent variables have in common. Students should be able to generalize that the change in the value of the independent variable isn't affected by any other variable in the situation and that the value of the dependent variable changes as a result of changes to the independent variable.

2. Ask students to work in pairs or small groups to complete the Matching Activity - Independent vs. Dependent Variables. Once students have paired the independent and dependent variable pairs, ask them to compare their results with another pair or small group of students.

3. Debrief the small group activity as a large group and discuss any situations in which students obtained different results than another group. Use each situation to create a possible equation that could represent the situation. (e.g.

4. Have student individually complete the Independent vs. Dependent Identification chart. Review the solutions as a whole group and ask students to justify their answers.

Pulling It All Together (Reflection)

Exit Ticket:

Mrs. Hernadez keeps a jar of cookies in her kitchen. Julio, her son, eats four cookies from the jar each day when he gets home from school. In the equation below, *y* is the number of cookies remaining in the jar and *x* is the number of cookies in the jar before Julio came home from school. The relationship between these two variables can be expressed by the following equation:

y = x - 4

Identify the independent and dependent variables in this situation. Explain how you know.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Virginia Department of Education 2018

Matching Activity - Independent vs. Dependent Variables

Name _____ **Date** _____

Match the independent and dependent variables described below.

Independent Variable	Dependent Variable
Number of cars washed by the Key Club	Time spent at the movie theater
The number of boxes of strawberries	The number of minutes spent watching anime
Number of minutes of previews before a movie	Amount of Fundraising Money Earned
The number of months that you keep your membership	The number of dollars spent at the Farmer's Market
The number of episodes that you watch	Number of minutes to complete all of my homework
The number of minutes it takes to do my mathematics homework	Total cost of my yoga membership

Independent vs. Dependent Variables Identification Chart

Name _____ **Date** _____

Identify the independent and dependent variables for each situation described below.

Situation	Independent Variable	Dependent Variable
Renee wants to calculate the perimeter of a square. She measures the length of each side of a square.		
$y = 2x + 3$		
Ron measures how many centimeters his sunflower plant grows each week.		
Thomas gets a weekly paycheck by working at the local theater earning $10.50 per hour.		
The number of chocolate candies, c, that can be packaged in a box with a volume of V cubic units is given by $g = 10V + 5$.		
Julie works as a babysitter. Her earnings for an evening of work is based on the number of children that she must watch.		