

Indicators

Objective:

5.01 Develop an understanding of function.

a) Translate among verbal, tabular, graphic, and algebraic representations of functions.

Vocabulary and Resources		
input	range	slope-intercept form
output	solution	$f(x) = ax + b$
relation	variable	point-slope form
function table	independent	$y - y_1 = a(x - x_1)$
function rule	dependent	standard form
function notation	coefficient	$Ax + By = C$
domain	equation	
properties of equality	graph	Students need to be
commutative property	slope (rate of change)	familiar with a variety
associative property	intercepts	of notations for
distributive property	y-intercept	multiplication: $a \times b$
identities	x-intercept	$a \cdot b$
		$a(b)$
		ab

A. At the beginning of the summer, Beth has \$2, John has \$30, and Sam has \$14. Beth and John each earn \$3 per day for baby-sitting Sam. John spends \$5 each day at the movies while Beth spends \$2 each day playing video games. Sam stays at home and saves his money. Make a table showing how much money each person will have at the end of each day for two weeks. Make a graph of the data. On which day would John have \$6? Which person has the most money at the end of the two weeks? On which day would John and Sam have the same amount of money? Which person's graph shows a positive relationship? a negative relationship? a constant relationship? How much money would you expect Beth to have on the twentieth day? If Beth decided to spend only \$1 on video games instead of \$2, how would her graph look different?

B. The data in the table represents the cost of dance tickets.

Number(n)	1	3	4	6
Cost(c)	6	18	24	36

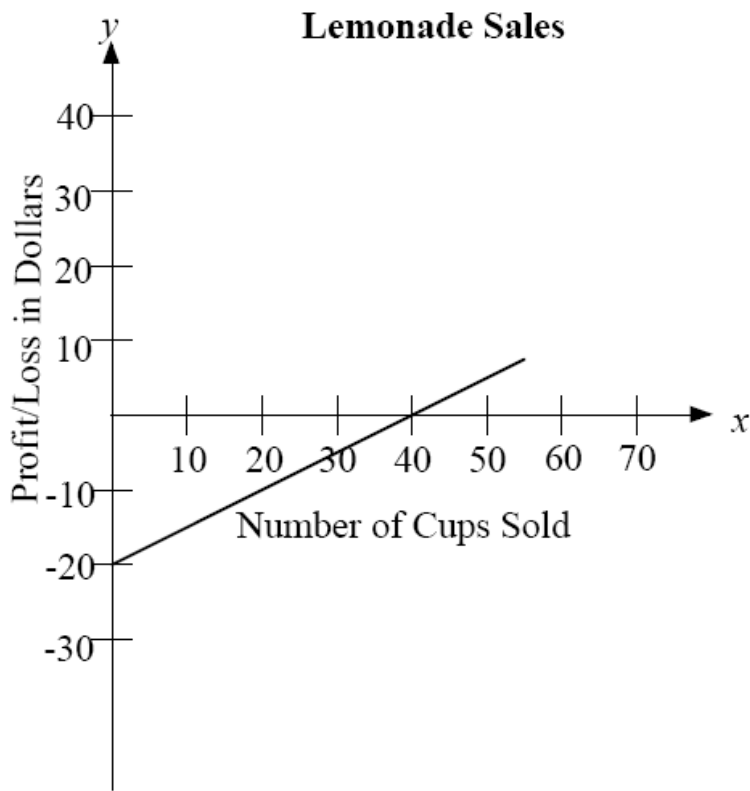
Write an equation representing this function. Make a graph of the equation. Determine the slope. Explain the meaning of the slope for this function.

C. An electrician charges customers a basic rate of \$22 for making a service call plus \$35 for each hour worked. Write an equation to represent the total charge, C , if h represents the number of hours worked. Explain the meaning of the y -intercept in terms of this situation.

D. On a recent backpacking trip up a mountain trail, Jim noticed that it seemed to get colder the further up the mountain he hiked from about 9 a.m. until about 3 p.m. He thought that it should get warmer in the afternoon hours, but the temperature dropped as indicated in the data below. Decide which is the dependent and independent variable, graph the data, draw the line that represents the relation, and determine the slope of the line. Explain the meaning of the slope for this relation. Based on this data, what would the temperature be at an elevation of 6,000 feet? What trend or relationship appears to exist between increasing elevation and temperature?

<u>Elevation in feet</u>	<u>Temperature (Fahrenheit)</u>
1,000	70°
2,000	69°
2,500	68.5°
4,000	67°
5,000	66°
5,500	65.5°

E. The following is a profit/loss graph for a sidewalk lemonade stand. Explain the meaning of the x - and y -intercepts and the slope as it relates to this situation.



F. $f(x) = -2x + 4$
 Evaluate this function for $\{x: x = 0, 1, 2, 3, 4, 5\}$
 Identify the values of the domain.
 Identify the values of the range.

G. Jose rides his bicycle to school. He leaves his house at 8:00 a.m. and travels at a steady rate for ten minutes. He then goes up a hill for five minutes. At the top of the hill he stops for water. At 8:20 a.m. he continues on his way traveling downhill for ten minutes. He gets to school and parks his bicycle. Create a graph to represent Jose's bicycle trip to school and explain your graph.