

# Activity 3 Assessment

## Solving Problems Involving Functions

### Investigating Functions

Identifies variables (dependent and independent) as changing quantities in a given situation.

Kaspar earned \$20 to spend on loot bags for their party guests. They want to put a mini flashlight in each loot bag. A flashlight costs \$3.

Number of Flashlights, $n$	Money Left, $M$ (\$)
1	17
2	14
3	11
4	8
5	5
6	2

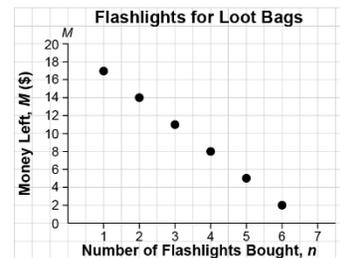
“The money left *depends* on the number of flashlights bought. So,  $M$  is the dependent variable and  $n$  is the independent variable.”

Describes the rule that relates the values of the dependent variable to the values of the independent variable.

Number of Flashlights, $n$	Money Left, $M$ (\$)
1	17
2	14
3	11
4	8
5	5
6	2

“Multiply the number of flashlights bought by 3, then subtract from 20 to get the money left in dollars.”

Represents corresponding values of the dependent and independent variables of a function (table of values, points on the Cartesian plane).



“From the graph, I can see that as the number of flashlights increases by 1, the money left decreases by 3.”

Represents a function as an algebraic expression.

“I used the rule to write an algebraic expression: Multiply the number of flashlights purchased,  $n$ , by 3, then subtract from 20 to get the money left in dollars,  $M$ . The expression is  $20 - 3n$ .”

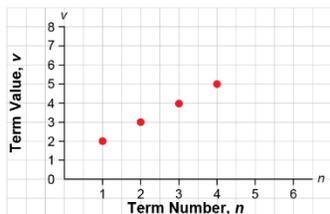
### Observations/Documentation

# Activity 3 Assessment

## Solving Problems Involving Functions

### Investigating Functions (cont'd)

Relates between various representations of the same function.



Add 1 to the term number,  $n$ , to get the term value,  $v$ .

“The graph and the rule both represent the same function because on the graph, each term value is one more than the term number.”

Determines a value of the dependent variable given the independent variable.

Bikes are available for rent for \$10, plus \$3 per hour. How much would it cost to rent a bike for 9 hours?

“An expression that relates the total cost,  $C$ , to the number of hours,  $n$ , is  $3n + 10$ .

To find the cost for 9 hours, I evaluated the expression for  $n = 9$ .  
 $3(9) + 10 = 37$   
 It would cost \$37.”

Uses strategies flexibly to determine a value of the independent variable given the value of the dependent variable.

A person paid \$43. For how many hours did they rent the bike?

“I set the expression equal to 43, then used inverse operations to solve the equation.”

$$\begin{aligned}
 3n + 10 &= 43 \\
 3n + 10 - 10 &= 43 - 10 \\
 3n &= 33 \\
 \frac{3n}{3} &= \frac{33}{3} \\
 n &= 11
 \end{aligned}$$

Flexibly solves problems involving functions.

Yuri has \$455 in the bank. To buy tickets, Yuri takes out \$15 each week, for 20 weeks. After 20 weeks, will Yuri have enough money left to donate \$175 to the Terry Fox Run?

“An expression that relates the amount left in the bank in dollars,  $A$ , to the number of weeks,  $w$ , is:

$$455 - 15w$$

After 20 weeks, the amount left in the bank will be:  $455 - 15(20) = 455 - 300$ , or 155; \$155.

Yuri will not be able to donate \$175 to the Terry Fox Run.”

### Observations/Documentation