Use Function Vocabulary

● Check Understanding

Possible answer: For any number of quarts, there is only one possible number of pints. Each input has exactly one output. This shows that the number of pints is a function of the number of quarts.

RECORDING SHEET

I can think of the problem description as a **rule** that tells me what to do to a starting value to get a final value. The starting value, or **input**, is the number of pounds. The final value, or **output**, is the total cost.

I can use this thinking to make a table.

Weight (*x*)	1	2	3	4	5
Total Cost (*y*)	3	5	7	**9**	**11**

I know that a **function** is a rule where each input has exactly one output. The table shows that this rule is a function. The total cost of picking apples is a function of the weight.

I can use the table to make a graph of the function. The graph shows that all the points lie on a straight **line**. That means this is a **linear** function.

●● Check Understanding

Possible answer: The table shows a function. For any number of quarts, there is only one possible number of pints. Each input has exactly one output. This shows that the number of pints is a function of the number of quarts.

RECORDING SHEET

I can think of the problem description as a **rule** that tells me what to do to a starting value to get a final value. The starting value, or **input**, is the number of pounds. The final value, or **output**, is the total cost.

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Weight (*x*)	1	2	3	4	5
Total Cost (*y*)	**3**	**5**	**7**	**9**	**11**

I know that a **function** is a rule where each input has exactly one output. The table shows that this rule is a function. The **total cost** of picking apples is a function of the **weight**.

I can use the table to make a graph of the function. The graph shows that all the points lie on a **straight line**. That means that this is a **linear** function.

Use Function Vocabulary *continued*

Check Understanding

Possible answer: The table shows a linear function. For any number of quarts, there is only one possible number of pints. Each input has exactly one output. This shows that the number of pints is a function of the number of quarts.

from $x = 2$ to $x = 4$: $\frac{8-4}{4-2} = 2$

from $x = 4$ to $x = 6$: $\frac{12-8}{6-4} = 2$

from $x = 6$ to $x = 8$: $\frac{16-12}{8-6} = 2$

The rate of change is constant. So, the function is linear.

RECORDING SHEET

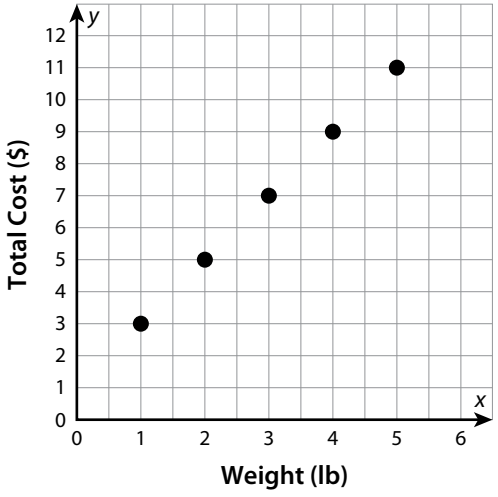
I can think of the problem description as a **rule** that tells me what to do to a starting value to get a final value. The starting value, or **input**, is the number of pounds. The final value, or **output**, is the total cost.

I can use this thinking to make a table.

Weight (*x*)	1	2	3	4	5
Total Cost (*y*)	**3**	**5**	**7**	**9**	**11**

I know that a **function** is a rule where each input has exactly one output. The table shows that this rule **is** a function. The total cost of picking apples **is** a function of the weight.

I can use the table to make a graph of the relationship. On the graph, all the points lie on a **straight line**. This shows that the rate of change is **constant**. Therefore, this graph represents a **linear function**.



Find the Function

● Check Understanding

Rate of change $= 4$; initial value $= 10$;
Possible explanation:

$$\text{rate of change} = \frac{\text{change in } y}{\text{change in } x} = \frac{14 - 10}{1 - 0} = \frac{4}{1} = 4$$

The initial value is the value of y when $x = 0$. The table shows that the initial value is 10.

ACTIVITY ANSWERS

The functions in the rows, from left to right, match these rates of change or initial values:

Row 1:

E: rate of change $= -1$

D: rate of change $= 2$

F: initial value $= 3$

Row 2:

B: rate of change $= -2$

H: rate of change $= 3$

C: initial value $= 6$

Row 3:

G: initial value $= 3$

A: initial value $= 8$

I: rate of change $= 5$

●● Check Understanding

Rate of change $= -5$; initial value $= 40$;
Possible explanation:

$$\text{rate of change} = \frac{\text{change in } y}{\text{change in } x} = \frac{20 - 30}{4 - 2} = \frac{-10}{2} = -5$$

$$y = mx + b$$
$$30 = -5(2) + b$$
$$30 = -10 + b$$
$$40 = b$$

ACTIVITY ANSWERS

The functions in the rows, from left to right, match these rates of change or initial values:

Row 1:

E: rate of change $= -1$

D: rate of change $= 2$

F: initial value $= 3$

Row 2:

B: rate of change $= -\frac{1}{2}$

H: rate of change $= 3$

C: initial value $= 6$

Row 3:

G: initial value $= 30$

A: initial value $= 8$

I: rate of change $= \frac{1}{2}$

Find the Function *continued*

Check Understanding

Rate of change $= -5.5$; initial value $= 40$;
Possible explanation:

$$\text{rate of change} = \frac{\text{change in } y}{\text{change in } x}$$

$$= \frac{18 - 29}{4 - 2} = \frac{-11}{2} = -5.5$$

$$y = mx + b$$

$$29 = -5.5(2) + b$$

$$29 = -11 + b$$

$$40 = b$$

ACTIVITY ANSWERS

The functions in the rows, from left to right, match these rates of change or initial values:

Row 1:

E: rate of change $= -1$

D: rate of change $= 1.5$

F: initial value $= 3.2$

Row 2:

B: rate of change $= -\frac{1}{2}$

H: rate of change $= 3.2$

C: initial value $= 2.3$

Row 3:

G: initial value $= 30$

A: initial value $= \frac{3}{2}$

I: rate of change $= \frac{1}{2}$