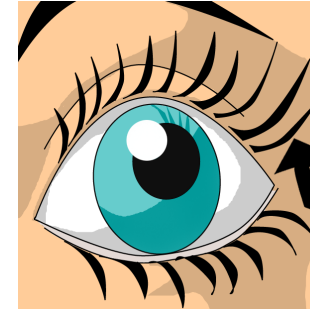


# 4-5: Writing a Function Rule

## Eye Opener

Define a variable and write an equation for each situation. Then solve the problem.



You have \$14. Ice cream cones cost \$4 and the store offers \$2 off the price of the first cone. How many ice cream cones can you buy?

$$4x - 2 = 14$$

4 cones

$$x = \# \text{ cones}$$

You order 5 yards of mulch and pay a delivery fee of \$35. The total cost including the delivery fee is \$200. What is the cost of a yard of mulch?

$$5x + 35 = 200$$

$$x = \$33/\text{yd.}$$

$$x = \# \text{ of mulch}$$

$$\begin{array}{r} 3 \\ 5 \overline{) 165} \\ \underline{15} \phantom{5} \\ 15 \\ \underline{15} \\ 0 \end{array}$$

## Essential Understandings

Many real-world functional relationships can be represented by equations.

Equations can be used to find the solution of given real-world problems.



Write a function rule that represents each situation.

**Pizza** The price  $p$  of a pizza is \$6.95 plus \$.95 for each topping  $t$  on the pizza.

$$p = 6.95 + .95t$$

$$(t, p)$$

**Baking** The almond extract  $a$  remaining in an 8-oz bottle decreases by  $\frac{1}{6}$  oz for each batch  $b$  of waffle cookies made.

$$a = 8 - \frac{1}{6}b$$

$$(b, a)$$

**Diving** A team of divers assembles at an elevation of  $-10$  ft relative to the surface of the water. Then the team dives at a rate of  $-50$  ft/min. Write a rule that represents the team's depth  $d$  as a function of time  $t$ . What is the team's depth after 3 min?

$(t, d)$   $d = -50t - 10$

$d(3) = -160'$   
 -10 start  
 ↓ -50ft/min

Write a function rule for the area of a triangle with a base 3 cm greater than 5 times its height. What is the area of the triangle when its height is 6 cm?



$5h + 3$

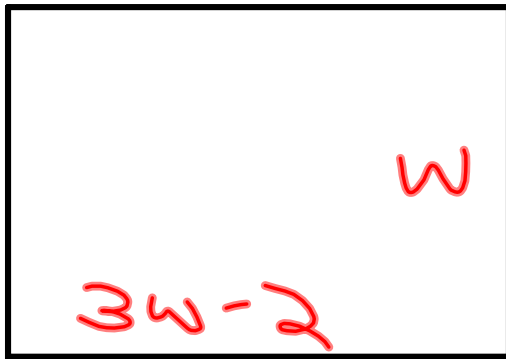
$A = \frac{1}{2}bh \rightarrow$  general formula

for A of  $\triangle$

$A = \frac{1}{2} [3 + (5 \cdot 6)] \cdot 6 = 99$  sq. cm

$A = \frac{1}{2} (5h + 3)(h)$

Write a function rule for the area of a rectangle with a length 2 ft less than three times its width. What is the area of the rectangle when its width is 2 ft?



all rect  
 $A = l \cdot w$   
 $A = (3w-2) \cdot w$

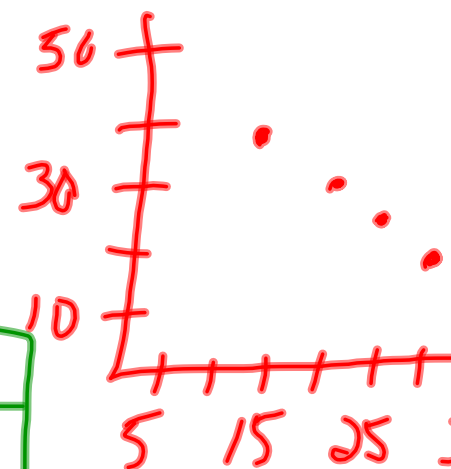
$$\begin{aligned} A &= (3 \cdot 2 - 2) \cdot 2 \\ &= (6 - 2) \cdot 2 \\ &= 4(2) \\ &= 8 \text{ sq. ft} \end{aligned}$$

**Tips** You go to dinner and decide to leave a 15% tip for the server. You had \$55 when you entered the restaurant.

- Make a table showing how much money you would have left after buying a meal that costs \$15, \$21, \$24, or \$30.
- Write a function rule for the amount of money  $m$  you would have left if the meal costs  $c$  dollars before the tip.
- Graph the function rule.

$$m = 55 - 1.15c$$

Meal	Tip	Bal	Bal
15	.15(15)	$55 - (15 + .15(15))$	37.75
21	.15(21)	$55 - (21 + .15(21))$	30.85
24	.15(24)	$55 - (24 + .15(24))$	27.40
30	.15(30)	$55 - (30 + .15(30))$	20.50



Make a table and a graph of each set of ordered pairs  $(x, y)$ . Then write a function rule to represent the relationship between  $x$  and  $y$ .

68.  $(-4, 7), (-3, 6), (-2, 5), (-1, 4), (0, 3), (1, 2), (2, 1), (3, 0), (4, -1)$

