1. The height of water in a bathtub, w, is a function of time, t. Let P represent this function. Height is measured in inches and time in minutes.

   Match each statement in function notation with a description.

   A. $P(0) = 0$

   B. $P(4) = 10$

   C. $P(10) = 4$

   D. $P(20) = 0$

   1. After 20 minutes, the bathtub is empty.

   2. The bathtub starts out with no water.

   3. After 10 minutes, the height of the water is 4 inches.

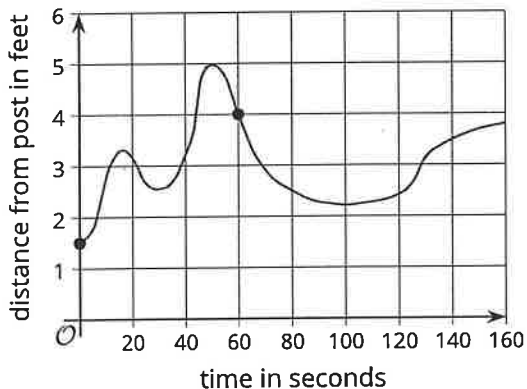   4. The height of the water is 10 inches after 4 minutes.

2. Function C takes time for its input and gives a student's Monday class for its output.

   a. Use function notation to represent: A student has English at 10:00.

   b. Write a statement to describe the meaning of $C(11:15) = \text{chemistry}$.

3. Function f gives the distance of a dog from a post, in feet, as a function of time, in seconds, since its owner left.
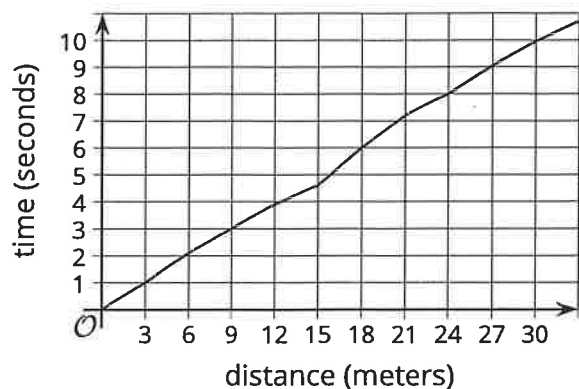
   Find the value of $f(20)$ and of $f(140)$.

4. Function C gives the cost, in dollars, of buying n apples. What does each expression or equation represent in this situation?

   a. $C(5) = 4.50$

   b. $C(2)$

5. The graph shows the time, t, it took a runner to run different distances, d.

time (seconds) vs distance (meters)

a. How long did it take the runner to run 9 meters?

b. How far did the runner go in 6 seconds?

c. What does the point $(24, 8)$ on the graph mean in this situation?

7. Match each equation with a description of the function it represents.

A. $f(x) = 2x + 4$

B. $g(x) = 2(x + 4)$

C. $h(x) = 4x + 2$

D. $k(x) = 4(x + 2)$

1. To get the output, add 4 to the input, then multiply the result by 2.

2. To get the output, add 2 to the input, then multiply the result by 4.

3. To get the output, multiply the input by 2, then add 4 to the result.

4. To get the output, multiply the input by 4, then add 2 to the result.

8. Function C gives the cost, in dollars, of buying n apples.

Which statement best represents the meaning of $C(10) = 9$?

A. The cost of buying 9 apples

B. The cost of 9 apples is $10.

C. The cost of 10 apples

D. Ten apples cost $9.

9. An equilateral triangle has three sides of equal length. Function P gives the perimeter of an equilateral triangle of side length s.

  a. Find $P(2)$

  b. Find $P(10)$

  c. Find $P(s)$

10 Functions f and A are defined by these equations.

$$f(x) = 80 - 15x \qquad\qquad A(x) = 25 + 10x$$

Which function has a greater value when x is 2.5?

11. The cell phone plan from Company C costs $10 per month, plus $15 per gigabyte for data used. The plan from Company D costs $80 per month, with unlimited data.

Rule C gives the monthly cost, in dollars, of using g gigabytes of data on Company C's plan. Rule D gives the monthly cost, in dollars, of using g gigabytes of data on Company D's plan.

  a. Write a sentence describing the meaning of the statement $C(2) = 40$.

  b. Which is less, $C(4)$ or $D(4)$? What does this mean for the two phone plans?

  c. Which is less, $C(5)$ or $D(5)$? Explain how you know.

12 Function g is represented by the graph.

For what input value or values is $g(x) = 4$?