

Variables That Change Together: Input and Output

Grade 6 math · Worksheet · Standards: 6.EE.C.9

Name: _____ Date: _____ Class: _____

These twenty problems train the skill in standard 6.EE.C.9: naming the independent and dependent variable, writing an equation such as $d = 65t$, and linking it to a table and a graph.

The problems start with naming variables and filling tables, move to equations and graph reading, and finish with word problems that compare two rates. Work in order and keep units with every answer.

Standards: 6.EE.C.9 · **Level:** Grade 6

Problem 1 Naming the variables (easy)

Name the independent variable and the dependent variable in each situation.

- The number of tickets sold at a school play and the total money collected.
- The minutes spent on a treadmill and the calories burned.
- The outside temperature and the number of lemonades a stand sells.

Problem 2 Who depends on whom? (easy)

A sunflower is measured every week. Let w be the number of weeks since planting and h the height in inches. Identify which variable is dependent and explain why.

Problem 3 An equation from a price (easy)

A parking garage charges \$4 for each hour. Write an equation for the cost c in dollars of parking for h hours. Name the dependent variable.

Problem 4 Complete the table (easy)

Complete the table for the equation $y = 7x$.

x	2	4	6	8
y	?	?	?	?

Problem 5 Substitute the input (easy)

A truck travels at a constant 55 miles per hour, so $d = 55t$. Find d when $t = 3$, $t = 6$ and $t = 10$.

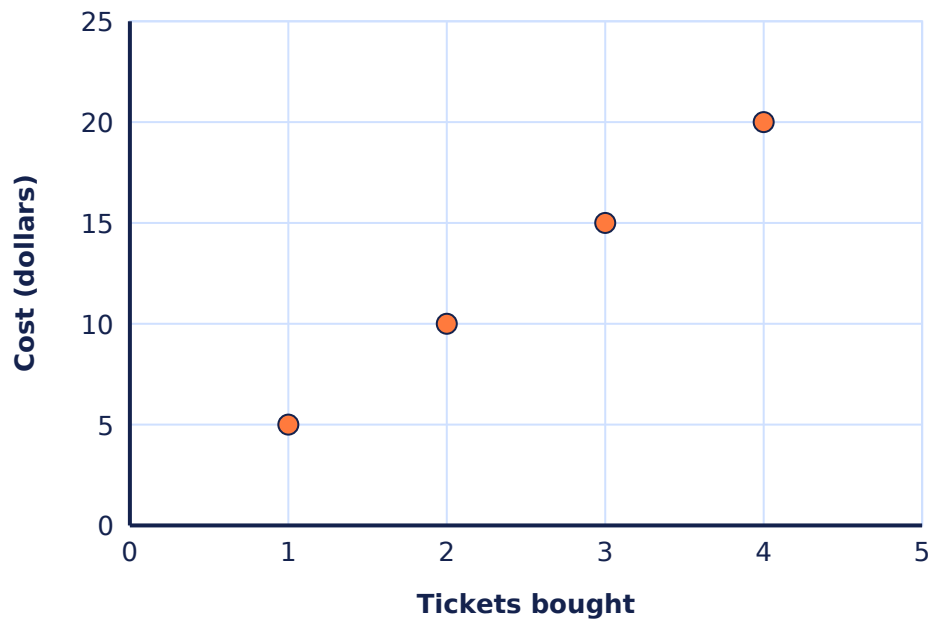
Problem 6 Equation from a table (medium)

Write an equation for the relationship shown in the table.

x	2	3	5	8
y	18	27	45	72

Problem 7 Reading the ticket graph (medium)

The graph shows the cost of tickets to a robotics showcase.



Cost of tickets to the robotics showcase.

- Write an equation for the cost c of n tickets.
- Find the cost of 9 tickets.

Problem 8 An age difference (medium)

Zoe is 4 years older than her brother Leo. Let l be Leo's age and z be Zoe's age.

- Write an equation for z .
- Find Zoe's age when Leo is 9.

c. Find Leo's age when Zoe is 21.

Problem 9 Muffin boxes (medium)

A bakery packs 6 muffins in each box. Complete the table and write an equation for the number of muffins m in b boxes.

b (boxes)	3	5	8	12
m (muffins)	?	?	?	?

Problem 10 Graph from a table (medium)

Graph the ordered pairs from the table on a coordinate plane. Then write an equation for y in terms of x .

x	2	4	6
y	3	6	9

Problem 11 Song downloads (medium)

Each song download costs \$1.25. Write an equation for the cost c of n songs, then complete the table.

n	2	4	8	10
c (dollars)	?	?	?	?

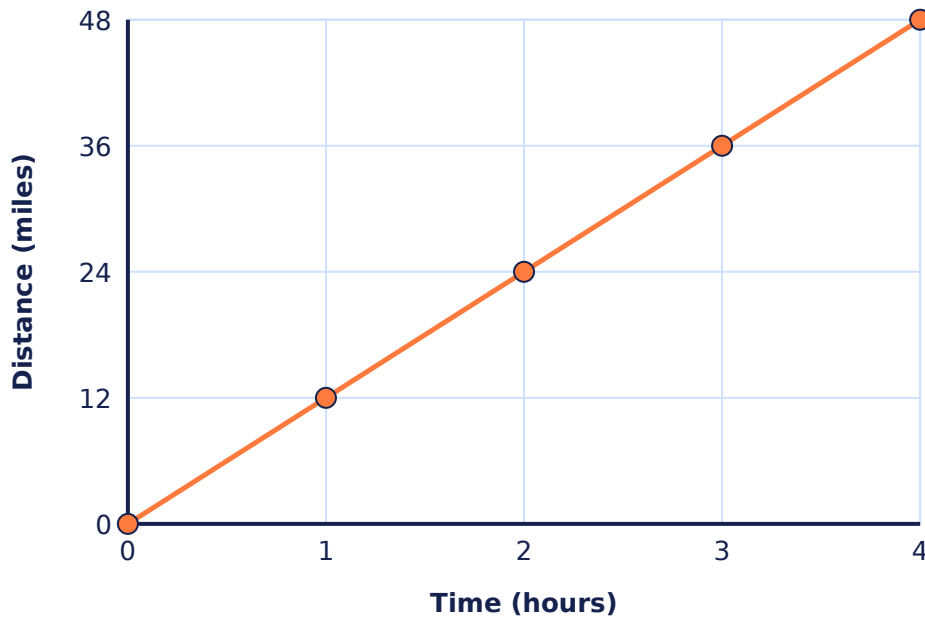
Problem 12 Which equation fits? (medium)

Choose the equation that matches the table: $y = 5x$, $y = x + 5$ or $y = x + 7$.

x	2	4	6	8
y	7	9	11	13

Problem 13 The cyclist graph (medium)

The graph shows a cyclist riding at a constant pace.



A cyclist riding at a constant pace.

- Explain what the point (3, 36) means.
- Write an equation for the distance d after t hours.
- Find the distance after 7 hours.

Problem 14 Cyclist versus runner (hard)

A cyclist rides at 14 miles per hour and a runner jogs at 9 miles per hour, both starting at the same place. Write an equation for each, using c and r for distance and t for hours.

- Find how much farther the cyclist has gone after 3 hours.
- Find the time when the cyclist is 25 miles ahead.

Problem 15 Hiking pace (hard)

A hiking group walks at a constant 2.5 miles per hour. Let t be the time in hours and d the distance in miles.

- Write an equation for d .
- Complete a table for $t = 2, 4$ and 6 .
- Find the distance walked in 3.6 hours.
- Find the time needed to walk 14 miles.

Problem 16 Food truck sales (hard)

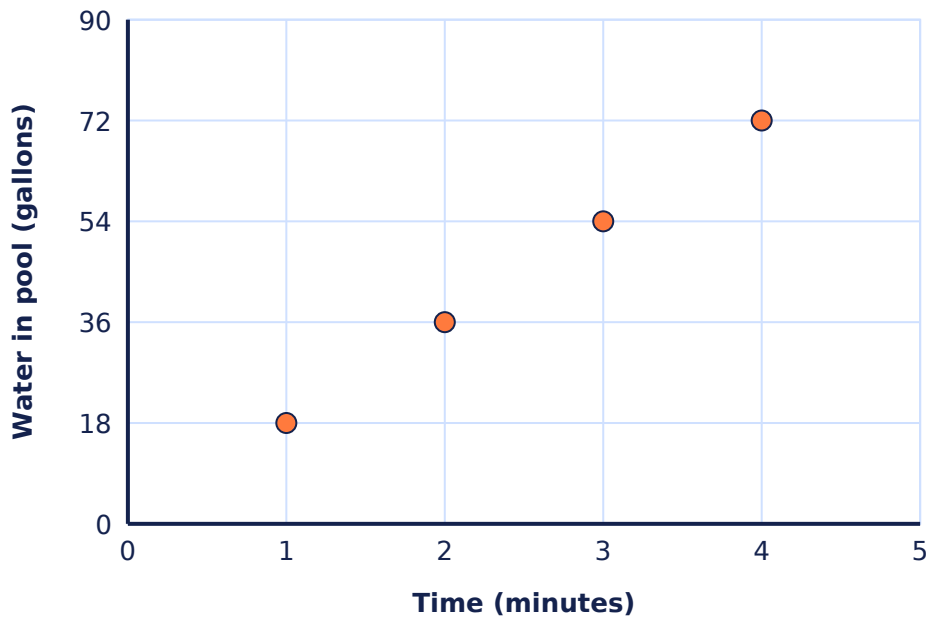
A food truck sells each taco for \$3.75. Let n be the number of tacos sold and r the revenue in dollars.

- Name the independent variable and write an equation.

- b. Find the revenue from 24 tacos.
- c. Find how many tacos were sold when the revenue was \$146.25.

Problem 17 Filling a kiddie pool (hard)

The graph shows the water in a kiddie pool as a hose runs at a steady rate.



A kiddie pool being filled with a hose.

- a. Which variable is independent?
- b. Write an equation for the gallons g after m minutes.
- c. Find the gallons after 11 minutes.
- d. Find how many minutes it takes to reach 504 gallons.

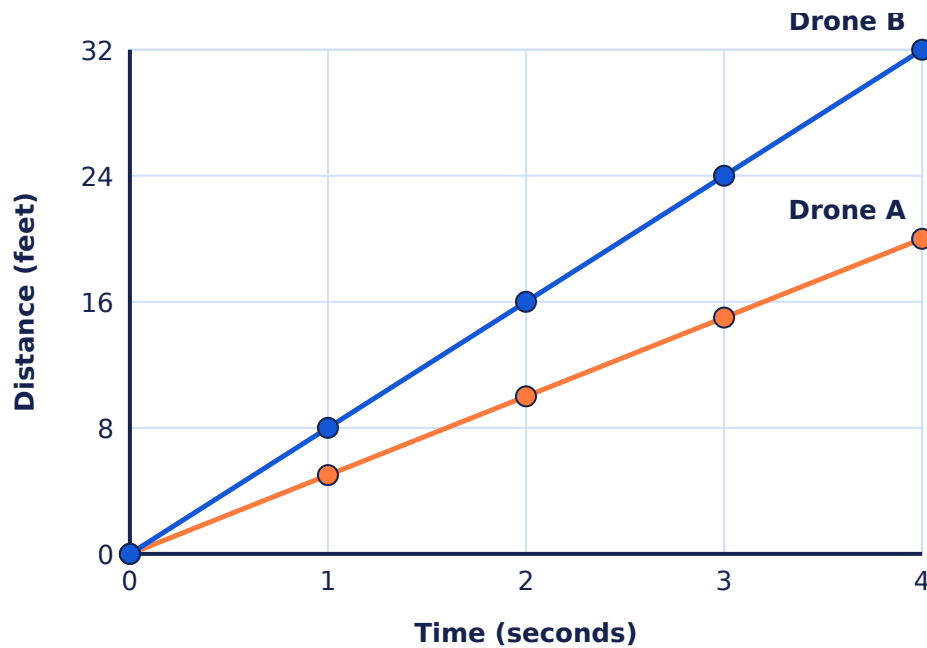
Problem 18 Weekend job pay (hard)

Jamal earns \$11.50 per hour. Let h be the hours worked and e the earnings in dollars.

- a. Write an equation for e .
- b. Find his earnings for 6, 9 and 13 hours.
- c. Find how many hours he must work to earn \$230.

Problem 19 Two drones (hard)

The graph shows the distance flown by two drones in a test.



Distance flown by two drones.

- Write an equation for each drone, using a and b for distance and t for seconds.
- Find the gap between the drones at 4 seconds.
- Find the time when Drone B is 27 feet ahead of Drone A.

Problem 20 Trail mix comparison (hard)

At a camp store, trail mix A costs \$6.40 per pound and trail mix B costs \$5.20 per pound. Let w be the weight in pounds.

- Write an equation for the cost of each mix.
- Find how much more mix A costs than mix B for 7.5 pounds.
- Write an equation for the difference D in cost and use it to check part (b).