

Grade 6 · Dependent and Independent Variables · Worksheet

Common Core 6.EE.C.9 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

These 20 problems practice using variables to represent two quantities that change together, from Common Core 6.EE.C.9. Early problems identify the independent and dependent variables and write equations; middle problems use tables, graphs, and ordered pairs.

Problems 15 through 20 are word problems about a hiker, pizza, lemonade, ages, a water tank, and a road trip. Name the variables first, then show every step.

Grade 6 Common Core: 6.EE.C.9

Problem 1: Identifying Variables

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

- a. The number of hours Ethan works and the money he earns
- b. The number of tickets bought and the total cost
- c. The miles Liam drives and the gas left in the tank
- d. A sunflower's age in weeks and its height

Problem 2: Which Variable Depends

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

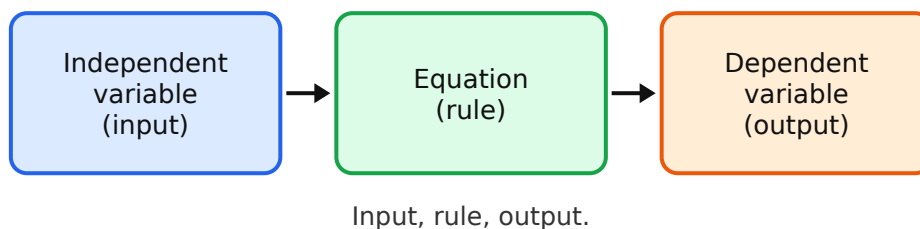
- a. The number of laps Mei swims and the calories she burns
- b. The pounds of apples bought and the price paid
- c. The days since planting and the height of a bean plant
- d. The minutes a faucet runs and the gallons of water in a bucket

Problem 3: Variables in Equations

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

- a. $d = 65t$
- b. $c = 3n$

- c. $p = 12h$
 d. $y = x + 4$



Problem 4: Writing Equations

Write an equation for each situation.

- The cost c of n notebooks that cost \$3 each
- The distance d after t hours at 55 miles per hour
- The pay P for h hours at \$12 per hour
- The perimeter P of a square with side length s

Problem 5: Writing More Equations

Write an equation for each situation.

- The cost c of n tickets that cost \$8.50 each
- The distance d after t hours at 12 miles per hour
- A number y that is 7 more than a number x
- The perimeter P of an equilateral triangle with side length s

Problem 6: Find the Dependent Value

Find the value of the dependent variable.

- $c = 8.5n$ when $n = 6$
- $c = 8.5n$ when $n = 10$
- $y = x + 9$ when $x = 4.5$
- $d = 12t$ when $t = 2.5$

Problem 7: Completing a Table

Complete the table for the equation $c = 4n$.

n	1	2	3	4	5
c	—	—	—	—	—

Problem 8: Two Tables

Complete each table using the equation.

a. $p = 9h$

h	2	4	6	8	10
p	—	—	—	—	—

b. $y = x - 3$

x	3	5	8	10
y	—	—	—	—

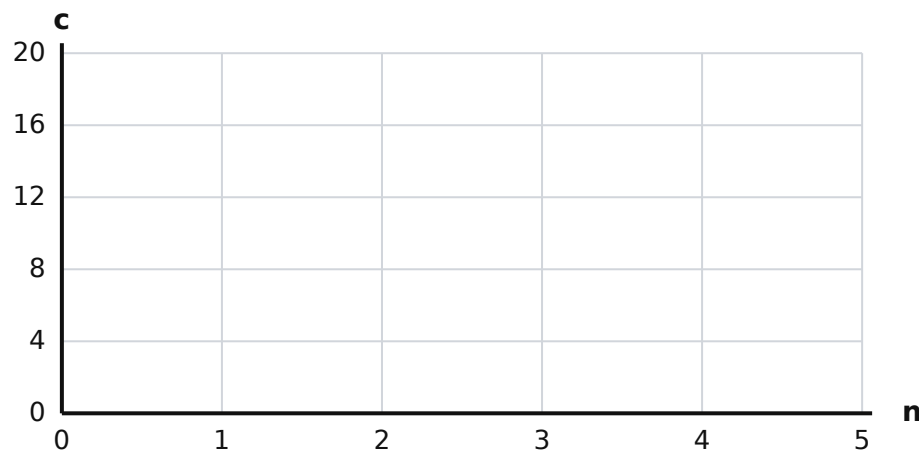
Problem 9: Table for an Addition Rule

Complete the table for the equation $y = x + 6$.

x	0	2	4	6	8
y	—	—	—	—	—

Problem 10: Plotting Points

Plot the points from the table for $c = 4n$ on the grid, with n on the horizontal axis and c on the vertical axis. Then describe the pattern the points make.



Grid for plotting (n, c) .

Problem 11: Find the Rule

Write an equation for each table, with x as the independent variable and y as the dependent variable.

a. Table 1

x	2	4	6	8
y	7	9	11	13

b. Table 2

x	1	2	3	4
y	3	6	9	12

Problem 12: Equation from a Table

Write an equation for the table, with t as the independent variable and d as the dependent variable.

t (hours)	1	2	3	4
d (miles)	55	110	165	220

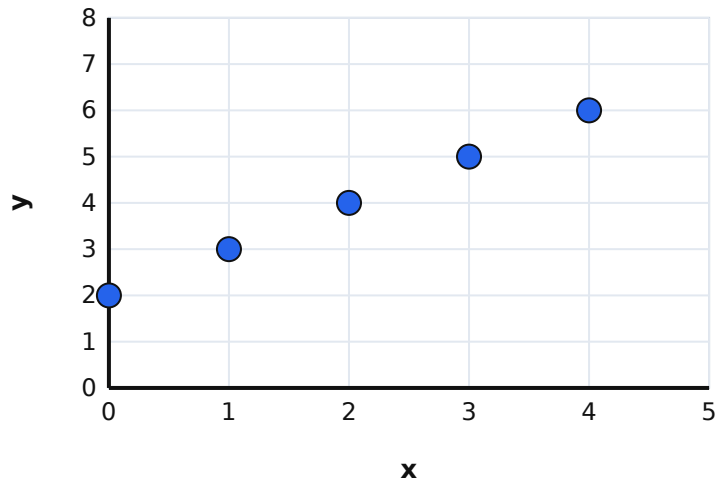
t (hours)	d (miles)
1	55
2	110
3	165
4	220

Values of t and d .

Problem 13: Rule from a Graph

The graph shows five points of a rule relating x and y .

- Write the ordered pairs.
- Write an equation for y in terms of x .
- Find y when $x = 10$.
- Find x when $y = 20$.

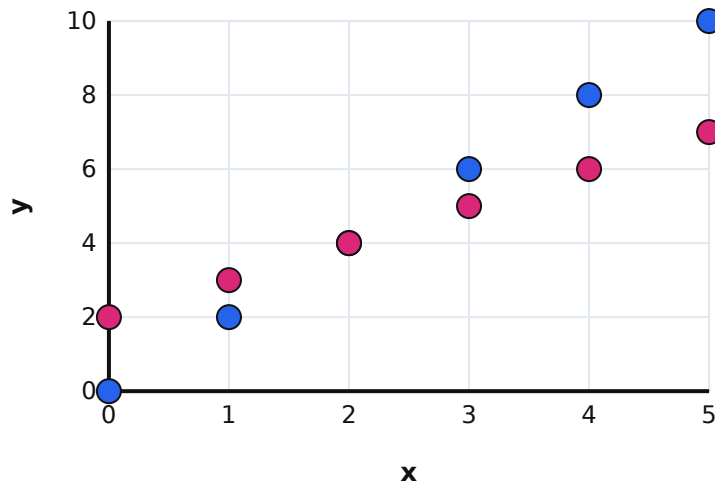


Points of a rule relating x and y .

Problem 14: Comparing Two Rules

The graph shows points for two rules. Rule 1 is shown in blue and Rule 2 is shown in pink. Answer each question using the graph.

- Which rule gives the greater y -value when $x = 1$?
- Which rule gives the greater y -value when $x = 4$?
- For which value of x do the rules give the same y -value?
- Write an equation for each rule.



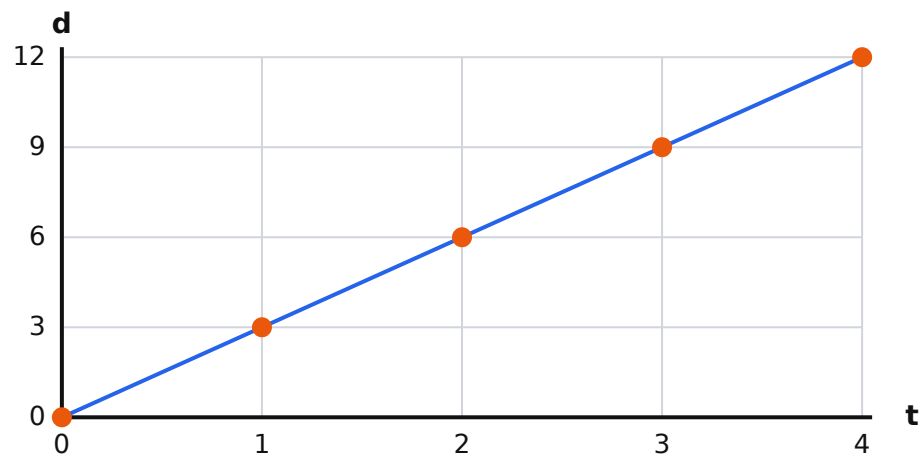
Blue: Rule 1. Pink: Rule 2.

Problem 15: Reading a Graph

The graph shows the distance d , in miles, that a hiker walks in t hours.

- Name the independent and dependent variables.

- How far does the hiker walk in 3 hours?
- How many hours does it take to walk 6 miles?
- Write an equation relating d and t .



Distance d (miles) versus time t (hours).

Problem 16: Pizza Night Cost

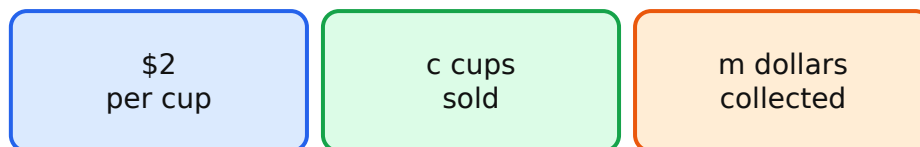
Jamal orders pizzas for a team party. Each pizza costs \$11. Let p be the number of pizzas and c the total cost in dollars.

- Write an equation and name the independent variable.
- Complete a table for $p = 1, 2, 3, 4$.
- Find the cost of 7 pizzas.
- Find the number of pizzas that cost \$132.

Problem 17: Lemonade Stand

At the Little League snack stand, Sofia sells lemonade for \$2 per cup. Let c be the number of cups sold and m the money collected in dollars.

- Write an equation and name the independent variable.
- Find the money collected when 12 cups are sold.
- Find the number of cups sold when the money collected is \$30.



Lemonade stand quantities.

Problem 18: Age Gap

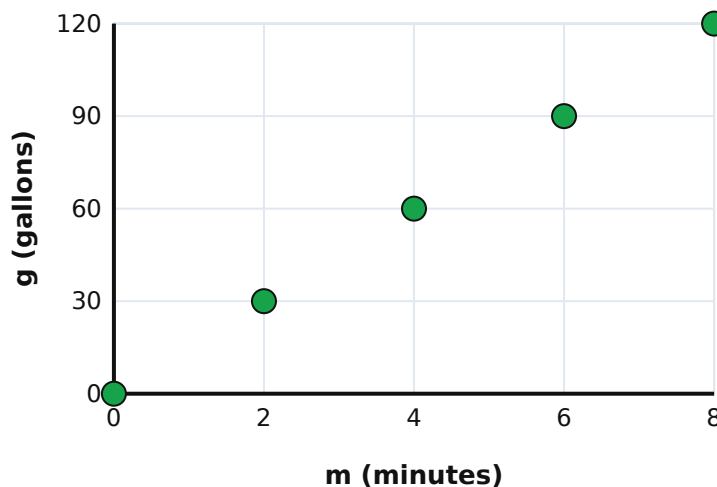
Priya is 5 years older than her cousin Ravi. Let r be Ravi's age and p be Priya's age, both in years.

- Write an equation for p in terms of r , and name the independent variable.
- Complete a table for $r = 6, 8, 10, 12$.
- Find Priya's age when Ravi is 15.
- Find Ravi's age when Priya is 21.

Problem 19: Filling a Water Tank

A hose fills an empty tank at a steady rate of 15 gallons per minute. Let m be the minutes and g the gallons in the tank. The graph shows some values.

- Write an equation for g in terms of m .
- Find the gallons in the tank after 6 minutes, first from the graph and then from the equation.
- Find the number of gallons after 8 minutes.
- Find the minutes needed to reach 270 gallons.



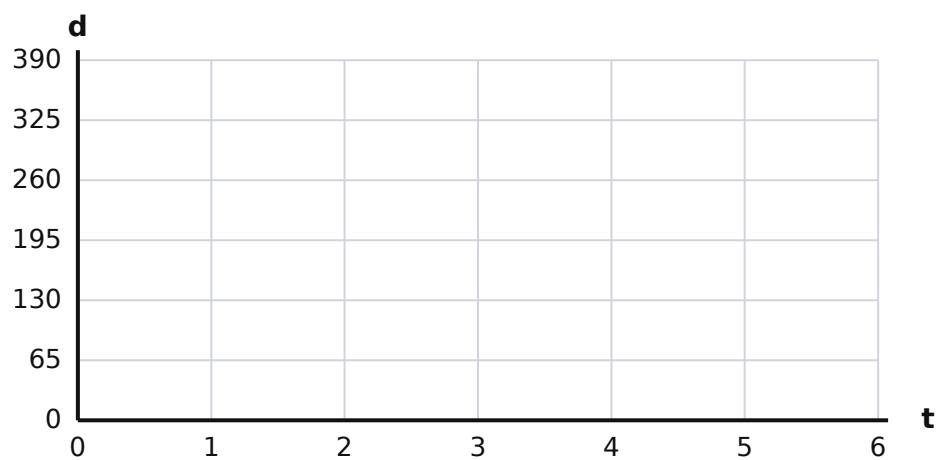
Water in the tank over time.

Problem 20: Road Trip

Aisha's family drives at a steady 65 miles per hour. Let t be the time in hours and d the distance in miles.

- Write an equation for d in terms of t .
- Find the distance after 2.5 hours.
- Find the time to drive 325 miles.

d. Plot the points for $t = 1, 2, 3, 4, 5, 6$ hours on the grid.



Grid for plotting (t, d) .