

Grade 6 - Independent and Dependent Variables - Answer Key

Common Core 6.EE.C.9 · maths-pdf.fr/en/

Check your equations, tables, and graphs here. The solutions name the independent and dependent variables, show the pattern used to write each equation, and give final answers in bold. Tables and graphs are included for many problems.

Grade 6 · Common Core State Standards: **6.EE.C.9**

Exercise 1 - Name the variables

The number of miles x is chosen first, so it is the **independent** variable.

The cost y depends on x , so it is the **dependent** variable.

Equation: $y = 3x$.

independent x ; dependent y ; $y = 3x$

Exercise 2 - Equation from a table

Each y is 5 times x : $5 \cdot 1 = 5$, $5 \cdot 2 = 10$, $5 \cdot 3 = 15$.

$y = 5x$

Exercise 3 - Complete a table

Add 4 to each x : $1 + 4 = 5$, $2 + 4 = 6$, $3 + 4 = 7$, $5 + 4 = 9$.

$y = 5, 6, 7, 9$

x	1	2	3	5
y	5	6	7	9

Each y is $x + 4$.

Exercise 4 - Evaluate an equation

$$y = 4 \cdot 7 = 28.$$

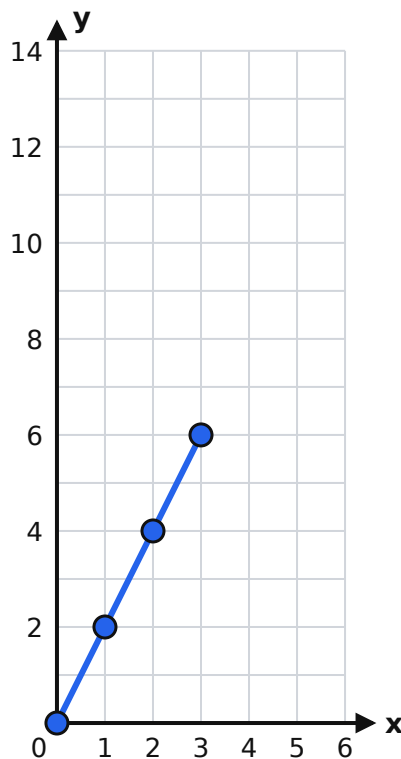
$$36 = 4x, \text{ so } x = 36 \div 4 = 9.$$

$$y = 28; x = 9$$

Exercise 5 - Graph $y = 2x$

Table: (0, 0), (1, 2), (2, 4), (3, 6).

See the graph: the points lie on a line through the origin.



Points on $y = 2x$.

Exercise 6 - Equation from a table with division

Each y is half of x: $2 \div 2 = 1$, $4 \div 2 = 2$.

$$y = \frac{x}{2}$$

Exercise 7 - Read a graph

y is 3 times x: $y = 3x$.

$$y = 3 \cdot 5 = 15.$$

$$y = 3x; \mathbf{y = 15}$$

Exercise 8 - Graph $y = x + 2$

The line for $y = x + 2$ crosses the y-axis at 2, not at 0. It goes up 1 each time x goes up 1.

The line for $y = 2x$ goes through (0,0) and goes up 2 each time x goes up 1.

It crosses the y-axis at 2 and rises more slowly.

Exercise 9 - Walking distance

Distance = rate times time: $d = 4t$. The time t is independent.

$$4 \cdot 1 = 4, 4 \cdot 2 = 8, 4 \cdot 3 = 12, 4 \cdot 5 = 20.$$

$$d = 4t; \mathbf{d = 4, 8, 12, 20}$$

t (hours)	1	2	3	5
d (miles)	4	8	12	20

Distance walked.

Exercise 10 - Age difference

$$j = p + 4.$$

$$j = 9 + 4 = 13.$$

$$j = p + 4; \mathbf{Jamal \text{ is } 13}$$

Exercise 11 - Hourly pay

$$\$9.00 \cdot 1 = \$9.00, \text{ so the rate is } \$9 \text{ per hour: } p = 9h.$$

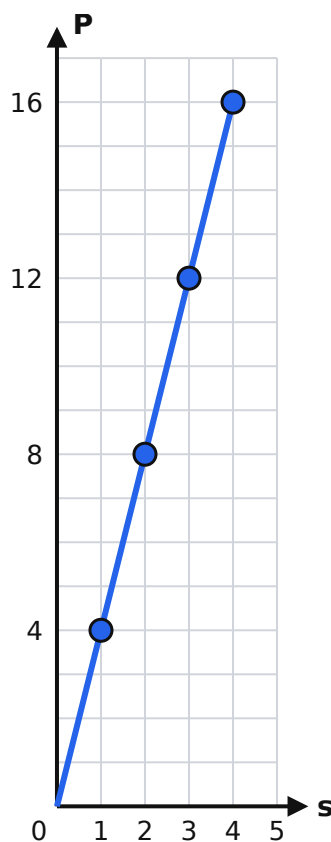
$$9 \cdot 8 = 72.$$

$$p = 9h; \$72.00$$

Exercise 12 - Perimeter of a square

A square has 4 equal sides.

$$P = 4s$$



The graph of $P = 4s$.

Exercise 13 - Which table matches?

Table A: $3 \cdot 1 = 3$, $3 \cdot 2 = 6$: $y = 3x$.

Table B: $1 + 3 = 4$, $2 + 3 = 5$: $y = x + 3$.

B matches $y = x + 3$; A matches $y = 3x$

Exercise 14 - Distance and time

$$d = 55t.$$

$$275 = 55t, \text{ so } t = 275 \div 55 = 5.$$

$$d = 55t; \text{ 5 hours}$$

Exercise 15 - Cookie trays

$$c = 12t.$$

$$108 = 12t, \text{ so } t = 9.$$

$$c = 12t; \text{ 9 trays}$$

Exercise 16 - Independent or dependent?

(a) Independent: hours studied. Dependent: test score.

(b) Independent: number of pizzas. Dependent: total cost.

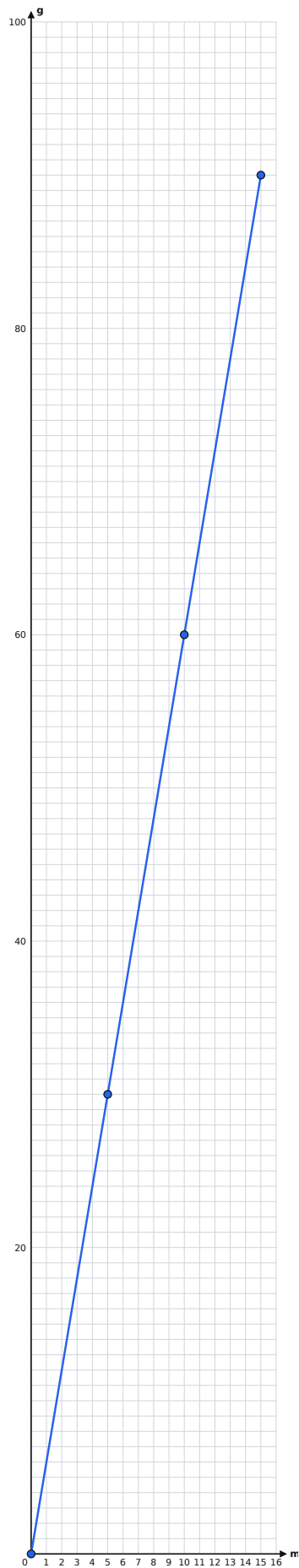
The quantity that you choose or change is independent; the one that responds is dependent.

Exercise 17 - Water tank

$$g = 6m.$$

$$90 = 6m, \text{ so } m = 90 \div 6 = 15.$$

$$g = 6m; \text{ 15 minutes}$$



The line passes through (15, 90).

Exercise 18 - Match the situation

(a) The pay is 5 times the hours: $y = 5x$.

(b) Her age is 5 more than her brother's age: $y = x + 5$.

(a) $y = 5x$; (b) $y = x + 5$

x	1	2	3
$y = 5x$	5	10	15
$y = x + 5$	6	7	8

The two relationships grow differently.

Exercise 19 - Growth table

The graph starts at (0,3) and rises 1 each week: $y = x + 3$.

$$10 + 3 = 13.$$

$y = x + 3$; **13 inches**

Exercise 20 - Multi-step relationship

$$s = 7w.$$

Table: 14, 28, 42, 56.

$$84 = 7w, \text{ so } w = 12.$$

$s = 7w$; **12 weeks**

Weeks (w)	2	4	6	8
Savings (s)	\$14	\$28	\$42	\$56

Savings at \$7 per week.