

Grade 6 · Dependent and Independent Variables · Worksheet Answer Key

Common Core 6.EE.C.9 · mathovore.fr

This answer key gives complete worked solutions for all 20 problems on the dependent and independent variables worksheet. Each solution names the variables, shows the equation or table, and gives the final answer in bold so students can check their work.

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

Problem 1: Identifying Variables

- a. Independent: **hours worked**; dependent: **money earned**
- b. Independent: **number of tickets**; dependent: **total cost**
- c. Independent: **miles driven**; dependent: **gas left**
- d. Independent: **age in weeks**; dependent: **height**

Problem 2: Which Variable Depends

The independent variable is the quantity that is chosen or changes on its own. The dependent variable changes because of it.

- a. Independent: **number of laps**. Dependent: **calories burned**.
- b. Independent: **pounds of apples**. Dependent: **price paid**.
- c. Independent: **days since planting**. Dependent: **height of the plant**.
- d. Independent: **minutes the faucet runs**. Dependent: **gallons in the bucket**.

Problem 3: Variables in Equations

- a. Independent: t ; dependent: d
- b. Independent: n ; dependent: c
- c. Independent: h ; dependent: P
- d. Independent: x ; dependent: y

Problem 4: Writing Equations

- a. $c = 3n$
- b. $d = 55t$
- c. $p = 12h$
- d. A square has 4 equal sides: $P = 4s$

Problem 5: Writing More Equations

- a. Cost equals price times number: $c = 8.5n$
- b. Distance equals rate times time: $d = 12t$
- c. Add 7 to x : $y = x + 7$
- d. Three equal sides: $P = 3s$

Problem 6: Find the Dependent Value

- a. $c = 8.5(6) = 51$
- b. $c = 8.5(10) = 85$
- c. $y = 4.5 + 9 = 13.5$
- d. $d = 12(2.5) = 30$

Problem 7: Completing a Table

Multiply each n by 4: $4 \times 1 = 4$, $4 \times 2 = 8$, $4 \times 3 = 12$, $4 \times 4 = 16$, $4 \times 5 = 20$.

n	1	2	3	4	5
c	4	8	12	16	20

n	c
1	4
2	8
3	12
4	16
5	20

Completed table.

Problem 8: Two Tables

- a. Multiply each h by 9: $9(2) = 18$, $9(4) = 36$, $9(6) = 54$, $9(8) = 72$, $9(10) = 90$.

h	2	4	6	8	10
p	18	36	54	72	90

- b. Subtract 3 from each x : $3 - 3 = 0$, $5 - 3 = 2$, $8 - 3 = 5$, $10 - 3 = 7$.

x	3	5	8	10
y	0	2	5	7

Problem 9: Table for an Addition Rule

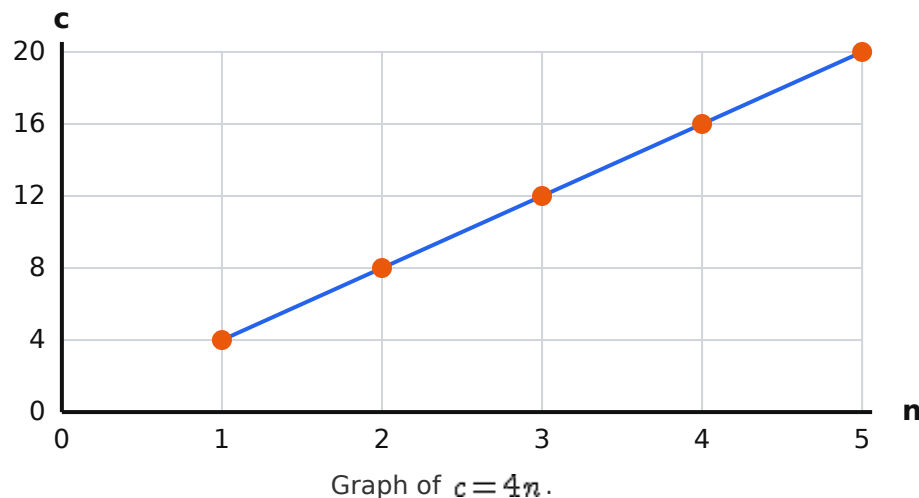
Add 6 to each x : $0+6=6$, $2+6=8$, $4+6=10$, $6+6=12$, $8+6=14$.

Answer: $y = 6, 8, 10, 12, 14$

Problem 10: Plotting Points

Plot $(1,4)$, $(2,8)$, $(3,12)$, $(4,16)$, and $(5,20)$.

The points lie on a **straight line** that rises as n increases; each step right of 1 goes up 4.



Problem 11: Find the Rule

- a. Each y is 5 more than x : $2+5=7$, $4+5=9$, $6+5=11$, $8+5=13$. The equation is $y = x+5$.
- b. Each y is 3 times x : $3 \times 1 = 3$, $3 \times 2 = 6$, $3 \times 3 = 9$, $3 \times 4 = 12$. The equation is $y = 3x$.

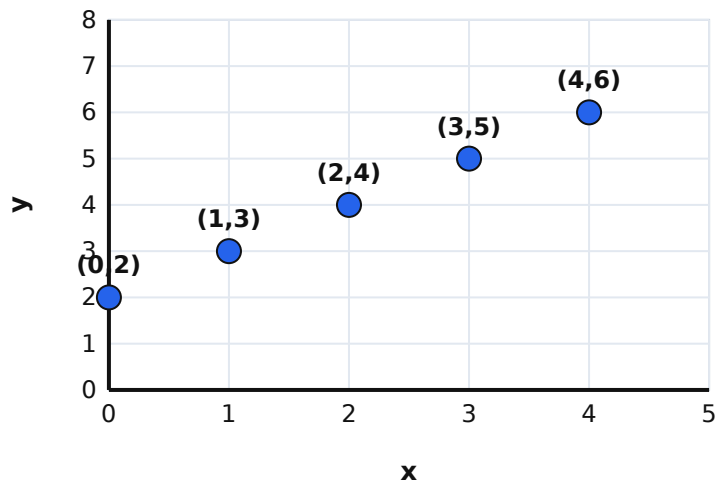
Problem 12: Equation from a Table

Each d is 55 times t : $55 \times 1 = 55$, $55 \times 2 = 110$, $55 \times 3 = 165$, $55 \times 4 = 220$.

Equation: $d = 55t$

Problem 13: Rule from a Graph

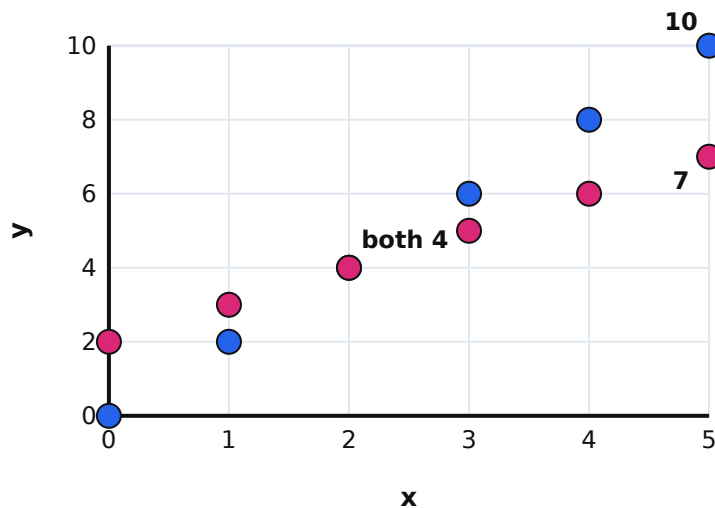
- a. $(0,2)$, $(1,3)$, $(2,4)$, $(3,5)$, $(4,6)$
- b. Each y is 2 more than x : $y = x+2$.
- c. $y = 10+2 = 12$
- d. $20 = x+2$, so $x = 20-2 = 18$



Each y is 2 more than x.

Problem 14: Comparing Two Rules

- At $x=1$, Rule 1 gives 2 and Rule 2 gives 3. **Rule 2** is greater.
- At $x=4$, Rule 1 gives 8 and Rule 2 gives 6. **Rule 1** is greater.
- Both rules give 4 at $x=2$.
- Rule 1: $y=2x$. Rule 2: $y=x+2$.



The rules agree only at $x=2$.

Problem 15: Reading a Graph

- Independent: **time t**; dependent: **distance d**
- At $t=3$, the graph is at 9: **9 miles**
- At $d=6$, the graph is at $t=2$: **2 hours**
- Each hour adds 3 miles, so $d=3t$

Problem 16: Pizza Night Cost

- a. Cost is \$11 for each pizza: $c = 11p$. The independent variable is p , the number of pizzas; the cost depends on it.

p	1	2	3	4
c	11	22	33	44

- c. $c = 11(7) = \$77$
d. $132 = 11p$, so $p = 132 \div 11 =$ **12 pizzas**

Problem 17: Lemonade Stand

- a. Money equals \$2 times cups: $m = 2c$. The independent variable is c .
b. $m = 2 \times 12 = \$24$
c. $30 = 2c$, so $c = 30 \div 2 =$ **15 cups**

Problem 18: Age Gap

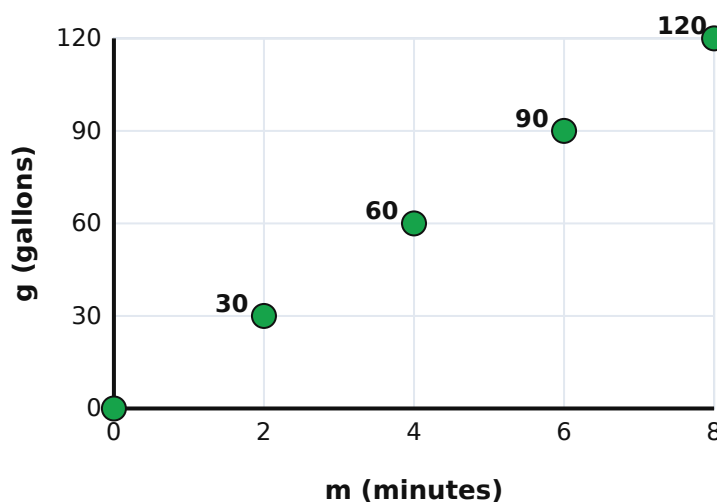
- a. Priya is always 5 years older: $p = r + 5$. The independent variable is r , Ravi's age.

r	6	8	10	12
p	11	13	15	17

- c. $p = 15 + 5 =$ **20 years old**
d. $21 = r + 5$, so $r = 21 - 5 =$ **16 years old**

Problem 19: Filling a Water Tank

- a. Gallons equal rate times minutes: $g = 15m$.
b. The graph shows 90 at $m = 6$. Equation: $g = 15(6) =$ **90 gallons**.
c. $g = 15(8) =$ **120 gallons**, which matches the last point.
d. $270 = 15m$, so $m = 270 \div 15 =$ **18 minutes**.



Every 2 minutes adds 30 gallons.

Problem 20: Road Trip

- a. $d = 65t$
- b. $d = 65 \times 2.5 = 162.5$. Answer: **162.5 miles**
- c. $325 = 65t$, so $t = 325 \div 65 =$ **5 hours**
- d. The points are (1,65), (2,130), (3,195), (4,260), (5,325), (6,390). **See graph.**

