

Dependent and Independent Variables: math test, Grade 6 – download the PDF

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1

Identify the variables

/ 3 pts

For each situation, name the independent variable and the dependent variable (1 point each).

- The number of hours a faucet runs and the gallons of water used.
- The number of players on a team and the number of water bottles needed.
- The speed of a car and the distance it has traveled in one hour.

2 Smoothie bar

/ 4 pts

A smoothie costs 7 dollars. Let n be the number of smoothies and c the cost in dollars.

- Write an equation for c . (1 pt)
- Complete the table. (1 pt)
- Find the cost of 11 smoothies. (1 pt)
- A bill is 91 dollars. How many smoothies were bought? (1 pt)

n	2	4	6	8
c	?	?	?	?

3 Find the rule

/ 3 pts

Look at the table.

x	3	4	5	6
y	8	9	10	11

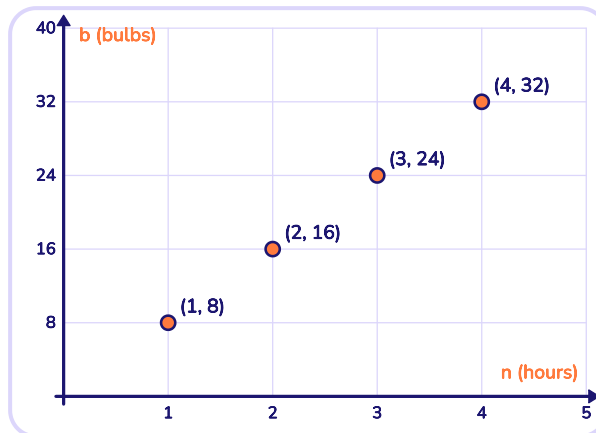
- Write the rule. (1 pt)
- Find y when $x = 20$. (1 pt)
- What is the rate of change? Is the graph a line through the origin? (1 pt)

4

Planting tulips

/ 4 pts

A gardener plants bulbs at a steady pace. The graph shows the number of bulbs b planted after n hours.



- Which variable is independent, and on which axis is it? (1 pt)
- What is the constant rate of change? (1 pt)
- Write an equation. (1 pt)
- How many bulbs are planted in 6 hours? (1 pt)

5 Constant rate or not?

/ 3 pts

Look at the two tables.

Table A: x	1	2	3	4
y	3	6	9	12

Table B: x	1	2	3	4
y	2	5	9	14

- Find the rate of change in Table A. (1 pt)
- Show that the rate in Table B is not constant. (1 pt)
- Which table can be written as $y = kx$? Give k . (1 pt)

6 Renting a bus

/ 3 pts

A club rents a bus. The cost is a 40 dollar fee plus 12 dollars for each rider. Let r be the number of riders and c the total cost in dollars.

- Write an equation. (1 pt)
- Find the cost for 5 riders. (1 pt)
- The total is 172 dollars. How many riders are there? (1 pt)



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