

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

22 problems graded by difficulty (★ easy, ★★ medium, ★★★ hard). Try first, without looking at the solutions!

1 Name the variables



For each situation, name the independent variable and the dependent variable.

- a. The number of minutes on a treadmill and the calories burned.
- b. The number of pizzas ordered and the total price.
- c. The amount of rain that falls and the water level in a rain barrel.

2 Complete the table



The rule is $y = 4x$. Copy and complete the table.

x	1	2	3	4	5
y	?	?	?	?	?

3 Movie tickets



A movie ticket costs 9 dollars. Let t be the number of tickets and c the total cost in dollars.

- Write an equation for c .
- How much do 6 tickets cost?
- A group spends 117 dollars. How many tickets did they buy?

4 Use the rule



The rule is $y = x + 7$. Find y when $x = 3$, $x = 8$ and $x = 15$.

5 From a table to ordered pairs



Write the table below as ordered pairs. Which variable goes first in each pair, and on which axis would you place it?

Hours h	1	2	3
Pages read p	2	4	6

6 True or false?



Decide whether each statement is true or false, and explain.

- In the equation $d = 5t$, the variable d is independent.
- For $y = 5x$, the ordered pair $(4, 20)$ has the independent value first.
- In a graph, the independent variable is usually on the horizontal axis.
- For $y = x + 3$, when $x = 18$ we get $y = 6$.

7

Growing bamboo

A bamboo shoot grows 2 inches each day. Let d be the number of days and h the growth in inches.

- Make a table for $d = 1$ to 5 .
- Write the rule.
- How much has it grown after 7 days? Give the answer in inches and in centimeters (1 inch = 2.54 cm).

8

Find the rule: adding

Find the rule for the table, then use it to find y when $x = 40$.

x	2	3	4	5
y	9	10	11	12

9

Find the rule: multiplying

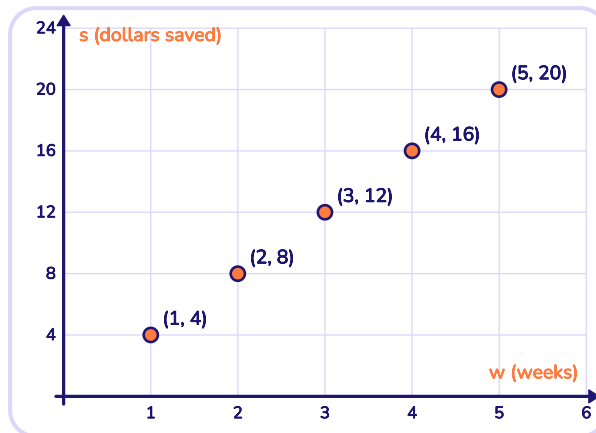
Find the rule for the table. Then find y when $x = 10$, and x when $y = 96$.

x	1	2	3	4
y	6	12	18	24

10 Reading a graph



Maya saves the same amount of money each week. The graph shows her savings s in dollars after w weeks.



- Which variable is independent? Which is dependent?
- How much does she save each week?
- Write an equation for s .
- How much will she have saved after 8 weeks?

11 Cousins



Leo is 4 years older than his cousin. Let a be the cousin's age and L Leo's age.

- Write a rule for L .
- Complete a table for $a = 6, 9, 12$.
- How old is the cousin when Leo is 20?
- Is the ratio $L : a$ the same for every pair? Explain.

12 The jogger



A jogger runs at a steady pace.

Minutes m	5	10	15	20
Miles d	0.5	1	1.5	2

- What is the constant rate of change?
- Write an equation.
- How far does she run in 45 minutes?

13 Is the rate constant?



The table shows the cost c in dollars of n packs of stickers at a store.

n	1	2	3	4
c	3	6	10	15

Is the rate of change constant? Can the relationship be written as $c = kn$? Explain.

14

Trail mix ratio

A trail mix has 3 cups of raisins for every 2 cups of nuts. Let n be the cups of nuts and r the cups of raisins.

- Complete the table.
- Write the pairs (n, r) .
- Will the graph be a line through the origin? Why?
- How many cups of raisins go with 10 cups of nuts?

n	2	4	6	8
r	3	?	?	?

15

Taxi fare

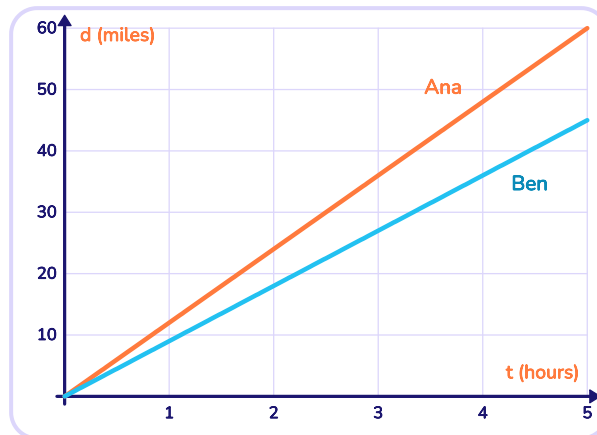
A taxi charges a pickup fee of 3 dollars plus 2 dollars for each mile. Let m be the number of miles and c the cost in dollars.

- Write an equation for c .
- Make a table for $m = 0$ to 5.
- What is the rate of change?
- A ride costs 25 dollars. How long was it?

16 Two cyclists

★★★

The graph shows the distance d in miles covered by Ana and Ben as functions of the time t in hours. Both ride at a steady pace.



- Who rides faster? How can you tell from the graph?
- Write an equation for each cyclist.
- What is the difference between their distances after 3 hours?
- After how many hours is Ana 12 miles ahead?

17 Find the mistake

★★★

A student looks at this table and writes the rule $y = x + 3$.

x	1	2	3
y	4	8	12

Explain what is wrong and give the correct rule. Then find y when $x = 25$.

18 The printer



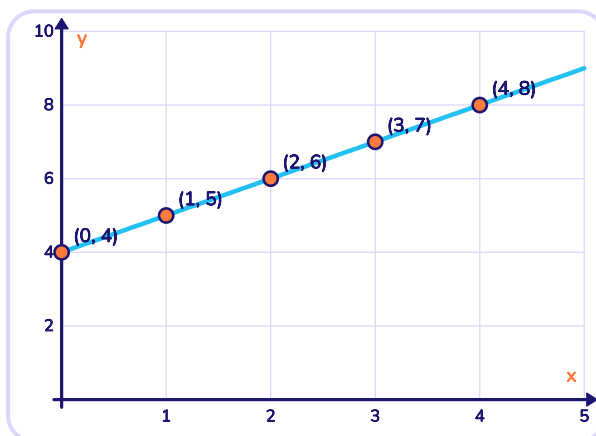
A printer prints 18 pages per minute. Let m be the number of minutes and p the number of pages.

- Write an equation.
- How many pages in 10 minutes?
- How long does it take to print 135 pages?
- Is m or p the independent variable? Explain.

19 A line that misses the origin



The graph shows the rule $y = x + 4$.



- Read the ordered pair for $x = 0$. Why does this matter?
- What is the rate of change?
- Is the ratio $y : x$ constant? Test $x = 1$ and $x = 4$.
- Explain why this line is not like the graph of a constant ratio.

20 Your own situation



Invent a real-world situation with a constant rate of 6 items per box. Name the independent and dependent variables, write an equation, and make a table with four values.

21 A road trip



A family drives at a constant speed of 55 miles per hour. Let t be the hours and d the distance in miles.

- Write an equation.
- How far do they drive in 3.5 hours?
- How long to drive 330 miles?
- Express the speed in kilometers per hour (1 mile $\approx$ 1.609 km), rounded to the nearest tenth.

22 Missing values



The table follows the rule $y = 7x$. Find the three missing values.

x	2	?	10	?
y	14	35	?	63



Test yourself: quick challenge for Grade 6

Change level

Level : Grade 6

6 random questions, instant feedback.



Start the challenge



Speed drill for Grade 6: how many in 60 seconds?



Keep exploring with Zyro

✓ Practice solutions

Dependent and Independent Variables:
practice solutions, Grade 6

📖 Math lessons

Dependent and Independent Variables:
math lesson, Grade 6

🎯 Math quizzes

Dependent and Independent Variables:
math quiz, Grade 6

✓ Practice solutions

Area, Surface Area, and Volume: practice
solutions, Grade 6

✓ **Practice solutions**

Ratios and Rate Reasoning: practice solutions, Grade 6

■ **Math lessons**

Area, Surface Area, and Volume: math lesson, Grade 6

Zyro takes you to our partner sites

Blast off to other planets of knowledge and their apps.

Lift off