MATHEMATICS · GRADES 7-9

Tables of Values

Difficulty level: Intermediate

Mathematics: Grades 7-9

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Overview of the concept

This is how you turn an equation into points you can plot, like working out the cost for one, two, and three items before drawing the graph, so you build the picture one point at a time. A table lists the inputs you choose and the outputs the equation gives back, one row at a time. Those rows are the points, and once you have enough of them the graph draws itself. That is how you go from a rule on paper to a picture you can read, whether it is a cost, a height, or a temperature over time.



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Worked examples

EXAMPLE 1

Q Make a table of values for $y = x + 2$ for $x = 0, 1, 2$

$$y = x + 2$$

x	y
0	
1	
2	

SOLUTION

For $x = 0$: $y = 0 + 2 = 2$, so the pair is $(0, 2)$.

For $x = 1$: $y = 1 + 2 = 3$, so the pair is $(1, 3)$.

For $x = 2$: $y = 2 + 2 = 4$, so the pair is $(2, 4)$.

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EXAMPLE 2

Q Make a table of values for $y = 3x$ for $x = 0, 1, 2$

x	y
0	?
1	?
2	?

SOLUTION

For $x = 0$: $y = 3 \times 0 = 0$, so the pair is $(0, 0)$.

For $x = 1$: $y = 3 \times 1 = 3$, so the pair is $(1, 3)$.

For $x = 2$: $y = 3 \times 2 = 6$, so the pair is $(2, 6)$.

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Practice questions

1 A taxi charges 3 dollars to start and 1 dollar for each kilometre. Complete the table of values for $y = x + 3$ for $x = 0, 1, 2$. Write the completed table.

	0	1	2
x	0	1	2
y	?	?	?

A. x 0, y 2; x 1, y 3; x 2, y 4

B. x 0, y 3; x 1, y 4; x 2, y 5

C. x 0, y 3; x 1, y 5; x 2, y 7

D. x 0, y 0; x 1, y 1; x 2, y 2

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2 A shop sells pencils in packs of 3, and gives 1 extra pencil free. The rule is $y = 3x + 1$. What is y when $x = 2$?

- **A** 7
- **B** 6
- **C** 4
- **D** 5

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3 Sara saves money. Her table shows x 0, y 5; x 1, y 6; x 2, y 7. Which rule made this table?

- **A** $y = x + 5$
- **B** $y = 5x$
- **C** $y = x + 6$
- **D** $y = 2x + 5$

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4 A recipe doubles the flour for each batch. The table for y = 2x shows x 0, y 0; x 1, y 2; x 2, y 4. Which point is on the graph of y = 2x?

- **A** (2, 4)
- **B** (1, 3)
- **C** (2, 3)
- **D** (0, 2)

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5 The temperature starts at -1 degrees and rises 1 degree each hour. Work out y = x - 1 for x = 0, 1, 2. Write the values of y.

- **A** x 0, y 1; x 1, y 2; x 2, y 3
- **B** x 0, y -1; x 1, y 0; x 2, y 1
- **C** x 0, y 0; x 1, y 1; x 2, y 2
- **D** x 0, y -1; x 1, y -2; x 2, y -3

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6 **A tank holds 10 litres and loses 1 litre each hour. The rule is y = 10 - x. For which x is y = 8?**

- A 2
- B 8
- C 10
- D 18

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7 **A plant grows 4 cm each week. The rule is y = 4x. A table shows x 0, y 0; x 1, y 4; x 2, y 8. What is the next value of y when x = 3?**

- A 12
- B 10
- C 16
- D 9

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8 **A phone plan costs 1 dollar + 5 dollars for each minute. The rule is y = 5x + 1. A student completes the table as x 0, y 1; x 1, y 6; x 2, y 10. Which row is wrong?**

A x = 2, y should be 11

B x = 1, y should be 5

C x = 0, y should be 0

D No row is wrong

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9 **Two taxis charge by the rule y = 2x + 3 and y = x + 3, where x is kilometres. For a 2-kilometre trip, how much more does the first taxi cost?**

A 2 dollars

B 3 dollars

C 4 dollars

D 7 dollars

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10 A taxi charges 2 dollars to start and 1 dollar for each kilometre. Complete the table of values for $y = x + 2$ for $x = 3, 4, 5$. Write the completed table.

	3	4	5
x	3	4	5
y	?	?	?

A. x 3, y 5; x 4, y 6; x 5, y 7

B. x 3, y 3; x 4, y 4; x 5, y 5

C. x 3, y 6; x 4, y 8; x 5, y 10

D. x 3, y 5; x 4, y 7; x 5, y 9

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ANSWER KEY

1. x 0, y 3; x 1, y 4; x 2, y 5

2. 7

3. y = x + 5

4. (2, 4)

5. x 0, y -1; x 1, y 0; x 2, y 1

6. 2

7. 12

8. x = 2, y should be 11

9. 2 dollars

10. x 3, y 5; x 4, y 6; x 5, y 7

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