

Grade 8 · Introduction to Functions · Quiz

Common Core 8.F.A.1, 8.F.A.2, 8.F.A.3 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

Ten multiple-choice questions check your understanding of functions: one output per input, tables and mappings, evaluating rules, linear versus nonlinear functions and comparing functions. Choose the one correct answer, then read the explanation to learn from any mistake.

Grade 8 Common Core: 8.F.A.1 · 8.F.A.2 · 8.F.A.3

Questions

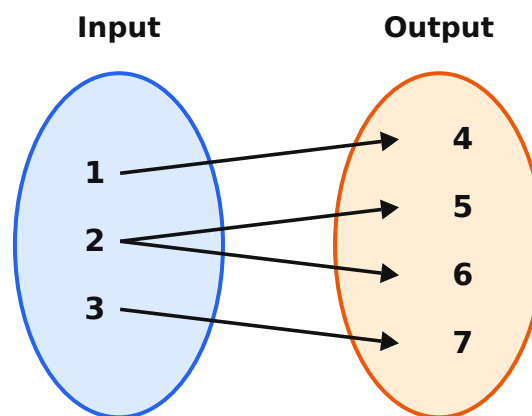
Question 1

Which set of ordered pairs is a function?

- A. (1,3),(2,5),(3,3)
- B. (1,2),(1,3),(2,4)
- C. (0,1),(2,4),(0,5)
- D. (4,1),(4,2),(4,3)

Question 2

Why is this mapping not a function?



A mapping with inputs 1, 2, 3.

- A. The input 2 has two outputs
- B. The output 7 is used only once
- C. The input 1 has an output
- D. There are more outputs than inputs

Question 3

If $f(x) = 2x - 5$, what is $f(4)$?

- A. -2
- B. 13
- C. -1
- D. 3

Question 4

Which equation represents a nonlinear function?

- A. $y = 5x$
- B. $y = x^2$
- C. $y = x + 9$
- D. $y = \frac{x}{3} - 4$

Question 5

Which equation matches the table?

x	y
1	3
2	7
3	11
4	15

A linear function.

- A. $y = 4x + 1$
- B. $y = 3x$
- C. $y = x + 2$
- D. $y = 4x - 1$

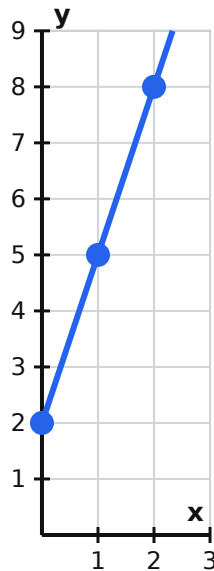
Question 6

Function A is $y = 3x + 1$. Function B has the points $(0,1), (2,9), (4,17)$. Which statement is true?

- A. A has the greater rate of change, 3 versus 1
- B. B has the greater rate of change, 4 versus 3
- C. A and B have the same rate of change
- D. A has the greater initial value

Question 7

Which equation describes the line through the points on the graph?



A line through three marked points.

- A. $y = 2x + 3$
- B. $y = 3x - 2$
- C. $y = 5x$
- D. $y = 3x + 2$

Question 8

The area of a square is $A = s^2$. What is the area when $s = 7$ inches?

s	A
1	1
2	4
3	9

Some values of $A = s^2$.

- A. 49 square inches
- B. 14 square inches
- C. 28 square inches
- D. 343 square inches

Question 9

Which list of points shows a linear function?

- A. $(0,1), (1,2), (2,5), (3,10)$
- B. $(0,0), (1,1), (2,4), (3,9)$
- C. $(0,4), (1,7), (2,10), (3,13)$

D. $(1,2),(2,4),(3,8),(4,16)$

Question 10

For $y = -2x + 9$, what are the rate of change and the initial value?

- A. Rate of change 9, initial value -2
- B. Rate of change 2, initial value 9
- C. Rate of change -2 , initial value 9
- D. Rate of change -9 , initial value 2

Answer key

1. **A** - Each input in the first set appears once. The others repeat an input with different outputs. Repeating an output (3 twice) is allowed.
2. **A** - A function needs exactly one output for each input. Input 2 goes to both 5 and 6.
3. **D** - $2(4)-5=3$. The value -2 comes from $2(4-5)$, and 13 comes from adding 5 instead of subtracting.
4. **B** - Only $y=x^2$ is not of the form $y=mx+b$; its graph is a curve.
5. **D** - The outputs rise by 4, so $m=4$. At $x=1$, $4-1=3$. The equation $y=4x+1$ gives 5 instead.
6. **B** - B rises 8 for each 2 across, a rate of 4. A has rate 3. Both start at 1, so neither has the greater initial value.
7. **D** - The line crosses the y-axis at 2 and rises 3 for each 1 across. Swapping m and b gives $y=2x+3$.
8. **A** - $7^2=49$. Multiplying 7 by 2 gives 14, and 7^3 is 343.
9. **C** - The outputs 4, 7, 10, 13 rise by 3 each time. The other lists have growing differences.
10. **C** - In $y=mx+b$, $m=-2$ is the rate of change and $b=9$ is the initial value. Mixing up the two is the usual mistake.

Remember:

- Standards 8.F.A.1, 8.F.A.2 and 8.F.A.3: define, compare and classify functions.
- A relation is a function when every input has exactly one output.
- Different inputs may share an output, but one input may never have two outputs.
- A linear function $y=mx+b$ has rate of change m and initial value b .
- The area of a square, $A=s^2$, is a nonlinear function.