

Functions and Function Notation

Input-output rules, notation, tables, graphs, and function meaning.

Name _____ Date _____

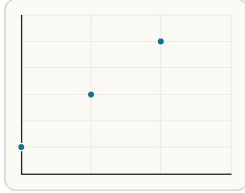
32 main 2-up grid 3 pages

Completion Reward



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1. What makes a relation a function?



A relation is a function only when each x-value is paired with exactly one y-value.

- A. Each input has exactly one output
- B. Each output has exactly one input
- C. It always forms a straight line
- D. It has no variables

4. In $C = 0.25m + 2$, where C is total cost and m is minutes parked, which variable is independent?

- A. C
- B. Both variables
- C. Neither variable
- D. m

7. To find $g(4)$ when $g(x) = 2x + 9$, what should you do first?

- A. Multiply 4 by g .
- B. Add 4 to the output 9 only.
- C. Replace x with 4 in the rule.
- D. Set g equal to 0.

10. If $r(x) = 5 - x$, find $r(-4)$. Answer with a number.

13. If t is the number of tickets sold, which value makes sense in the domain?

- A. -3
- B. 2.5
- C. 8
- D. -1.2

2. Why is the relation $\{(2, 5), (2, 7), (4, 1)\}$ not a function?

- A. The input 2 is paired with two different outputs.
- B. The output 1 is too small.
- C. The relation has too many ordered pairs.
- D. A function cannot repeat an input at all.

5. In a function, what is the range?

- A. The set of input values
- B. The slope of the graph
- C. The set of output values
- D. The variable name only

8. A student says a relation is not a function if two different inputs give the same output. What is wrong?

- A. A function is allowed to send different inputs to the same output.
- B. Every function must have different outputs for every input.
- C. Functions are not allowed to use ordered pairs.
- D. The student should have squared each output first.

11. If $g(x) = x^2 - 4$, find $g(3)$. Answer with a number.

14. In a tickets-sold context, what kind of values belong in the domain?

- A. Only negative numbers
- B. Only output values
- C. Reasonable input values like whole numbers of tickets
- D. Any symbol at all

3. If the point $(3, 7)$ is on the graph of f , what does that mean?

- A. $f(3) = 7$
- B. $f(7) = 3$
- C. The slope is $7/3$
- D. The domain is only 3 and 7

6. If $f(x) = 2x + 3$, what does $f(4)$ mean?

- A. Multiply f by 4
- B. The slope of the graph
- C. The y-intercept
- D. The output when $x = 4$

9. A student says $f(4)$ means f multiplied by 4. What is wrong?

- A. $f(4)$ always equals 4
- B. $f(4)$ means the function output at input 4
- C. Functions cannot use numbers in parentheses
- D. Nothing is wrong

12. If you want the output when $x = 0$, which representation is quickest to use?

- A. A long paragraph with no rule
- B. A picture with no labeled points
- C. A random list of outputs only
- D. An equation like $f(x) = 2x + 5$

15. Which set of ordered pairs is not a function?

- A. $\{(1,2), (1,5), (3,4)\}$
- B. $\{(1,2), (2,3), (3,4)\}$
- C. $\{(0,1), (2,1), (4,1)\}$
- D. $\{(-1,0), (0,0), (1,0)\}$

16. Why is $x = 4$ not a function of x ?



At $x = 4$, many y -values occur, so the relation does not assign one output to that input.

- A. Because one x -value is paired with many y -values on the vertical line
- B. Because the graph is not straight
- C. Because the y -intercept is 4
- D. Because all equations are functions

19. Which equation matches the table?

x	y
-1	1
0	3
1	5
2	7

Track the starting value and how the output changes as x increases to identify the matching equation.

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

22. A machine subtracts 4 from the input and then doubles the result. Which rule matches the machine?

- A. $y = 2(x - 4)$
- B. $y = x - 8$
- C. $y = 2x + 4$
- D. $y = x/2 - 4$

25. If $f(x) = 2x + 3$ and $g(x) = x + 7$, which function has the greater output at $x = 4$?

- A. f
- B. g
- C. They are equal
- D. Cannot determine

28. If $p(x) = x^2 + 1$, find $p(-3)$. Answer with a number.

17. Which set of ordered pairs represents a function?

- A. $\{(1, 2), (1, 3), (2, 4)\}$
- B. $\{(2, 1), (2, 4), (3, 5)\}$
- C. $\{(0, 5), (1, 7), (2, 9)\}$
- D. $\{(4, 0), (4, 1), (5, 2)\}$

20. Which relation is a function?

- A. $\{(1, 2), (2, 4), (3, 6)\}$
- B. $\{(1, 2), (1, 5), (3, 6)\}$
- C. $\{(0, 1), (2, 3), (2, 4)\}$
- D. $\{(4, 8), (4, 9), (5, 10)\}$

23. Which set of ordered pairs is not a function?

- A. $\{(0, 3), (1, 5), (2, 7)\}$
- B. $\{(2, 2), (3, 4), (4, 6)\}$
- C. $\{(-1, 1), (0, 0), (1, 1)\}$
- D. $\{(1, 4), (1, 6), (2, 7)\}$

26. A student says $h(2 + 1) = h(2) + 1$. What is wrong?

- A. Function notation means multiply h by the parentheses.
- B. You should always replace h with x .
- C. $h(2 + 1)$ means $h(3)$, so you must evaluate the input first.
- D. The expression has no meaning at all.

29. If $q(x) = 2x^2 - 1$, find $q(2)$. Answer with a number.

18. Does the table represent a function?

x	y
1	4
2	5
2	7
3	8

A table fails to represent a function when the same input is assigned two different outputs.

- A. Yes, because the outputs are different
- B. No, because $x = 2$ is paired with two outputs
- C. Yes, because the x -values are in order
- D. No, because one output is larger than the others

21. A table shows inputs 0, 1, 2 and outputs 5, 7, 9. Which rule matches the table?

- A. $f(x) = x + 5$
- B. $f(x) = 2x + 5$
- C. $f(x) = 5x + 2$
- D. $f(x) = 2x + 3$

24. Which equation matches the table?

x	y
0	1
1	3
2	5

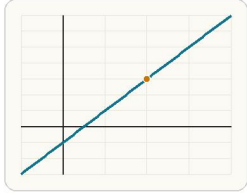
The outputs start at 1 and increase by 2 each time x increases by 1.

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

27. If $f(x) = 3x - 7$, find $f(5)$. Answer with a number.

30. Evaluate $f(-3)$ if $f(x) = x^2 + 2x$. Answer with a number.

31. What is $f(2)$ on the graph?



At $x = 2$, the line passes through $y = 3$.

- A. 1
- B. 5
- C. 3
- D. 7

32. At $x = 3$, which function has the greater output:

$$f(x) = 2x + 1 \text{ or } g(x) = x^2?$$

- A. $g(x)$
- B. $f(x)$
- C. They are equal
- D. Cannot tell