ALBERT

Name _____ Date _____

Domain and Range Worksheet

Algebra 1 · Common Core HSF-IF.A.1

> Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

Practice

Builds the skill step by step.

1. Which relation is a function?

   A. (1, 2), (1, 3), (2, 4)

   B. (1, 2), (2, 3), (3, 4)

   C. (5, 0), (5, 1), (6, 2)

   D. (0, 0), (0, 1), (0, 2)

2. Which relation is NOT a function?

   A. (1, 1), (2, 1), (3, 1)

   B. (4, 0), (5, 1), (6, 2)

   C. (2, 1), (2, 5), (3, 6)

   D. (0, 3), (1, 4), (2, 5)

3. What is the domain of the relation (−1, 4), (0, 2), (3, 5)? List the values from least to greatest.

4. What is the range of the relation (−1, 4), (0, 2), (3, 5)? List the values from least to greatest.

5. f(x) = 2x + 1. What is f(3)?

6. What does the vertical line test check?

   A. whether the graph is a line

   B. whether the range is all numbers

   C. whether the graph crosses the x-axis

   D. whether each input has exactly one output

7. The table defines f. What is f(3)?

x	1	2	3	4
f(x)	5	7	9	11

8. A mapping sends the input 2 to both 5 and 7. Is it a function?

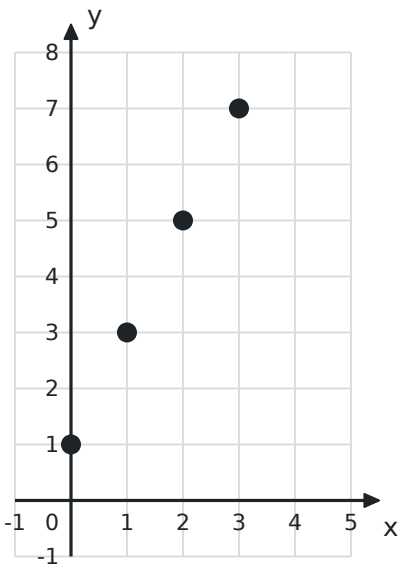
   A. No: one input has two outputs.

   B. Yes: every input has an output.

   C. Yes: 5 and 7 are different.

   D. Only if 5 = 7.

9. The graph shows the function f. What is f(2)?



10. In f(x), what does x stand for?

    A. an input

    B. an output

    C. the slope

    D. the function's name

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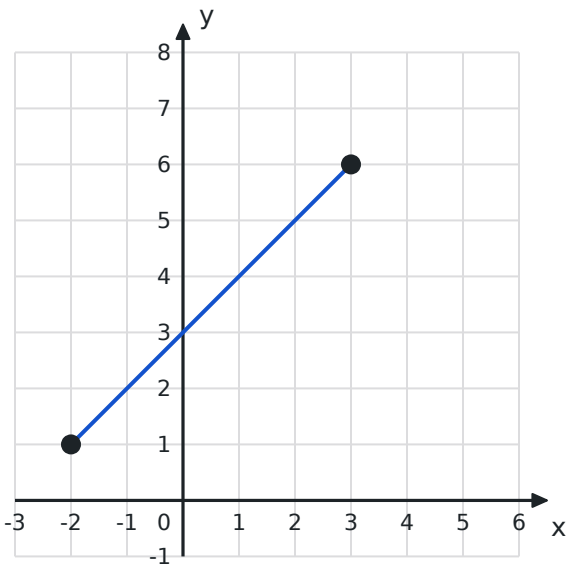
On Level

Grade-level practice.

1. The graph shows the function f. What is its domain?



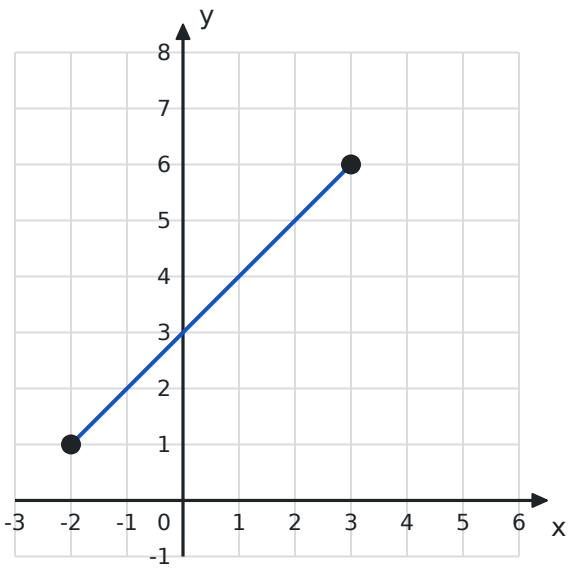
A. $1 \leq x \leq 6$

B. $-2 \leq x \leq 3$

C. all real numbers

D. $x \geq -2$

2. The graph shows the function f. What is its range?



   A. $-2 \leq y \leq 3$

   B. all real numbers

   C. $1 \leq y \leq 6$

   D. $y \geq 1$

3. $f(x) = x^2$ with domain $-2, -1, 0, 1, 2$. What is the range? List the values from least to greatest.

4. Is $y^2 = x$ a function of x?

   A. No: $x = 4$ gives $y = 2$ and $y = -2$.

   B. Yes: every x has a y.

   C. Yes: it is a parabola.

   D. Only for $x \geq 0$.

5. $f(x) = 1 \div (x - 3)$. Which value of x is NOT in the domain?

6. Explain why the relation (2, 5), (3, 5), (4, 5) is a function.

7. $f(x) = x^2 - 1$. The graph of $y = f(x)$ passes through (3, y). What is y?

8. Which equation does NOT define y as a function of x?

   A. $y = 4$

   B. $y = x + 4$

   C. $y = 4x^2$

   D. $x = 4$

9. The table shows $x = 0, 1, 2, 3$ and $y = 3, 3, 3, 3$. Is y a function of x?

   A. Yes: each x has one y.

   B. No: the outputs repeat.

   C. No: the graph is flat.

   D. Only for $x = 0$.

10. $f(x) = 5 - x$ with domain 0, 1, 2, 3. What is the largest value in the range?

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Challenge

Multi-step and word problems that stretch it.

1. $f(x) = \sqrt{(x - 2)}$. What is the smallest value of x in its domain?

2. $f(x) = 3x - 2$. The point (a, 7) is on its graph. What is a?

3. Input: a student in your class. Output: that student's birthday. Is this a function? Is the reverse (birthday to student)?

   A. Yes; the reverse may not be, since two students can share a birthday.

   B. No; neither is.

   C. Yes; the reverse is too.

   D. No; but the reverse is.

4. $f(x) = x^2$, with domain all real numbers. What is the smallest value in its range?

5. Is a circle on a coordinate grid the graph of a function?

   A. Yes: it is a closed curve.

   B. No: a vertical line can cross it twice.

   C. Yes: it has a center.

   D. Only if its center is the origin.

6. $f(x) = |x|$. How many inputs give an output of 4?

7. $f(x) = 2x$ with domain 1, 2, 3. What is the sum of the values in the range?

8. $f(2) = 5$. Explain what this means about the function and its graph.

9. $f(x) = 10 \div (x + 5)$. Which value of x is NOT in the domain?

10. $f(x) = x^2$, and $f(2) = f(-2) = 4$. Is f still a function?

    A. Yes: each input still has one output.

    B. No: two inputs share an output.

    C. No: 4 appears twice.

    D. Only for positive x.