

Algebra 1 - Functions and Function Notation - Test Answer Key

Common Core F-IF.A.1, F-IF.A.2, F-IF.B.5 · maths-pdf.fr/en/

These are worked solutions for the functions test with a scoring guide for every question. Award points for correct method as well as for the final answer. The test totals 20 points, so add the question scores to find the final grade.

Algebra 1 · Common Core State Standards: **F-IF.A.1, F-IF.A.2, F-IF.B.5**

Question 1 - Function or not [2 pts]

- a) Every input is different, so it is **a function**.
- b) The input 2 has outputs 1 and 4, so it is **not a function**.

Scoring: 1 point for each correct decision with a reason.

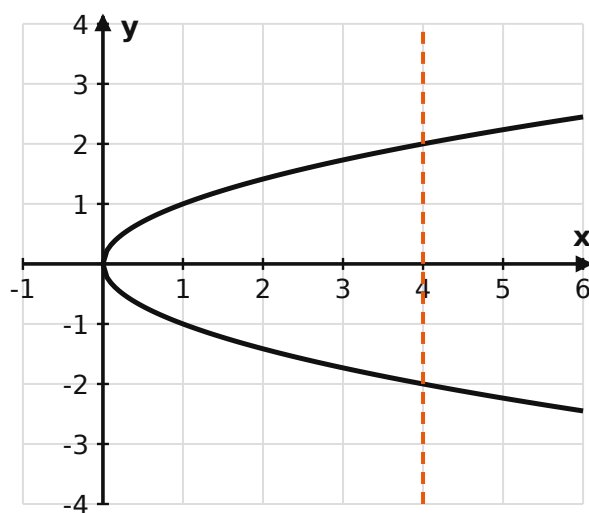
Question 2 - Mapping diagram [2 pts]

Each input has one arrow, so it is a function. The inputs 1 and 2 may share the output 3.

Function; domain $\{1,2,4\}$; **range** $\{3,6\}$

Scoring: 1 point for the decision; 1 point for the domain and range.

Question 3 - Vertical line test [2 pts]



A vertical line meets the graph twice.

The vertical line $x=4$ meets the graph at $(4,2)$ and $(4,-2)$.

Not a function

Scoring: 1 point for the decision; 1 point for the explanation.

Question 4 - Evaluate a function [2 pts]

a) $2(-2)^2 - 3(-2) + 1 = 8 + 6 + 1 = 15$.

b) $2(3)^2 - 3(3) + 1 = 18 - 9 + 1 = 10$.

$f(-2) = 15$; $f(3) = 10$

Scoring: 1 point for each correct value.

Question 5 - Input and output [2 pts]

a) $4(6) - 5 = 19$.

b) $4x - 5 = 11$, so $4x = 16$ and $x = 4$.

$f(6) = 19$; $x = 4$

Scoring: 1 point for each part.

Question 6 - Domain and range [2 pts]

Domain: the inputs. Range: the outputs, writing 2 only once.

Domain $\{-1, 0, 1, 4\}$; **range** $\{-3, 2, 5\}$

Scoring: 1 point for the domain; 1 point for the range.

Question 7 - Phone plan function [3 pts]

a) $20(6) + 15 = 135$.

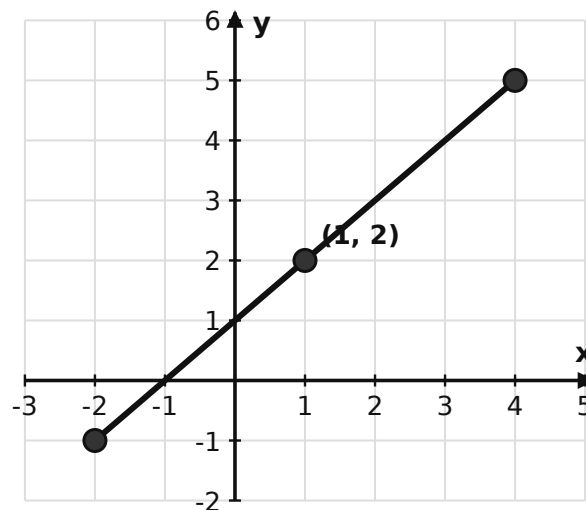
b) $20m + 15 = 215$, so $20m = 200$ and $m = 10$.

c) Months are counted in whole numbers starting at 0: $m = 0, 1, 2, 3, \text{and soon}$.

\$135; 10 months; whole numbers $m \geq 0$

Scoring: 1 point per part.

Question 8 - Graph of a segment [3 pts]



The point $(1, 2)$ is on the graph.

a) The x-values run from -2 to 4: $-2 \leq x \leq 4$.

b) The y-values run from -1 to 5: $-1 \leq y \leq 5$.

c) The graph passes through (1,2).

$$-2 \leq x \leq 4; -1 \leq y \leq 5; \mathbf{2}$$

Scoring: 1 point per part.

Question 9 - Rule from a table [2 pts]

The outputs increase by 2 each time the input increases by 1, and $f(1)=3$. So $f(x)=2x+1$.

$$f(10)=2(10)+1=21.$$

$$f(x)=2x+1; f(10)=21$$

Scoring: 1 point for the rule; 1 point for $f(10)$.

Total
20 points