

Understanding Functions and Their Graphs

Grade 8 math · Test · Standards: 8.F.A.1, 8.F.A.2, 8.F.A.3

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total and should take about 45 minutes. Show how you decide each answer, and use complete sentences where the question asks you to explain.

Standards: 8.F.A.1, 8.F.A.2, 8.F.A.3 · **Level:** Grade 8

Time: 45 minutes · 8 questions · Total: 20 points · Calculator: as allowed by your teacher

Question 1 Function or not? (2 points)

Decide whether each is a function and explain. (1 point each)

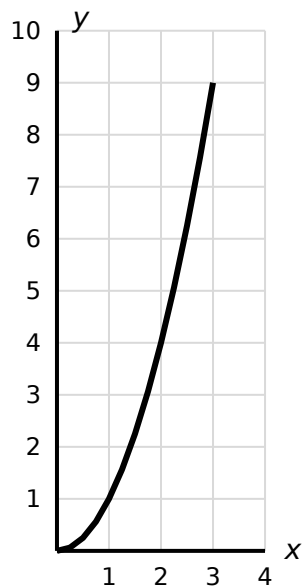
- a. $\{(2, 5), (4, 9), (6, 13), (6, 15)\}$
- b. $\{(-1, 4), (0, 4), (1, 4), (2, 4)\}$

Question 2 Evaluate (2 points)

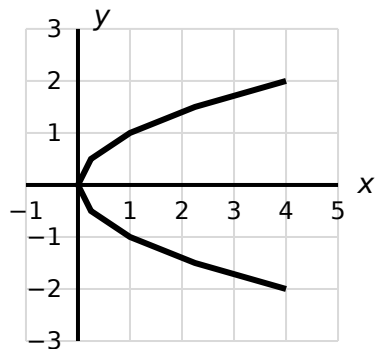
Let $f(x) = 3x^2 - 5$. Find $f(-2)$ and $f(4)$. (1 point each)

Question 3 Which graph? (3 points)

Two graphs are shown.



Graph A.



Graph B.

- Which graph represents a function? (1 point)
- Use the vertical line test to explain. (1 point)
- Name two points on the other graph that share an x-coordinate. (1 point)

Question 4 Compare two functions (3 points)

Function 1: $y = 4x + 3$. Function 2 is shown in the table.

x	0	1	2
y	6	8	10

- Find the rate of change of each. (1 point)
- Find the initial value of each. (1 point)
- Which has the greater output when $x = 10$? (1 point)

Question 5 Linear or not? (3 points)

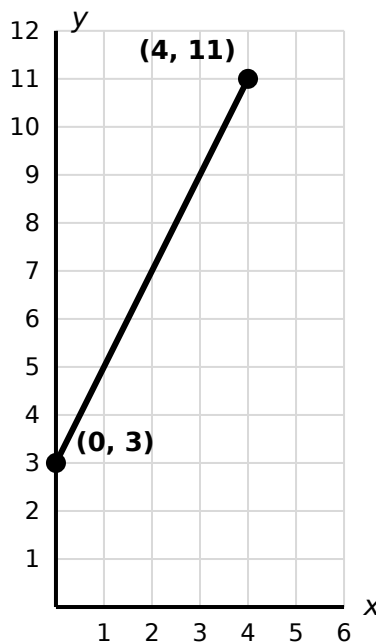
Look at the table.

x	1	2	3	4
y	3	7	13	21

- Find the change in y for each step of 1 in x . (1 point)
- Is the function linear? Explain. (1 point)
- Write a rule for the linear function with $(0, 5)$, $(1, 8)$, $(2, 11)$. (1 point)

Question 6 Graph and equation (3 points)

The graph shows a function. A second function is $y = 2.5x + 1$.



First function.

- Find the rate of change and initial value of the graph. (1 point)
- Which function changes faster? (1 point)
- Write the equation of the graphed function. (1 point)

Question 7 Rising water (2 points)

The depth of a fish tank is $d(t) = 5t + 8$ inches after t hours. Find $d(4)$ (1 point) and the time when the depth is 43 inches (1 point).

Question 8 Is area linear? (2 points)

The area of a square is $A = s^2$. Use the sides 1, 2 and 3 to show that the function is not linear.