

Introduction to Functions: math test solutions, Grade 8 – download the PDF

Test solutions with the detailed point scale. Add up your points and spot what to review.

Suggested time: 45 minutes. Out of 20 points. Calculator allowed only when the problem says so.

1 Function or not?

/ 4 pts

- a. Yes: each input appears once; the repeated output 3 is allowed. (1 pt)
- b. No: the input 4 has outputs 1 and 2. (1 pt)
- c. No: a vertical line at $x = 2$ meets the graph twice. (1 pt)
- d. Yes: every input has exactly one square. (1 pt)

2 Reading a table

/ 4 pts

- a. $\frac{11 - 5}{2 - 0} = 3$. (1.5 pts)
- b. The output at $x = 0$ is 5. (0.5 pt)
- c. $y = 3x + 5$. (1 pt)
- d. $3(10) + 5 = 35$. (1 pt)

3 Linear or nonlinear?

/ 3 pts

- a. Linear: of the form $y = mx + b$. (1 pt)
- b. Nonlinear: x is cubed, the graph is a curve. (1 pt)
- c. Nonlinear: the changes are **2, 4, 8**, not constant. (1 pt)

4 A swimming pool

/ 4 pts

- a. $V = 600 - 25t$. (1 pt)
- b. 600 is the initial volume in gallons; **-25** is the rate of change: the volume drops 25 gallons per minute. (1 pt)
- c. $600 - 250 = 350$ gallons. (1 pt)
- d. $600 - 25t = 0 \Rightarrow t = 24$ minutes. (1 pt)

5 Comparing two functions

/ 3 pts

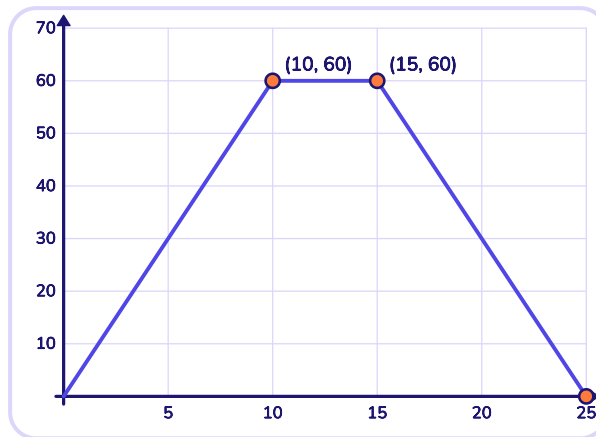
- a. For f , the rate is 4. For g : $\frac{15 - 9}{3 - 0} = 2$. (1 pt)
- b. f starts at 3 and g starts at 9: g has the greater initial value. (1 pt)
- c. $g(x) = 2x + 9$. $4x + 3 = 2x + 9 \Rightarrow 2x = 6 \Rightarrow x = 3$; both outputs are 15. (1 pt)

6

Sketch from a story

/ 2 pts

Key points after the start: $(10, 60)$, $(15, 60)$ and $(25, 0)$. (1 pt) The graph rises, stays flat, then falls. (1 pt)

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