

Modeling Real Situations With Linear Functions

Grade 8 math · Test · Standards: 8.F.B.4, 8.F.B.5

Name: _____ Date: _____ Class: _____

This test has 8 questions worth 20 points in total and should take about 45 minutes. Show how you find each rate of change and initial value, and write final functions in the form $y = mx + b$.

Standards: 8.F.B.4, 8.F.B.5 · **Level:** Grade 8

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

Question 1 Table to rule (3 points)

The table shows a linear function.

x	0	2	4	6
y	14	20	26	32

- Find the rate of change. (1 point)
- Find the initial value. (1 point)
- Write the rule. (1 point)

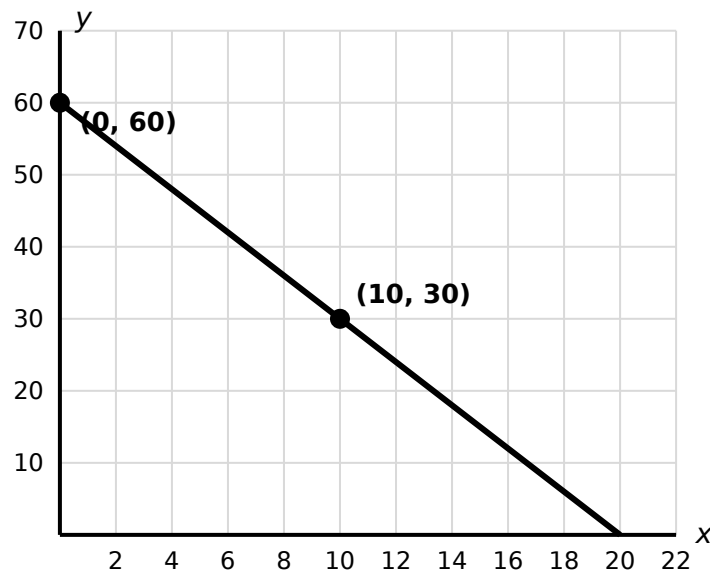
Question 2 Two points (3 points)

A line passes through (3, -4) and (7, 8).

- Find the slope. (1 point)
- Find the y-intercept. (1 point)
- Write the equation. (1 point)

Question 3 Draining a pool (3 points)

The graph shows the gallons in a kiddie pool as it drains, with minutes on the x-axis.



Gallons over minutes.

- Find the rate of change and the initial value. (1 point)
- Write the function. (1 point)
- When is the pool empty? (1 point)

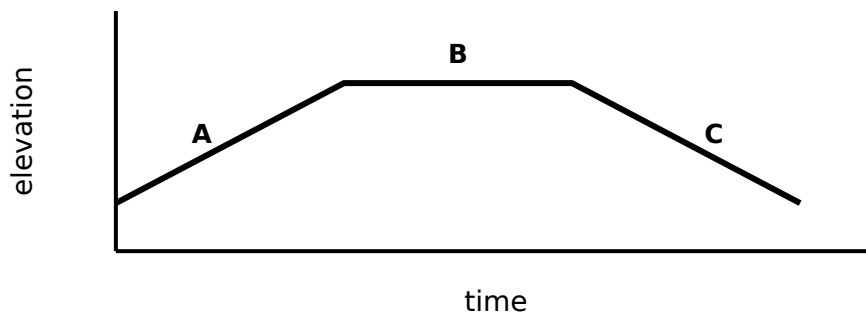
Question 4 Trail club fees (3 points)

A trail club charges a \$25 membership fee plus \$9 per guided hike.

- Write a function for the total cost y of x hikes. (1 point)
- Find the cost of 8 hikes. (1 point)
- Explain what 9 and 25 mean. (1 point)

Question 5 Hiker's elevation (3 points)

The graph shows a hiker's elevation over time. Describe each section. (1 point each)



Elevation over time.

- Section A
- Section B

Question 6 Sketch a story (2 points)

A kayaker paddles at a steady speed, rests for a while, then paddles at a faster steady speed. Sketch a graph of distance paddled against time. (2 points)

Question 7 Drone model (2 points)

A drone is 12 feet high after 1 second and 36 feet high after 4 seconds, climbing steadily. Find the rate of change (1 point) and write the function (1 point).

Question 8 Linear or not? (1 point)

A table shows $x = 1, 2, 3$ and $y = 1, 4, 9$. Is the function linear? Justify. (1 point)