

Grade 8 · Linear Functions and Modeling · Test

Common Core 8.F.B.4, 8.F.B.5 · mathovore.fr

Name: _____ Date: ____/____/____ Score: _____

This test has 9 questions worth 20 points on linear functions (8.F.B.4, 8.F.B.5). Show every step, include units where they apply, and use the coordinate planes and tables as given. Plan on 45 minutes. Calculators are not needed.

Test information

- **Grade:** Grade 8
- **Chapter:** Linear Functions and Modeling
- **Common Core:** 8.F.B.4, 8.F.B.5
- **Time:** 45 minutes
- **Total:** 20 points (Question 1: 2 pts; Question 2: 2 pts; Question 3: 3 pts; Question 4: 3 pts; Question 5: 2 pts; Question 6: 2 pts; Question 7: 2 pts; Question 8: 2 pts; Question 9: 2 pts)

Question 1: Rate and initial value (2 points)

The function $y = -4x + 30$ gives the gallons of water in a tank after x minutes.

- Identify the rate of change, with units. (1 point)
- Identify the initial value, with units. (1 point)

Question 2: Equation from a table (2 points)

The table shows a linear function. Write its equation.

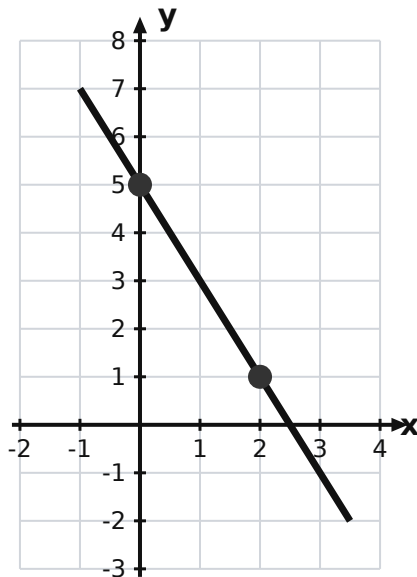
x	1	2	3	4
y	9	13	17	21

Question 3: Equation from two points (3 points)

Write the equation of the line through $(-2, -1)$ and $(4, 11)$.

Question 4: Equation from a graph (3 points)

Write the equation of the line shown.



A line on a coordinate plane.

Question 5: Linear or nonlinear? (2 points)

Decide whether each table shows a linear function. Give a reason.

(a) Table P (1 point)

x	0	1	2	3
y	5	8	11	14

(b) Table Q (1 point)

x	0	1	2	3
y	1	2	4	7

Question 6: Club savings (2 points)

A school club has \$85 and adds \$12 every week. (a) Write a function for the total y after x weeks. (1 point) (b) After how many weeks will the club have \$205? (1 point)

Question 7: Describe a graph (2 points)

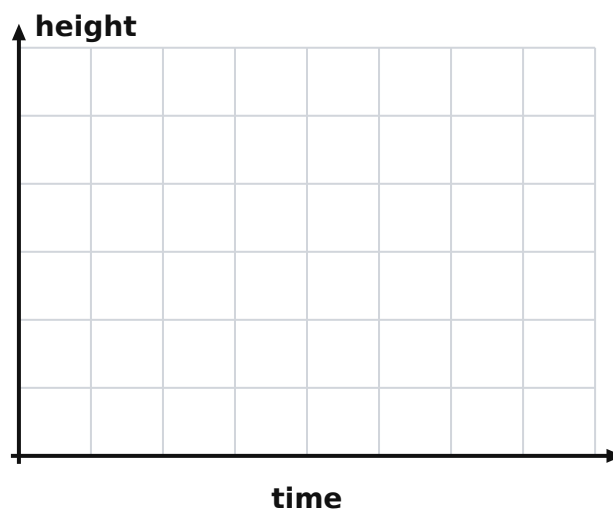
The graph shows the height of an elevator above the ground. Describe what the elevator does during each part of the trip and state whether the whole graph is linear.



Height of an elevator in feet against time in seconds.

Question 8: Sketch a graph (2 points)

A hot-air balloon rises steadily, hovers at one height, and then descends quickly to the ground. Sketch a graph of its height against time on the axes.



Blank axes for the sketch.

Question 9: Filling a pool (2 points)

A pool holds 150 gallons after 3 minutes of filling and 230 gallons after 5 minutes. The water flows at a constant rate. (a) Find the rate of change, with units. (1 point) (b) Write a function for the gallons y after x minutes and state the initial value. (1 point)