

Algebra 1 - Slope and Rate of Change - Quiz

Common Core F-IF.B.4, F-IF.B.6, F-LE.A.1b · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Check what you know about slope and rate of change with 10 multiple-choice questions (F-IF.B.6, F-IF.B.4, and F-LE.A.1b). Each question has one correct answer, and the explanation points out the common error behind the wrong choices. Use the results to decide what to practice next.

Algebra 1 · Common Core State Standards: **F-IF.B.4, F-IF.B.6, F-LE.A.1b**

Questions

Question 1

A ramp rises 3 feet over a horizontal distance of 12 feet. What is its slope?

- A. 4
- B. $\frac{1}{4}$
- C. 36
- D. $-\frac{1}{4}$

Question 2

What is the slope of the line through (4,7) and (-2,7)?

- A. 0
- B. Undefined
- C. 7
- D. -1

Question 3

What is the slope of the line through (5,1) and (5,9)?

- A. 0
- B. 8
- C. $\frac{1}{8}$
- D. Undefined

Question 4

x	1	3	5
y	10	4	-2

The table shows a linear function. What is its slope?

- A. 3
- B. -6
- C. -3
- D. $-\frac{1}{3}$

Question 5

Hours	Pay (dollars)
2	30
4	60
6	90

What is the rate of change in the table?

- A. \$15 per hour
- B. \$30 per hour
- C. \$2 per hour
- D. \$60 per hour

Question 6

A line has equation $y = 25 + 6x$ for the cost of renting skates for x hours. What does 6 represent?

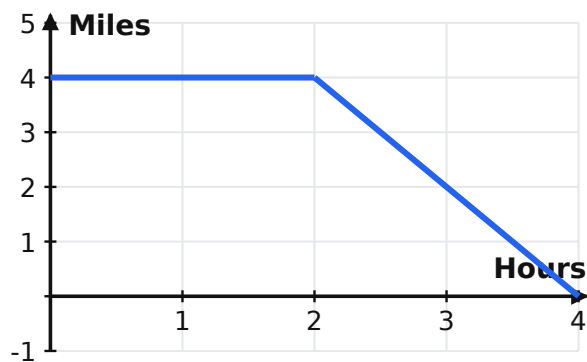
- A. The cost before any hours
- B. The cost for each hour
- C. The total cost for 6 hours
- D. The number of hours

Question 7

A tank holds 20 gallons at 1 minute and 50 gallons at 4 minutes. What is the average rate of change of the volume?

- A. 30 gal/min
- B. 3 gal/min
- C. 10 gal/min
- D. 15 gal/min

Question 8



What is the rate of change from hour 2 to hour 4?

- A. -2 mi/h
- B. 2 mi/h
- C. 0 mi/h
- D. -4 mi/h

Question 9

The slope of the line through $(2,3)$ and $(6,y)$ is 2. What is y ?

- A. 7
- B. 9
- C. 15
- D. 11

Question 10

x	y
1	2
2	5
3	10
4	17

Is the function in the table linear?

- A. Yes, y always increases
- B. No, the rate of change is not constant
- C. Yes, x increases by 1
- D. No, because y starts at 2

Answers

1. **B** – Slope is rise over run: $3/12 = 1/4$. Inverting the ratio gives 4.
2. **A** – The y-values are equal, so the rise is 0. The line is horizontal and the slope is 0.
3. **D** – The x-values are equal, so the run is 0 and the line is vertical. Slope is undefined.
4. **C** – When x increases by 2, y changes by -6, so the slope is $-6/2 = -3$.
5. **A** – Pay goes up \$30 for every 2 hours, which is \$15 per hour. Using the first row only gives \$30.
6. **B** – The coefficient of x is the slope, which is the cost per hour. The 25 is the fixed starting cost.
7. **C** – Divide the change in volume by the change in time: $(50 - 20)/(4 - 1) = 10$.
8. **A** – The distance changes by -4 miles in 2 hours: $-4/2 = -2$.
9. **D** – $(y - 3)/4 = 2$, so $y - 3 = 8$ and $y = 11$.
10. **B** – The changes in y are 3, 5, 7, so the rate is not constant. Increasing is not enough to be linear.

Remember

- Slope = rise $\div$ run = $(y_2 - y_1)/(x_2 - x_1)$.
- Positive slope rises, negative slope falls, horizontal lines have slope 0, vertical lines are undefined.
- In a context, slope is a rate of change with units like dollars per hour.
- A linear function has the same rate of change between any two points.
- Average rate of change over $[a, b]$ is $(f(b) - f(a))/(b - a)$.