

Slope Signal

Find the rate of change in different forms.

GRADE 8 • MA.8.AR.3.2

MA.8.AR.3.2 "Given a table, graph or written description of a linear relationship, determine the slope."

NAME _____

DATE _____

FIND THE SLOPE

Slope tells how much y changes for each 1 unit that x changes. Choose any two points on a line and calculate slope = change in y/change in x. Keep the point order the same in both differences.

WORKED EXAMPLE

A table shows x-values 7 and 10 and y-values 15 and 24. Find the slope.

1. Find the change in y: $24 - 15 = 9$.
2. Find the change in x: $10 - 7 = 3$.
3. Slope = $9/3 = 3$.

Answer: 3

PRACTICE 6 problems

- 1** A table has points (-4, 9) and (0, 1). What is the slope?

ANSWER _____

- 2** A graph has points (0, 2) and (4, 12). What is the slope?

ANSWER _____

- 3** In a linear relationship, y decreases 5 units each time x increases 1 unit. What is the slope?

ANSWER _____

- 4** A graph has points (-2, 4) and (4, -8). What is the slope?

ANSWER _____

- 5** A table has points (-2, 8) and (2, 0). What is the slope?

ANSWER _____

- 6** In a linear relationship, y increases 9 units when x increases 4 units. What is the slope?

ANSWER _____

APPLY IT Show your work

- 1** At a school esports event, a snack booth has earned \$6 after 1 hour and \$22 after 5 hours. If the earnings are linear, what is the slope in dollars per hour?

WORK SPACE

ANSWER _____

- 2** Maya's phone battery is at 92% at 1 p.m. and 68% at 5 p.m. If the battery changes at a constant rate, what is the slope in percentage points per hour?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A line passes through $(-6, 14)$ and $(8, -14)$. Find the slope. Then explain why calculating from the second point to the first gives the same slope.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A table has points (-4, 9) and (0, 1). What is the slope?	-2
2	A graph has points (0, 2) and (4, 12). What is the slope?	5/2
3	In a linear relationship, y decreases 5 units each time x increases 1 unit. What is the slope?	-5
4	A graph has points (-2, 4) and (4, -8). What is the slope?	-2
5	A table has points (-2, 8) and (2, 0). What is the slope?	-2
6	In a linear relationship, y increases 9 units when x increases 4 units. What is the slope?	9/4

PART 2 • APPLY IT

1. **\$4 per hour** Use $(22 - 6)/(5 - 1)$. The slope is 4 dollars per hour.
2. **-6 percentage points per hour** Use $(68 - 92)/(5 - 1)$. The negative slope shows that the battery percentage decreases each hour.

CHALLENGE

Slope = -2. From the second point to the first, the change in y is 28 and the change in x is -14, so $28/-14 = -2$.

Accept equivalent forms of $5/2$ and $9/4$, including 2.5 and 2.25. For the challenge, accept an explanation that reversing both differences keeps their quotient the same.