LESSON MAKER PRO

Change in Context

Read what a function's rate means.

HIGH SCHOOL · PC.F.1.3

PC.F.1.3 "Interpret characteristics of graphs and tables for a function that models a relationship between two quantities in terms of the quantities."

NAME _____ DATE _____

AVERAGE RATE OF CHANGE

To find an average rate of change, divide the change in output by the change in input. Use the quantities to name its units. A negative rate means the output fell as the input rose.

WORKED EXAMPLE

Use the table to find the plant's average growth in centimeters per week.

PLANT GROWTH

Week	Height (cm)
2	13
7	38

1. Height change: 38 - 13 = 25 cm.
2. Time change: 7 - 2 = 5 weeks.
3. Average rate: 25 / 5 = 5 cm per week.

Answer: 5 cm per week

PRACTICE 4 problems

1 A gaming wallet has $18 on day 0 and $30 on day 4. Find its average rate of change in dollars per day.

ANSWER _____

2 A phone battery is at 90% at hour 0 and 54% at hour 6. Find its average rate of change in percentage points per hour.

ANSWER _____

3 A runner is 12 miles from home at minute 0 and 12 miles from home at minute 8. Find the average rate of change in distance from home.

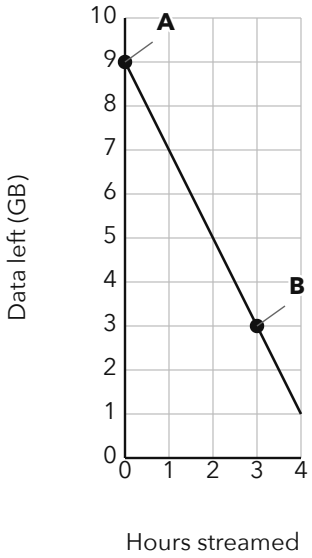
ANSWER _____

4 A video has 36 views at hour 0, 60 at hour 3, and 96 at hour 9. Which interval gained views faster, and by how many views per hour?

ANSWER _____

APPLY IT Show your work

1 A livestream uses data from a plan. Use points A and B on the graph to find the average change in data left per hour. What does the sign mean?



ANSWER _____

2 A student tracks a concert ticket's resale price. From day 3 to day 9, find its average rate of change. What does it mean?

TICKET RESALE PRICE

Day	Price ($)
0	72
3	66
9	42

ANSWER _____

CHALLENGE One step up

An app has 120 users at week 0, 180 at week 3, and 156 at week 9. Its average rate from week 0 to week 9 is positive. Does that mean the number of users rose throughout the period? Use the average rates for both shorter intervals to explain.

WORK SPACE AND ANSWER

ANSWER KEY

Change in Context

HIGH SCHOOL · PC.F.1.3

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A gaming wallet has $18 on day 0 and $30 on day 4. Find its average rate of change in dollars per day.	**$3 per day**
2	A phone battery is at 90% at hour 0 and 54% at hour 6. Find its average rate of change in percentage points per hour.	**-6 percentage points per hour**
3	A runner is 12 miles from home at minute 0 and 12 miles from home at minute 8. Find the average rate of change in distance from home.	**0 miles per minute**
4	A video has 36 views at hour 0, 60 at hour 3, and 96 at hour 9. Which interval gained views faster, and by how many views per hour?	**Hours 0 to 3, by 2 views per hour**

PART 2 · APPLY IT

1. **-2 GB per hour; the data left decreased by an average of 2 GB per hour.** From A to B, data left changes by 3 - 9 = -6 GB over 3 hours. Divide -6 by 3.
2. **-$4 per day; the price fell by an average of $4 per day.** The price changes by $42 - $66 = -$24 over 9 - 3 = 6 days. Divide -24 by 6.

CHALLENGE

No. The average rate is 20 users per week from week 0 to week 3, but -4 users per week from week 3 to week 9. The number of users fell over the second interval.

Accept equivalent wording that keeps the sign and units. A zero average rate in problem 3 does not mean the runner stayed still.