LESSON MAKER PRO

Rate Change Detectives

Spot a steady change for each x-unit.

HIGH SCHOOL · HSF-LE.A.1b

CCSS.Math.Content.HSF-LE.A.1b "Recognize situations in which one quantity changes at a constant rate per unit interval relative to another."

NAME _____ DATE _____

A CONSTANT RATE

A quantity has a constant rate when it changes by the same amount for every equal change in x. Find the rate by dividing the change in y by the change in x.

WORKED EXAMPLE

The number line shows x-values 1 and 5. When x = 1, y = 10. When x = 5, y = 30. Find the constant rate of change.



1. Find the change in y: 30 - 10 = 20.
2. Find the change in x: 5 - 1 = 4.
3. Divide: 20 / 4 = 5.

Answer: 5 units of y per x-unit

PRACTICE 4 problems

1 The points are (2, 8), (4, 14), and (7, 23). What is the constant rate of change?

ANSWER _____

2 As x changes from 3 to 8, y changes from 11 to 31. Find the rate of change.

ANSWER _____

3 For y = 7x - 9, what is the constant rate of change?

ANSWER _____

4 For equal x-intervals, the y-values are 18, 24, and 33. Does this show a constant rate? State why.

ANSWER _____

APPLY IT Show your work

1 A phone-data plan has these total costs. Is the cost changing at a constant rate? Give the rate per week.

PHONE-DATA PLAN

Weeks	Total cost ($)
0	18
2	26
4	34
8	50

ANSWER _____

2 Jordan has $45 in a concert fund and adds $12 each month. Is the fund changing at a constant rate? Give the rate.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Plan A starts with 40 followers and gains 7 followers each day. Plan B has 40 followers on day 0, 54 on day 2, and 70 on day 4. Which plan has a constant rate? Explain using unit rates.

WORK SPACE AND ANSWER

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The points are (2, 8), (4, 14), and (7, 23). What is the constant rate of change?	**3**
2	As x changes from 3 to 8, y changes from 11 to 31. Find the rate of change.	**4**
3	For y = 7x - 9, what is the constant rate of change?	**7**
4	For equal x-intervals, the y-values are 18, 24, and 33. Does this show a constant rate? State why.	**No. The changes are +6 and +9, which are not equal.**

PART 2 · APPLY IT

1. **Yes, $4 per week.** The cost rises $8 from week 0 to week 2, so the unit rate is $8 / 2 = $4 per week. The later intervals have the same rate.
2. **Yes, $12 per month.** Jordan adds the same $12 during every month, so the rate is constant.

CHALLENGE

Plan A. Its rate is 7 followers per day. Plan B changes by 7 followers per day from day 0 to day 2 and by 8 followers per day from day 2 to day 4, so its rate is not constant.

Accept equivalent units such as 3 y-units per x-unit. For the challenge, students must identify Plan A and show that Plan B has unequal unit rates.