

Variable Change Lab

Use rates to explain how one variable changes with another.

GRADE 6 • 6.1.d.i

6.1.d.i "constructing and critiquing conclusions and explanations construct explanations that includes qualitative or quantitative relationships between variables"

NAME _____

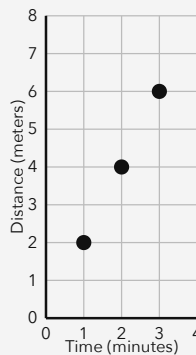
DATE _____

FIND THE CONSTANT RATE

When two variables change at a constant rate, find how much one variable changes for each unit of the other. Use that rate to predict a new value and explain the pattern in words.

WORKED EXAMPLE

A rover's distance is shown on the graph. Predict its distance after 4 minutes.



1. Distance rises 2 meters for each minute.
2. Rate = 2 meters per minute.
3. At 4 minutes: $4 \times 2 = 8$.

Answer: 8 meters

PRACTICE 4 problems

- 1** A sensor records 35 pulses in 7 seconds at a constant rate. What is the rate?

ANSWER _____

- 2** A robotic rover travels 9 meters each second. How far does it travel in 7 seconds?

ANSWER _____

- 3** A cell culture adds 35 cells in 7 hours. At the same rate, how many new cells will it add in 14 hours?

ANSWER _____

- 4** A weather sensor sends 11 data points each minute. Write the rate and a conclusion about what happens as minutes increase.

ANSWER _____

APPLY IT Show your work

- 1** The table shows clips from a nature camera. What is the rate in clips per day? Write a conclusion about the relationship between days and clips.

NATURE CAMERA CLIPS

Days	Clips
9	45
18	90
27	135

RATE AND CONCLUSION

ANSWER _____

- 2** A birdwatching club posts 63 observation clips in 9 days. At the same rate, how many clips will it post in 15 days? Explain how clips and days are related.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two water-quality sensors send readings at constant rates. Sensor A sends 90 readings in 10 minutes and 135 readings in 15 minutes. Sensor B sends 70 readings in 10 minutes and 105 readings in 15 minutes. Which sensor sends readings faster? Explain using both rates.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A sensor records 35 pulses in 7 seconds at a constant rate. What is the rate?	5 pulses per second
2	A robotic rover travels 9 meters each second. How far does it travel in 7 seconds?	63 meters
3	A cell culture adds 35 cells in 7 hours. At the same rate, how many new cells will it add in 14 hours?	70 new cells
4	A weather sensor sends 11 data points each minute. Write the rate and a conclusion about what happens as minutes increase.	11 data points per minute. As minutes increase, data points increase by 11 each minute.

PART 2 • APPLY IT

- 5 clips per day. As days increase, clips increase by 5 each day.** Divide clips by days: $45 / 9 = 5$. Each row shows the same constant rate.
- 105 clips. Clips increase by 7 each day.** Find the rate: $63 / 9 = 7$ clips per day. Multiply 7 by 15 to get 105.

CHALLENGE

Sensor A sends readings faster. Sensor A sends 9 readings per minute, while Sensor B sends 7 readings per minute.

Accept equivalent rate units and equivalent explanations that clearly state the constant increase. For the challenge, students may compare either readings per minute or the changes over 5 minutes.