LESSON MAKER PRO

Data Rate Detectives

Use unit rates to compare scientific data.

GRADE 6 · TEKS 6.2.C

6.2.C "use mathematical calculations to assess quantitative relationships in data; and"

NAME _____ DATE _____

COMPARE UNIT RATES

A unit rate tells how much changes for each one unit of time or another measure. Divide the total amount by the number of units, then compare rates that use the same units.

WORKED EXAMPLE

A water level rises 91 mm in 7 minutes. What is the rate of rise in mm per minute?

1. Write the rate as 91 mm / 7 minutes.
2. Divide: 91 / 7 = 13.
3. State the unit rate: 13 mm per minute.

Answer: 13 mm per minute

PRACTICE 6 problems

1 A snail travels 45 cm in 5 minutes. What is its speed in cm per minute?

ANSWER _____

2 The air temperature drops 36 degrees in 6 hours. What is the rate of temperature drop in degrees per hour?

ANSWER _____

3 Station A records 32 bird calls in 4 minutes. Station B records 45 bird calls in 5 minutes. Which station has the greater rate, and by how many bird calls per minute?

ANSWER _____

4 A rolling cart moves 72 meters in 9 seconds. What is its speed in meters per second?

ANSWER _____

5 A plant is 18 cm tall at the start of an investigation and 42 cm tall after 6 days. What is its average growth rate in cm per day?

ANSWER _____

6 A rain sensor detects 60 drops in 12 seconds. At the same rate, how many drops will it detect in 18 seconds?

ANSWER _____

APPLY IT Show your work

1 The Eco Club times two teams as they sort plastic bottles for recycling. Use the table. Which team sorts bottles faster, and by how many bottles per minute?

BOTTLE SORTING TEST

Team	Bottles Sorted	Time (minutes)
Solar	48	6
River	54	9

ANSWER _____

2 A science class tests two small wind turbines for a school energy project. Use the table. Which turbine produces more energy each minute, and by how much?

WIND TURBINE TEST

Turbine	Energy Produced (joules)	Time (minutes)
A	66	6
B	80	8

ANSWER _____

CHALLENGE One step up

A class counts worms in the same square meter of soil over time. Use the table. Find the growth rate from the start to week 3 and from week 3 to week 8. Does the data show a constant growth rate? Explain.

WORM COUNT OVER TIME

Time	Worms per Square Meter
Start	10
Week 3	22
Week 8	42

WORK SPACE AND ANSWER

ANSWER KEY

Data Rate Detectives

GRADE 6 · TEKS 6.2.C

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A snail travels 45 cm in 5 minutes. What is its speed in cm per minute?	**9 cm per minute**
2	The air temperature drops 36 degrees in 6 hours. What is the rate of temperature drop in degrees per hour?	**6 degrees per hour**
3	Station A records 32 bird calls in 4 minutes. Station B records 45 bird calls in 5 minutes. Which station has the greater rate, and by how many bird calls per minute?	**Station B, by 1 bird call per minute.**
4	A rolling cart moves 72 meters in 9 seconds. What is its speed in meters per second?	**8 meters per second**
5	A plant is 18 cm tall at the start of an investigation and 42 cm tall after 6 days. What is its average growth rate in cm per day?	**4 cm per day**
6	A rain sensor detects 60 drops in 12 seconds. At the same rate, how many drops will it detect in 18 seconds?	**90 drops**

PART 2 · APPLY IT

1. **Team Solar, by 2 bottles per minute.** Team Solar sorts 48 / 6 = 8 bottles per minute. Team River sorts 54 / 9 = 6 bottles per minute, so Solar's rate is 2 bottles per minute greater.
2. **Turbine A, by 1 joule per minute.** Turbine A produces 66 / 6 = 11 joules per minute. Turbine B produces 80 / 8 = 10 joules per minute, so A produces 1 more joule per minute.

CHALLENGE

From the start to week 3, the rate is 4 worms per square meter per week. From week 3 to week 8, the rate is 4 worms per square meter per week. Yes, the growth rate is constant because both rates are equal.

Accept equivalent unit-rate forms, such as 9 cm/min. For comparisons, accept answers that name the correct item and state the correct difference in rate.