What Is a Rate?

Rates and their units: Models and calculations

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

A rate compares quantities with different units. A unit rate has a second quantity of 1: 18 kilometers in 3 hours means $18 \div 3 = 6$ kilometers per hour. Keep the order and units: hours per kilometer would instead be $3/18 = 1/6$.

Worked example

Read 28 pages in 4 minutes. Find pages per minute.

1. The rate compares 28 pages with 4 minute.
2. Divide: $28 \div 4 = 7$ pages per minute.
3. Check: $7 \times 4 = 28$ pages.
Answer: 7 pages per minute.

Practice Problems

Show your thinking.

1. A runner travels 42 km in 6 h. A club has 42 girls and 6 boys. Which comparison is a rate, and why? Give the numerical quotient of each.

2. A label says 15 dollars for 3 notebooks. State both dollars per notebook and notebooks per dollar; explain their different meanings.

3. A hose fills 36 liters in 4 minutes. Find liters per minute.

4. Which compares different kinds of units: 8 red to 12 blue tiles, or 8 meters in 12 seconds? Find the unit rate of the latter.

5. A sign says 54 words every 9 seconds. Write an equivalent for each second statement, and state which quantity is measured in words.

6. A printer makes 7 pages each minute. Complete the output for $1, 2, 5$ minutes.

Minutes	1	2	5
Pages			

7. Six bags contain 9 kg altogether. Find kg per bag.

8. A recipe uses 2 cups flour for 8 muffins. Find both cups per muffin and muffins per cup.

Answer Key

1. Travel is a rate: 7 km/h. The club comparison is a count ratio, $7:1$.
2. 5 dollars/notebook; $\frac{1}{5}$ notebook/dollar.
3. 9 liters per minute.
4. The second is a rate; $\frac{2}{3}$ meter per second.
5. For each second, 6 words; words measure output.
6. $7, 14, 35$ pages.
7. $\frac{3}{2}$ kilograms per bag.
8. $\frac{1}{4}$ cup/muffin; 4 muffins/cup.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Travel compares unlike units: $42/6 = 7$ kilometers per hour.
2. Girls and boys are both people counts: $42:6 = 7:1$. The same quotient 7 does not make the units the same.

Problem 2

1. Dollars per notebook $= 15/3 = 5$: one notebook costs 5 dollars.
2. Notebooks per dollar $= 3/15 = 1/5$: one dollar buys one fifth of a notebook at that rate.

Problem 3

1. The rate compares 36 liters with 4 minute.
2. Divide: $36 \div 4 = 9$ liters per minute.
3. Check: $9 \times 4 = 36$ liters.

Problem 4

1. Red and blue are both tile counts: $8:12 = 2:3$.
2. Meters and seconds differ: $8 \div 12 = 2/3$ meter per second.

Problem 5

1. $54/9 = 6$ words per second, so words are the output and seconds the elapsed time.
2. $6 \times 9 = 54$ words checks that the new statement matches the original sign.

Problem 6

1. $7 \times 1 = 7$ and $7 \times 2 = 14$ pages.
2. $7 \times 5 = 35$ pages; each total divided by its minutes gives 7.

Problem 7

1. The rate compares 9 kilograms with 6 bag.
2. Divide: $9 \div 6 = \frac{3}{2}$ kilograms per bag.
3. Check: $\frac{3}{2} \times 6 = 9$ kilograms.

Problem 8

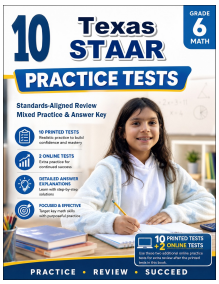
1. Cups per muffin: $2 \div 8 = 1/4$.
2. Muffins per cup: $8 \div 2 = 4$; the units reverse along with the quotient.

TESTINAR

Keep Building Grade 6 Math Skills

Choose the practice book matched to your state assessment and turn worksheet practice into a complete test-prep plan.

All Grade 6 books



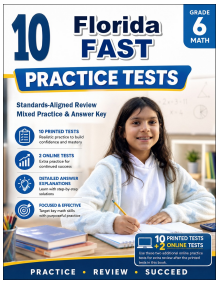
TEXAS STAAR

10 Full-Length Math Practice Tests

Build Grade 6 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



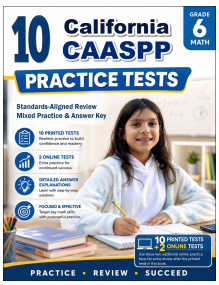
FLORIDA FAST

10 Full-Length Math Practice Tests

Build Grade 6 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook



CALIFORNIA CAASPP

10 Full-Length Math Practice Tests

Build Grade 6 accuracy, confidence, and test stamina with 10 printable practice tests.

Printable eBook • Instant PDF access

View eBook

Need a different state?
Testinar has Grade 6 math practice books for state assessments across the country.

TESTINAR.COM/GRADES/6