Finding the Unit Rate

Finding unit rates: 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 cyclist travels 42 km in 6 hours. State the rate and its units.

2. Three notebooks cost 15 dollars. Find dollars per notebook.

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

4. Find the unit speed for 22.5 m in 5 s, then verify by multiplication.

5. A device records 54 words in 9 seconds. Find words per second.

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. 7 kilometers per hour.
2. 5 dollars per notebook.
3. 9 liters per minute.
4. $\frac{9}{2}$ meters per second.
5. 6 words per second.
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. The rate compares 42 kilometers with 6 hour.
2. Divide: $42 \div 6 = 7$ kilometers per hour.
3. Check: $7 \times 6 = 42$ kilometers.

Problem 2

1. The rate compares 15 dollars with 3 notebook.
2. Divide: $15 \div 3 = 5$ dollars per notebook.
3. Check: $5 \times 3 = 15$ dollars.

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. The rate compares 22.5 meters with 5 second.
2. Divide: $22.5 \div 5 = \frac{9}{2}$ meters per second.
3. Check: $\frac{9}{2} \times 5 = 22.5$ meters.

Problem 5

1. The rate compares 54 words with 9 second.
2. Divide: $54 \div 9 = 6$ words per second.
3. Check: $6 \times 9 = 54$ words.

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.

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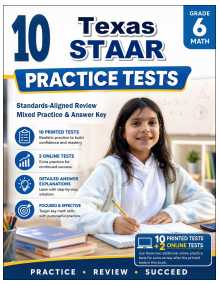

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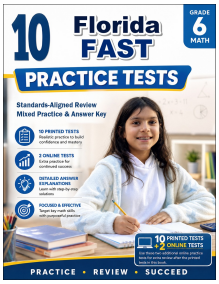

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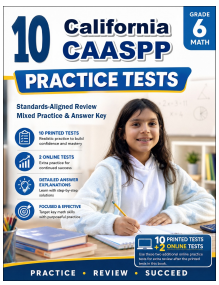

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