Word Problems: Dividing with Unit Fractions

Grade 5 Math • Section 6.3

Name: _____	Date: _____	Score: _____ / 10

Quick Review and Helpful Hints

Two types: (1) **Unit fraction ÷ whole number:** $\frac{1}{b} \div c = \frac{1}{bc}$ (sharing a piece equally).
(2) **Whole number ÷ unit fraction:** $c \div \frac{1}{b} = cb$ (how many pieces fit).
Read carefully to determine which type applies. "Split $\frac{1}{4}$ among 3" → type 1. "How many $\frac{1}{4}$'s in 3?" → type 2.

Example: A carpenter has $\frac{1}{2}$ yard of wood. He cuts it into 4 equal pieces. How long is each piece?
This is type 1: unit fraction ÷ whole number. $\frac{1}{2} \div 4 = \frac{1}{8}$ yard per piece.

Answer: $\frac{1}{8}$ yard

Practice Problems

Solve each word problem. Show your work.

1. A recipe uses $\frac{1}{3}$ cup of oil. You want to split this equally into 5 batches. How much oil per batch?

2. A roll of ribbon is 8 meters long. Each bow uses $\frac{1}{4}$ meter. How many bows can be made?

3. A $\frac{1}{6}$-acre garden plot is divided equally among 3 families. How much land does each family get?

4. A marathon runner drinks 4 liters of water during a race. Each sip is $\frac{1}{8}$ liter. How many sips does the runner take?

5. Jake has $\frac{1}{2}$ of a pizza. He shares it with 5 friends equally. What fraction of the whole pizza does each friend get?

6. A farmer has 10 acres of land. Each row of corn takes $\frac{1}{5}$ acre. How many rows can the farmer plant?

7. A $\frac{1}{4}$-pound bag of seeds is split into 8 packets. How much does each packet weigh?

8. A wire is 6 meters long. It is cut into pieces that are each $\frac{1}{3}$ meter long. How many pieces are there?

Word Problems

9. A tank holds $\frac{1}{5}$ of a gallon. It is poured equally into 4 cups. How much is in each cup? If you had 3 full tanks, how many cups could you fill?

10. A school cafeteria has 9 gallons of milk. Each serving glass holds $\frac{1}{6}$ gallon. How many glasses can be filled? If 48 students each take one glass, how many gallons of milk are left?

Answer Keys

1. $\frac{1}{15}$ cup
2. 32
3. $\frac{1}{18}$ acre
4. 32
5. $\frac{1}{10}$
6. 50
7. $\frac{1}{32}$ lb
8. 18
9. $\frac{1}{20}$ gal; 12 cups
10. 54 glasses; 1 gal left

Step-by-Step Explanations

1. Start with the main idea. For dividing with unit fractions, $\frac{1}{3} \div 5 = \frac{1}{15}$. Fractions are easier to combine when the pieces are the same size.

2. Keep the work tidy. For dividing with unit fractions, $8 \div \frac{1}{4} = 8 \times 4 = 32$ bows. Always simplify at the end so the answer is clean and useful.

3. Look at what the numbers mean. For dividing with unit fractions, $\frac{1}{6} \div 3 = \frac{1}{18}$. For mixed numbers, converting to improper fractions can make the arithmetic calmer.

4. Use the setup first. For dividing with unit fractions, $4 \div \frac{1}{8} = 4 \times 8 = 32$ sips. Fractions are easier to combine when the pieces are the same size.

5. Check the size of the answer. For dividing with unit fractions, $\frac{1}{2} \div 5 = \frac{1}{10}$ of the pizza. Always simplify at the end so the answer is clean and useful.

6. Match the operation to the words. For dividing with unit fractions, $10 \div \frac{1}{5} = 10 \times 5 = 50$ rows. For mixed numbers, converting to improper fractions can make the arithmetic calmer.

7. Write the important values first. For dividing with unit fractions, $\frac{1}{4} \div 8 = \frac{1}{32}$. Fractions are easier to combine when the pieces are the same size.

8. Follow the pattern carefully. For dividing with unit fractions, $6 \div \frac{1}{3} = 18$ pieces. Always simplify at the end so the answer is clean and useful.

9. Start with the main idea. For dividing with unit fractions, $\frac{1}{5} \div 4 = \frac{1}{20}$. Three tanks hold $\frac{3}{5}$ gallon; $\frac{3}{5} \div \frac{1}{20} = 12$ cups. For mixed numbers, converting to improper fractions can make the arithmetic calmer.

10. Keep the work tidy. For dividing with unit fractions, $9 \div \frac{1}{6} = 54$ glasses. After 48 glasses, 6 glasses remain, which is $6 \times \frac{1}{6} = 1$ gallon. Fractions are easier to combine when the pieces are the same size.

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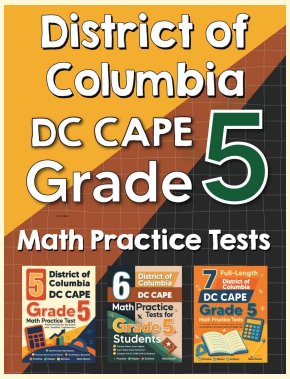

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