

Word Problems: Dividing with Unit Fractions

Grade 5 Math • Section 6.3

Name: _____

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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.

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

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

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

- 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?

- 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?

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

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

- 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

- 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?

- 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

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

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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