Solving Real-World Problems with Fraction Division

Solving Real-World Problems with Fraction Division: Apply, Compare, and Design

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

QUICK REVIEW

Sharing a unit fraction among a whole number of recipients makes smaller shares. Dividing a whole amount by a unit fraction counts how many small groups fit. Keep the total first, and label the quotient as a size or a count.

Worked example

Keep 1 m of a 3 m roll in reserve. Cut the rest into $\frac{1}{6}$ m strips. How many strips can you cut?

1. After reserving material, $3 - 1 = 2$ m can be cut.
2. Each meter yields 6 strips, so $2 \div \frac{1}{6} = 12$ strips.
Answer: 12 strips.

Practice Problems

Show your thinking.

1. A cooler has 4 L and each cup holds $\frac{1}{3}$ L. The booth needs 14 cups. How many can it fill now, and how much more is needed?

2. $\frac{1}{4}$ kg of clay is shared equally by 3 teams. How much does one team get? How many shares that size can a 2 kg batch supply?

3. From 3 m of ribbon, plan A cuts $\frac{1}{2}$ m pieces and plan B cuts $\frac{1}{5}$ m pieces. Which plan makes at least 12 pieces? How many more pieces does it make than the other plan?

4. Fill $\frac{1}{4}$ L bottles from 3 L. Pack all bottles into boxes with 8 slots each. What is the fewest boxes, and how many slots stay empty?

5. Use equal-size full bags. Club A splits $\frac{1}{3}$ bag between 2 people; club B splits $\frac{1}{4}$ bag among 3. Whose share is larger, and by how much?

6. A lab needs exactly 18 full $\frac{1}{6}$ L jars and must keep 1 L separate. Plan how many whole liters to prepare and verify the jar count.

7. A 2 L pitcher and a 3 L pitcher fill $\frac{1}{5}$ L bottles. The small pitcher has already filled 9 bottles. How many more can the two pitchers fill?

8. Five equal warmups share $\frac{1}{3}$ hour. If a sixth warmup of the same length is added, will all six fit in 25 minutes? Find any spare time.

Answer Key

1. 12 cups now; $\frac{2}{3}$ L more is needed.
2. $\frac{1}{12}$ kg per share; 24 shares.
3. B; 15 pieces, 9 more than A.
4. 2 boxes; 4 empty slots.
5. A; $\frac{1}{12}$ of a bag larger.
6. 4 L; 3 L fills the 18 jars.
7. 16 more bottles.
8. Yes; 1 minute spare.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Available cups: $4 \div \frac{1}{3} = 4 \times 3 = 12$.
2. The booth is short $14 - 12 = 2$ cups.
3. Extra volume: $2 \times \frac{1}{3} = \frac{2}{3}$ L.

Problem 2

1. One team gets $\frac{1}{4} \div 3 = \frac{1}{12}$ kg.
2. Each kilogram makes 12 shares, so $2 \div \frac{1}{12} = 24$ shares.

Problem 3

1. A makes $3 \div \frac{1}{2} = 6$ pieces.
2. B makes $3 \div \frac{1}{5} = 15$ pieces, meeting the goal.
3. B makes $15 - 6 = 9$ more pieces.

Problem 4

1. Fill $3 \div \frac{1}{4} = 12$ bottles.
2. One box holds 8; two hold $2 \times 8 = 16$, enough for 12.
3. Empty slots: $16 - 12 = 4$.

Problem 5

1. A gives $\frac{1}{3} \div 2 = \frac{1}{6}$ bag per person.
2. B gives $\frac{1}{4} \div 3 = \frac{1}{12}$ bag per person.
3. The gap is $\frac{2}{12} - \frac{1}{12} = \frac{1}{12}$ of a bag.

Problem 6

1. Jars use $18 \times \frac{1}{6} = 3$ L.
2. Prepare $3 + 1 = 4$ L including the reserve.
3. After the reserve, $3 \div \frac{1}{6} = 18$ jars.

Problem 7

1. The small pitcher can fill $2 \div \frac{1}{5} = 10$ in all, leaving $10 - 9 = 1$.
2. The large pitcher can fill $3 \div \frac{1}{5} = 15$.
3. Both can still fill $1 + 15 = 16$ bottles.

Problem 8

1. One warmup takes $\frac{1}{3} \div 5 = \frac{1}{15}$ hour, or $60 \div 15 = 4$ minutes.
2. Six warmups take $6 \times 4 = 24$ minutes.
3. $25 - 24 = 1$ minute is spare.

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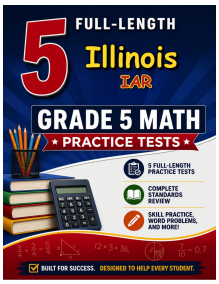

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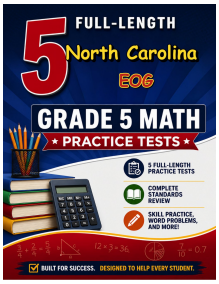

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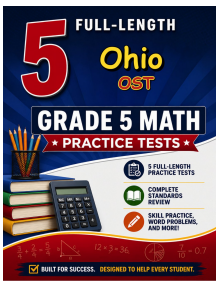

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