

Instruction CoachTM Mathematics











Dr. Jerry Kaplan
Senior Mathematics Consultant




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Problem Solving: Interpreting Fractions as Division



Camping Trip

READ

To prepare for a camping trip, Gail fills 8 equal-size jugs with water. She empties all the water from the 5-gallon container at the water cooler. How much water is in each jug?



PLAN

Write an equation to represent the problem.

Let w = the amount of water in each jug

$$5 \div 8 = w$$

SOLVE

Use a model to represent 5 gallons.

Separate each gallon into 8 equal sections.

Count the number of sections for jug 1.

There are five $\frac{1}{8}$ sections for jug 1.

So, there are _____ $\frac{1}{8}$ sections for each jug.

$$5 \div 8 = \frac{5}{8}$$

Notice that the dividend is the numerator.

The divisor is the denominator.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|

CHECK

To check your answer, add $\frac{5}{8}$ eight times.

$$\frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} + \frac{5}{8} = \frac{40}{8} = 5$$

Eight groups of $\frac{5}{8}$ equals 5. ← The answer is correct.

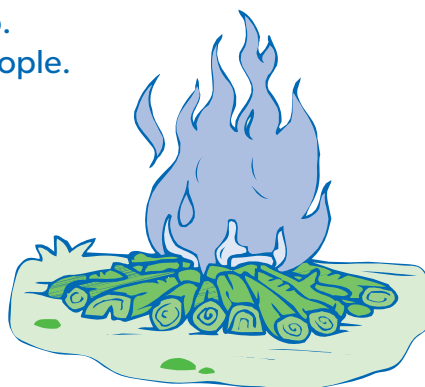
The quotient, w , is _____.

→ Each jug holds _____ gallon of water.

Cooking in the Woods

READ

Lloyd is helping to organize food for the camping trip. The club is bringing 24 pounds of meat to feed 18 people. How many pounds of meat is that for each person?



PLAN

Write an equation to represent the problem.

Let p = the number of pounds of meat per person

$$24 \div 18 = p$$

SOLVE

Find the quotient.

$$\begin{array}{r} 1R \square \\ 18 \overline{)24} \\ - 18 \\ \hline \square \end{array}$$

Think: The quotient is the amount of meat per person. It often makes sense to write the remainder as a fraction.

To write the remainder as a fraction, write the remainder over the divisor.

$$\frac{6}{18} \leftarrow \begin{array}{l} \text{remainder} \\ \text{divisor} \end{array}$$

$$\text{So, } 24 \div 18 = 1\frac{6}{18}$$

CHECK

To check the quotient, use the inverse operation.

Multiply the whole number part of the quotient by the divisor.

$$18 \times 1 = \underline{\quad}$$

Then add the remainder.

$$\underline{\quad} + 6 = 24$$



This matches the dividend. The answer is correct.

The quotient, p , is $\underline{\quad}$.

➔ There are $\underline{\quad}$ pounds of meat for each person.

Ounces of Rice

READ

Chelsea is also helping with the meal planning for the camping trip. She figures that they should bring 45 ounces of rice for 18 people. How many ounces of rice is that per person?



PLAN

Write an equation to represent the problem.

Let r = the number of ounces of rice per person

$$45 \div 18 = r$$

SOLVE

Find the quotient.

$$\begin{array}{r} 2R \square \\ 18 \overline{)45} \\ -36 \\ \hline \square \end{array}$$

The answer is in ounces, so write the remainder as a fraction of an ounce.

Write the remainder over the divisor: $\frac{9}{18}$

$$\text{So, } 45 \div 18 = \underline{\hspace{1cm}}.$$

CHECK

Check that the quotient is reasonable.

Think: The quotient of $45 \div 18$ is between what two whole numbers?

Find multiples of 18: 18, 36, 54, ...

$$36 \div 18 = 2$$

$$45 \div 18 = ? \quad \leftarrow \quad 45 \text{ is between } 36 \text{ and } 54.$$

$$54 \div 18 = 3$$

So, the quotient of $45 \div 18$ is between 2 and 3.

The quotient, $2\frac{9}{18}$, is between 2 and 3. \leftarrow The answer is reasonable.

The quotient, r , is $\underline{\hspace{1cm}}$.

\rightarrow There are $\underline{\hspace{1cm}}$ ounces of rice for each person.

Setting Up the Tents

READ

Cesar is setting up tents for the camping trip. He needs 6 pieces of rope of equal length. He has a rope that is 16 feet long. If he cuts the rope into 6 equal pieces, how long will each piece be?



PLAN

Write an equation to represent the problem.

Let l = the length of each piece of rope

$$16 \div 6 = l$$

SOLVE

Find the quotient.

$$\begin{array}{r} 2R \square \\ 6 \overline{)16} \\ -12 \\ \hline \square \end{array}$$

Write the remainder as a fraction.

$$\frac{4}{\square}$$

$$\text{So, } 16 \div 6 = \underline{\quad}$$

CHECK

Check that the quotient is reasonable.

Think: The quotient of $16 \div 6$ is between what two whole numbers?

Find multiples of 6: 6, 12, 18, ...

$$12 \div 6 = 2$$

$$16 \div 6 = ? \quad \leftarrow \quad 16 \text{ is between } 12 \text{ and } 18.$$

$$18 \div 6 = 3$$

So, the quotient of $16 \div 6$ is between 2 and 3.

The quotient, $2\frac{4}{6}$, is between 2 and 3. \leftarrow The answer is reasonable.

The quotient, l , is _____.

→ Each piece of rope will be _____ feet long.

Practice

Use the 4-step problem-solving process to solve each problem.

1. **READ** A museum guide schedules 12 tours of a gallery of aircraft. The gallery is open 8 hours. How long can each tour last?

PLAN

SOLVE

CHECK

2. There are 20 people in Tanya's biking club. She made 25 pounds of trail mix to share on a biking trip. How many pounds of trail mix is that per person?

