Dividing Fractions: Sharing Divisions

One meaning of division is **equal sharing.** In this lesson, we will look at sharing (dividing!) pie pieces equally among a certain number of people. This means the divisor is a <u>whole number</u>.

Example 1.

$$\frac{9}{10} \div 3 = ??$$

Think of 9/10 of a pie being divided among three people. We simply divide the number of slices, 9, by 3, and get that each person gets 3 slices.

Since the slices are tenths, each person gets 3/10 of the pie.

Each division can be **checked with a multiplication:** take the quotient (answer) times the divisor. You should get the original dividend. In this case, $\frac{3}{10} \times 3 = \frac{9}{10}$, so it checks.

1. Write a division sentence. You can color pie pieces to help. Lastly, write a multiplication to check your division.
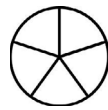
a. $\frac{6}{9}$ of a pie is divided between two people.
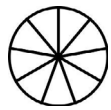
$$\frac{6}{9} \div 2 = \boxed{}$$

Check: $\boxed{} \times 2 =$

b. $\frac{3}{5}$ of a pie is divided among three people.

$$\boxed{} \div 3 = \boxed{}$$

Check: $\boxed{} \times \underline{} =$

c. $\frac{6}{12} \div 3 = \boxed{}$
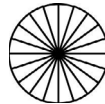
Check: $\boxed{} \times \underline{} =$

d. $\frac{15}{20} \div 5 = \boxed{}$

Check: $\boxed{} \times \underline{} =$

2. Write a division sentence for each problem, and solve it.

a. There is 6/9 of a pizza left over, and three people share it equally. How much does each one get?

b. A cake was cut into 20 pieces, and now there are 12 pieces left. Four people share those equally. What fraction of the original cake does each person get?

Next, we will divide **unit fractions**—fractions of the form 1/*n* where *n* is a whole number.

Example 2. $\frac{1}{2} \div 4 = ??$ Think of 1/2 of a pie being divided equally among four people. What fractional part of the *original* pie will each person get?

Remember also that **multiplication** is the **opposite operation of division.** This means that whatever the answer is to (1/2) ÷ 4, if you multiply the answer by 4, you will get 1/2.

(See the bottom of the page for the answer.)

3. Split each unit fraction equally, and solve. Use multiplication to check. Also, look for a shortcut, and fill it in.
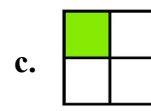
a.

$\frac{1}{3} \div 2 = \dfrac{\boxed{}}{\boxed{}}$

$\dfrac{\boxed{}}{\boxed{}} \times 2 = \frac{1}{3}$

b.

$\frac{1}{2} \div 5 =$

$\dfrac{\boxed{}}{\boxed{}} \times \underline{\quad} =$

c.

$\frac{1}{4} \div 2 =$

$\dfrac{\boxed{}}{\boxed{}} \times \underline{\quad} =$

d.

$\frac{1}{5} \div 3 =$

$\dfrac{\boxed{}}{\boxed{}} \times \underline{\quad} =$

e.

$\frac{1}{3} \div 3 =$

$\dfrac{\boxed{}}{\boxed{}} \times \underline{\quad} =$

f.

$\frac{1}{5} \div 2 =$

$\dfrac{\boxed{}}{\boxed{}} \times \underline{\quad} =$

Shortcut: $\dfrac{1}{m} \div n = \dfrac{\boxed{}}{\boxed{}}$ (where 1/*m* is a unit fraction, and *n* is a whole number)

4. Three children share 1/4 lb of chocolate equally. How much does each one get (in pounds)?

5. Solve.

a. $\frac{1}{6} \div 3 =$	**b.** $\frac{1}{10} \div 2 =$	**c.** $\frac{1}{7} \div 6 =$	**d.** $\frac{1}{2} \div 14 =$

Each person will get 1/8 of the original pie.

6. A half liter of juice is poured evenly into five glasses.

   a. How much juice is in each glass, measured in <u>liters</u>?

   b. How about in <u>milliliters</u>?

7. One morning, Joshua's gas can was only 1/8 full. He poured half of the gas into his lawn mower.

   a. How full is the gas can now?

   b. If the gas can holds 3 gallons, how much gasoline is left in the can, in gallons?

8. The job of cleaning the bathrooms at summer camp was first divided equally between Jeremy and Jenny. Jenny then amassed her a team of three other girls plus herself, and divided her part evenly among her team. What part of the job did each girl in Jenny's team do?

9. Think of equal sharing, and solve.

a. $\dfrac{12}{20} \div 2 =$	**b.** $\dfrac{8}{11} \div 4 =$	**c.** $\dfrac{8}{5} \div 4 =$	**d.** $\dfrac{2}{9} \div 2 =$

10. Write a story problem to match each division, and solve.

a. $\dfrac{1}{2} \div 3 =$	**b.** $\dfrac{6}{8} \div 2 =$

Puzzle Corner Find the missing fractions and mixed numbers.

a. $\dfrac{}{} \div 3 = \dfrac{1}{8}$	**b.** $\dfrac{}{} \div 5 = \dfrac{2}{7}$	**c.** $\dfrac{}{} \div 3 = \dfrac{4}{10}$	**d.** $\dfrac{}{} \div 6 = \dfrac{5}{8}$

Sample worksheet from
www.mathmammoth.com
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Fractions 2 (Blue Series)