# 5A.4.1 Fractions and Division

## Materials

- Worksheet 5A.4.1
- Paper rectangles (5 per student)

## Lesson Instructions

Give students 5 paper rectangles. Tell them that each paper rectangle represents one whole. Have students fold 3 paper rectangles into fourths. Ask them how many fourths there are (12 fourths). Write the fraction $\frac{12}{4}$ on the board. Ask students how many wholes $\frac{12}{4}$ is. They should have no trouble saying it is 3 wholes. Ask them how they could calculate the answer using the numerator and denominator of the fraction (divide the numerator by the denominator). Write the fraction as a division expression along with the answer.

$$\frac{12}{4} = 12 \div 4 = 3$$

You can tell them that the rectangles represent a food item, such as a bar of chocolate. Write the expression $3 \div 4$ on the board and have students use the paper rectangles to show how they could divide the three bars of chocolate evenly among four people. Students may first cut two of the paper rectangles into half to give each person half a bar, and the remaining bar into fourths. Ask them to express their answer as a fraction. Each person gets $\frac{3}{4}$ of a bar of chocolate. Write the following equation on the board:

$$3 \div 4 = \frac{3}{4}$$

Have students fold 2 more paper rectangles into fourths and ask them to show how 5 chocolate bars could be divided evenly among 4 people. Students will likely show that they can give each person 1 chocolate bar and divide the remaining bar into fourths. Each person gets $1\frac{1}{4}$ bars of chocolate. Ask students to write this answer as a mixed number and also as an improper fraction. Write the following equation on the board:
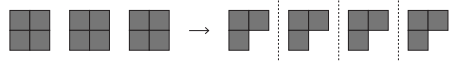
$$5 \div 4 = \frac{5}{4} = 1\frac{1}{4}$$

Hand out the worksheet and have students complete ❶. If students did the activity with the paper rectangles by first giving each person half of a whole, point out that one way to divide the bars would be to divide each bar into fourths and then share the fourths. In (a), there are a total of 12 fourths, and each person gets three of these fourths. In (b), there are a total of 20 fourths, and each person gets five of these fourths, which is the same amount as would be in $1\frac{1}{4}$ bars. However, giving each person 1 whole bar initially is similar to division where there is a remainder: 5 ÷ 4 is 1 with a remainder of 1. The remainder can be further divided by the divisor, which would result in a fraction.

Have students complete ❷ and discuss it. The illustration is for a sharing situation as well. The number line represents the dividend and the bar above the number line represents the number of groups. Students can tell what the answer is from the number line. Two methods are shown for calculating the answer. One uses the division algorithm (which represents a thought process similar to sharing the bar of chocolate by giving each person 1 and then dividing up the remainder). The other involves writing the division as a fraction and simplifying it first before converting it to a mixed number.
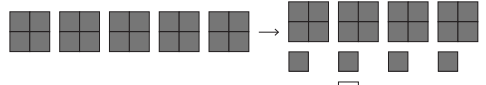


5A.4.1 Fractions and Division — Dimensions Math

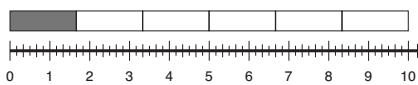❶ (a) Divide 3 by 4. Write the answer as a fraction.

$3 ÷ 4 = \dfrac{3}{4}$

(b) Divide 5 by 4. Write the answer as a fraction.

$5 ÷ 4 = 1\dfrac{1}{4}$

❷ Divide 10 by 6.

$10 ÷ 6 = 1\dfrac{4}{6} = 1\dfrac{2}{3}$

$10 ÷ 6 = \dfrac{10}{6} = \dfrac{5}{3} = 1\dfrac{2}{3}$