# $\begin{array}{ccc} 2\\ 1\\ 2\end{array} & \begin{array}{c} 2\\ 4\end{array} & \begin{array}{c} 3\\ 6\end{array}\end{array}$

#### I Just Thought You'd Like to Know About Fractions

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- A fraction is a type of ratio. A ratio compares two (or more) numbers or quantities using division.
- Fractions can be used to describe a number less than one, equal to one, or more than one whole amount or set.
- Fractions are used in our lives every day. We use fractions to cook, to share, to measure, to eat, to count money, tell time, to calculate a grade, to compete, and much much more.



• A fraction has a numerator and a denominator. These are separated by a fraction bar that represents division.



3 numerator

4 denominator

←The fraction bar means divided by (÷)

- The numerator is the "counting number" on top of the fraction bar. It tells you the number of equal parts being considered.
- The denominator names the "type of parts" and is down below the fraction bar. It tells you how many equal parts make one set or one whole amount.
- The fraction of blue puzzle pieces in this set is...  $\frac{1}{4}$



- A **fraction** can represent an amount more than one, less than one, or exactly 1.
- A **proper fraction** is a number between 0 and 1 such as
- An **improper** fraction represents a number greater than 1 such as  $\frac{7}{4}$ .
- $\frac{7}{4}$  can also be written as the **mixed number**  $1\frac{3}{4}$ .
- $\frac{4}{4}$  is equivalent to one whole, and is an **equivalent form of 1**.



- These equivalent fractions show the same amounts.
- If a cake with lemon frosting on half of it is sliced into more pieces, the amount of frosting on the cake stays the same.
- The fractions of how much each cake has icing are the same, but have different names such as one-half, two-fourths, and four-eighths.
- One-half  $\frac{1}{2}$  is the simplest fraction form above, since the numerator and denominator have no common prime factors.  $\frac{2}{4}$  and  $\frac{4}{8}$  are equivalent to one-half  $\frac{1}{2}$ .



• To change a fraction into an **equivalent fraction** that is the same but has a different name, you can multiply by an equivalent form of 1. Multiply straight across (numerator times numerator, and denominator times denominator).

• For example: 
$$\frac{1}{2} \cdot \frac{2}{2} = \frac{1 \cdot 2}{2 \cdot 2} = \frac{2}{4}$$



• To change a fraction into an equivalent fraction in simplest form, you can divide by equivalent forms of 1 using common factors (numerator divided by numerator, and denominator divided by denominator).

• For example: 
$$\frac{2}{4} \div \frac{2}{2} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$$



• To change a fraction into an equivalent fraction in simplest form, you can also use prime factorization to identify and divide out common factors.

• For example: 
$$\frac{4}{8} = \frac{2 \cdot 2}{2 \cdot 2 \cdot 2} = \frac{1}{2}$$

- Fractions can be compared with <, >, or = using many ways.
- For example, lets compare one-half and five-eighths:





- Drawing a picture shows that  $\frac{1}{2} < \frac{5}{8}$ .
- Another way is  $\frac{1}{2} \cdot \frac{4}{4} = \frac{4}{8}$  and four-eighths is less than five-eighths. This is comparing with a common denominator.
- Another way is  $\frac{1}{2} \cdot \frac{5}{5} = \frac{5}{10}$  and five-tenths is less than five-eighths, since tenths are smaller slices of the cake. This is comparing with a common numerator.



- Fractions can be turned into decimals and then compared. To find the decimal, just divide the numerator by the denominator using long division or other methods.
- 1÷2 = 0.5, and 5÷8 = 0.625

• 0.500 < 0.625 since five-tenths is less than six-tenths, or  $\frac{500}{1000} < \frac{625}{1000}$ 





- To compare two fractions, the size of the whole amount or set must be the same.
- The parts that make up one whole must be equal parts.

- Fractions are used in our lives every day.
- They are used in our money, time, sports, our food, and in many other ways.

