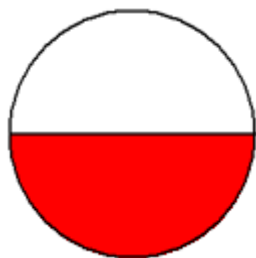
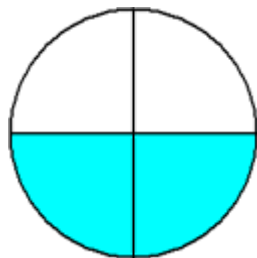


Equivalent Fractions

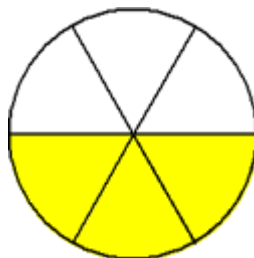
The figures below show a single pizza, cut into two equal pieces, four equal pieces, six equal pieces and eight equal pieces.



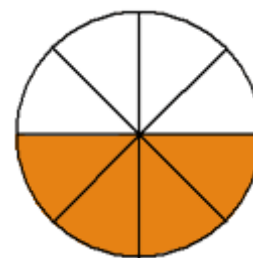
$$\frac{1}{2}$$



$$\frac{2}{4}$$



$$\frac{3}{6}$$



$$\frac{4}{8}$$

If we want to eat half of the pizza, then we have to eat the entire shaded region in each circle. Each fraction represents the same amount of pizza. As we cut the pizza into smaller pieces, we have to eat more pieces in order to eat the same amount of pizza. Therefore, the fractions represented in the shaded region are equivalent.

Definition: Equivalent fractions are fractions that have the same value.

The circles show that $\frac{1}{2}$, $\frac{2}{4}$, $\frac{3}{6}$, and $\frac{4}{8}$ are equivalent fractions. How can we use mathematics to change $\frac{1}{2}$ into $\frac{2}{4}$, $\frac{3}{6}$ and $\frac{4}{8}$?

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

Multiply by $\frac{2}{2}$

$$\frac{1 \cdot 3}{2 \cdot 3} = \frac{3}{6}$$

Multiply by $\frac{3}{3}$

$$\frac{1 \cdot 4}{2 \cdot 4} = \frac{4}{8}$$

Multiply by $\frac{4}{4}$

To find an equivalent fraction, we multiply the given fraction by **one**.

Objective 1: Finding equivalent fractions

Example: Find three fractions equivalent to $\frac{3}{8}$.

Solution:

1. Find three fractions equivalent to $\frac{6}{7}$.

Objective 2: Finding the Least Common Denominator (LCD)

Can we add one quarter and one dime? To add, we need to find the total value of one quarter plus one dime. We need to change them to the same kind of unit (cents) before we add them.

them to the same kind of unit (cents) before we add them.



25 cents

+



10 cents

= 35 cents

$$\frac{25}{100}$$

+

$$\frac{10}{100}$$

=

$$\frac{35}{100}$$

Finding The Least Common Denominator (LCD)

Step 1: List the multiples of the larger denominator.

Step 2: Find the first multiple that the other smaller denominator goes into evenly.

Example: Find the LCD of $\frac{1}{4}$ and $\frac{5}{6}$.

Solution:

1. Find the least common denominator of $\frac{4}{9}$ and $\frac{3}{11}$.

Example: Change $\frac{1}{4}$ and $\frac{5}{6}$ to equivalent fractions with denominator of 12, their LCD.

Solution:

2. Change $\frac{4}{9}$ and $\frac{3}{11}$ to equivalent fractions with their LCD.