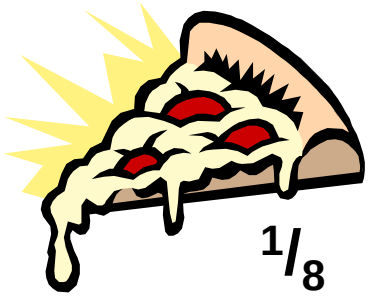
Fractions

SC Standard 5-2: The student will demonstrate through the mathematical processes […] the relationships among whole numbers, fractions, and decimals; and accurate, efficient, and generalizable methods of adding and subtracting fractions

Fractions:

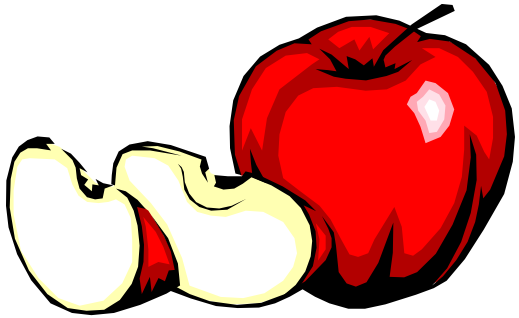
Parts of a Whole

$^{57}/_{60}$

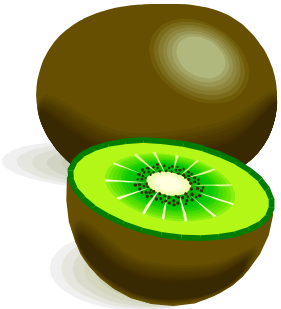


$^{1}/_{8}$

$^{11}/_{12}$



$1\ ^{2}/_{10}$



1 ½

$^{1}/_{12}$

What is a fraction?

A fraction is a quantity that cannot be represented by a whole number.

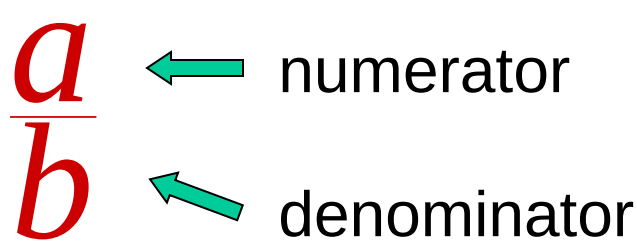
Why do we need fractions?

Can you finish the whole cake?

If not, how many cakes did you eat?

If not 0 or 1, then this suggests that we need a new kind of number.

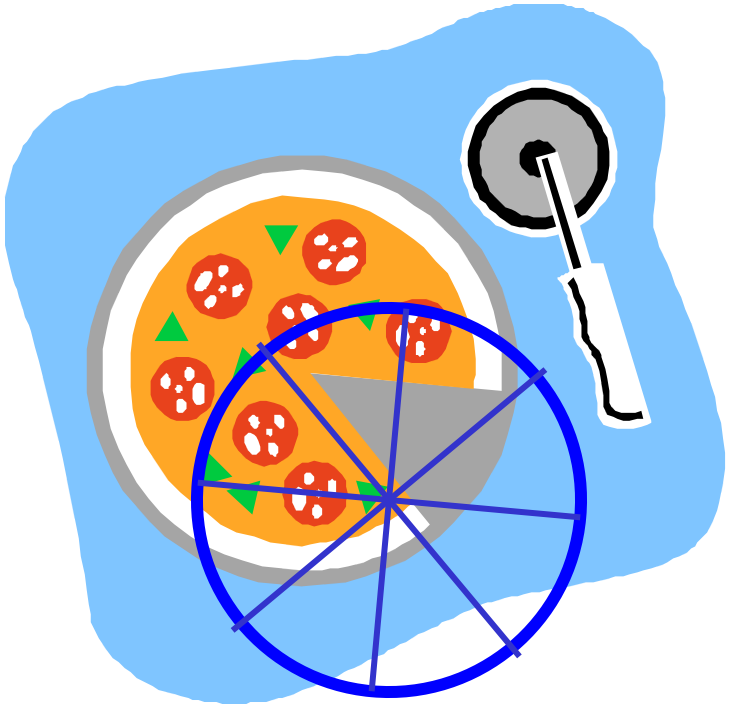
Definitions:



The **denominator** tells us how many congruent pieces the whole is divided into, this number cannot be 0.

The **numerator** tells us how many pieces of the whole are being considered.

Examples:

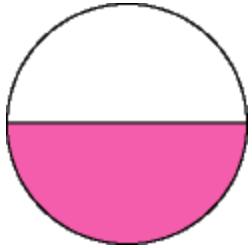


The blue circle is our <u>whole</u>.
- if we divide the whole into 8 congruent pieces, the denominator would be **8**.

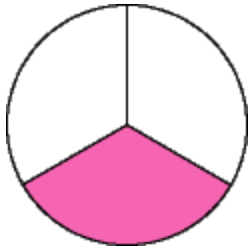
We have 7 of these pieces.
The numerator is **7**, and we have $\frac{7}{8}$ of a pizza.

Denominators

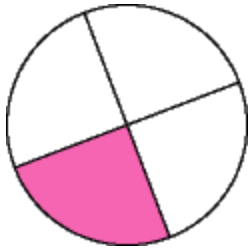
If you share a pizza equally among two people, you have $\frac{1}{2}$



If you share equally among three people, you get $\frac{1}{3}$

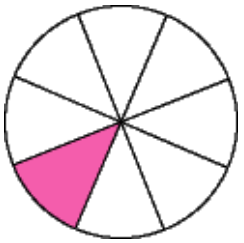


If you share equally among four people, you will get $\frac{1}{4}$



Denominators

If you share a pizza equally among eight people, you have $\frac{1}{8}$

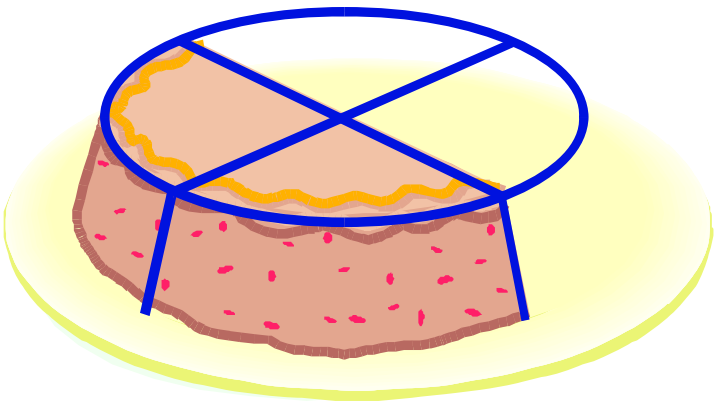


Conclusion: the slice you get becomes smaller and smaller.

The **larger** the denominator the **smaller** the pieces, the larger the denominator the smaller the fraction, if the numerators are equal.

Equivalent fractions

In the following picture we have ½ of a cake.



If we cut the cake into smaller congruent pieces, we can see that

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$$

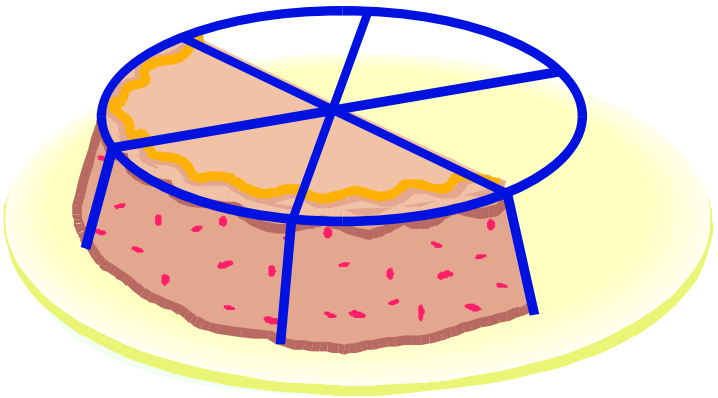
Or we can cut the original cake into 6 congruent pieces.

Equivalent Fractions

- 5-2.4 Compare whole numbers, decimals, and fractions by using the symbols <, >, and =.
- Do fractions have synonyms or equivalents?
- How can you identify equivalent fractions?

Equivalent fractions

Now we have 3 pieces out of 6 equal pieces, but the total amount we have is still the same.

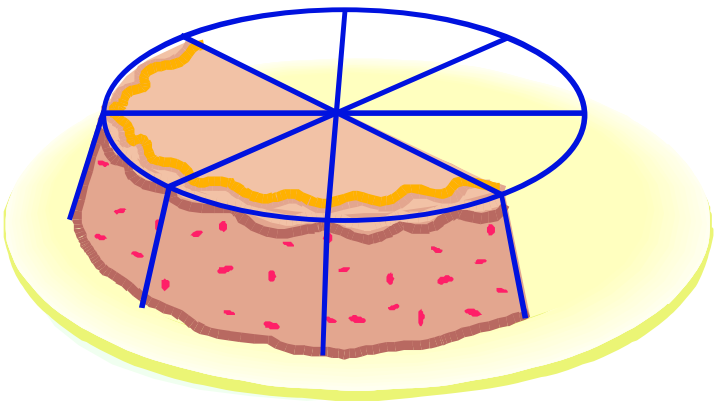


$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6}$$

What might be another equivalent fraction?

Equivalent fractions

Now you try! How many equivalent fractions can you find for ½?



For example:

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8}$$

Comparing Fractions

- How else might you compare two or more fractions?
- Could you use symbols you learned in 4^{th} grade, like < or >?
- For example ¼< ½ or 6/8 > 5/8

Comparing Fractions

- Write it out! How many ways can you compare the fractions ½, 1/3, ¾ to each other?

- Please bring your comparisons and equivalent fractions to our next class session.