



Student Learning Goals:

- I can use fractions along with visual fraction models to represent parts of a whole.
- I understand that the size of a fractional part is relative to the size of the whole.
- I can use fractions to represent numbers equal to, less than, and greater than one.
- I can solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators.

Key Vocabulary:

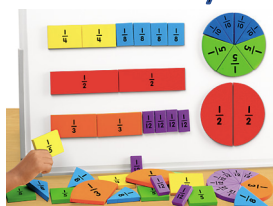
- fraction, numerator, denominator, unit fractions
- equivalent, equivalence, compare, $<$, $>$, $=$, equal parts, equal distance
- partition, halves, thirds, fourths, fifths, sixths, sevenths, eighths

Website for Information:

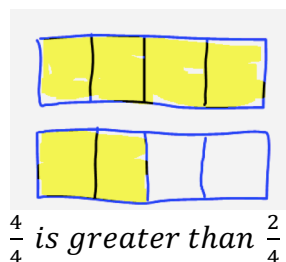
<https://www.khanacademy.org/math/arithmetic/fraction-arithmetic/arithmetic-review-fractions-intro/v/fraction-basics>

Tools/Models/Strategies

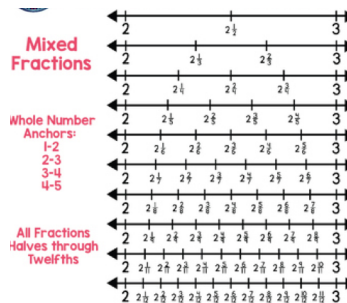
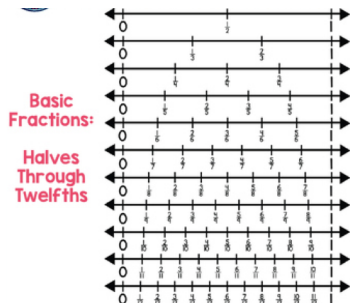
Fraction tiles/circles:



Fraction bars as a model:



Fractions on a Number line:



Did you know?

A fraction describes the division of a whole (region, set, segment) into equal parts.

Each fraction can be associated with a unique point on the number line.

Definition: A fraction is a numerical representation for part of a whole.



The **DENOMINATOR** tells how many equal pieces the whole is divided into.

$\frac{1}{5}$

The **NUMERATOR** tells how many pieces of the whole the fraction represents.

Add all the pieces to get the whole:

$$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{5}{5} = 1$$

Fact: $\frac{x}{x} = 1$ ($x \neq 0$)

The fraction bar represents division (\div), so $\frac{1}{5} = 0.2$, $\frac{10}{2} = 5$, and $\frac{38}{5} = 7.6$.

Any fraction with a Denominator of 1 is equal to its Numerator: $\frac{x}{1} = x \div 1 = x$

Division by zero is Undefined, so the Denominator of a fraction can never be zero: $\frac{x}{y}$ ($y \neq 0$)



P.S. 103
Math Family Letter

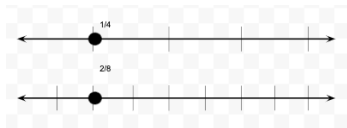
Grade 3: Unit 3
Division and Area of a Composite Figure



NYS Test Questions

This problem requires that students understand where fractions belong on a number line. It also assesses to see if they know the common equivalent fractions (fractions that are equal in size to each other). Worked with tools and double number lines to compare fractions will help them remember which are the common equivalent fractions.

In this question, the answer is B.



Many of the multiple choice questions use diagram such as these in the form of fraction bars to help students decide which fractions are equivalent to each other. In this problem they have a fraction diagram to compare to 4 choices. The given fraction is representing a $\frac{1}{2}$, since $\frac{1}{2}$ is shaded.

A represents $\frac{1}{8}$.

B represents $\frac{1}{4}$.

C represents $\frac{2}{4}$.

D represents $\frac{3}{4}$.

Students can use the given fraction to visually see which one is equivalent.

Before the test, it is imperative that they know that

$$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} \text{ and so on.}$$

They will come to realize through practice with tools and models that when the denominator is double the size of the numerator, the fraction is equivalent to $\frac{1}{2}$.

In this problem, they really are testing to see if students see that fractions relate directly to division. Dividing and sharing one item equally among others is a tough concept to grasp, but very important.

Each person in Family A will receive $\frac{1}{4}$ of one large sandwich.

Each person in Family B will receive $\frac{1}{2}$ of one large sandwich.

****It is important that in reading they do not misunderstand that there is 1 sandwich for the two families, but that each family has their own large sandwich. ****

Two-point response: Since Family A is dividing it into 4 equal parts and Family B is dividing it into 2 equal parts, and they have the same size sandwiches, each person in Family A will get a different size than each person from Family B. Family A will get $\frac{1}{4}$ each of their sandwich, and Family B will get $\frac{1}{2}$ of their sandwich.

Which two fractions should be plotted at the same location on a number line?

- A $\frac{3}{4}$ and $\frac{4}{8}$
- B $\frac{1}{4}$ and $\frac{2}{8}$
- C $\frac{2}{4}$ and $\frac{4}{6}$
- D $\frac{1}{2}$ and $\frac{2}{6}$

The shape below is shaded to represent a fraction.



Which shape is shaded to represent a fraction equivalent to the shape shown above?



Two families buy large sandwiches of the same size. Family A shares one sandwich equally among 4 people, as represented in the picture below.



Family B shares one sandwich equally between 2 people.

Will a person from Family A get the same amount or a different amount of a sandwich as a person from Family B? Be sure to include what you know about fractions or parts of a whole in your answer.

Explain your answer.
