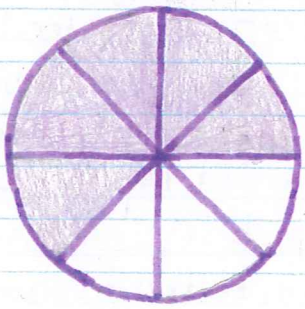
Fractions - Think Sheets

What is a fraction?

A fraction is a part, amount, quantity, or portion of something or of a whole. There are also many different kinds of fractions which all end up relating to one concept. An example of a fraction for instance could be that there are 8 slices in a pizza and someone ate 5. So basically someone ate 5 of the 8 slices of the pizza but if I wanted to explain this sentence in another much simplier form, I could write the sentence in the form of a fraction. This how I would write 5 of the 8 slices of pizza in the form of a fraction: $\frac{5}{8}$. I created this fraction with the number of slices eaten (5) and the number slices which the pizza had in total (8) as the number of slices eaten at the top and slices in total at the bottom. I wrote my fraction in this way because in a fraction a part of the whole is always at the top and then the whole is always at the bottom. In other words a fraction has a numerator at the top (the part of the whole) and the denominator at the bottom (the whole/total amount of parts). Now that I've told you about what a fraction is and what are the parts of a fraction called, I'd like to show you a diagram of the example of a fraction which I have mentioned previously above. Here is a diagram to show $\frac{5}{8}$ (below):



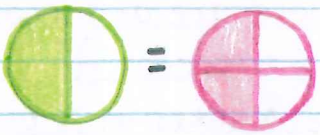
$= \frac{5}{8}$ } 5 of the 8 parts (the whole) are shaded in to represent the fraction.

What are equivalent fractions?

An equivalent fraction is a different fraction which names/represents the same number/value, even though they may look different than one another. An equivalent fraction can be created by taking the original fraction and then multiplying, or dividing both the numerator and the denominator by the same number and then an equivalent fraction is created. Here are some examples

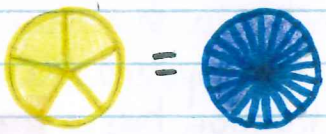
of equivalent fractions (below) with diagrams beside them to show that even though the numbers in both fractions may be different they both mean/represent the same number/value. Here are the equivalent fractions and diagrams:

shows same proportion

Example #1: $\frac{1 \times 2 = 2}{2 \times 2 = 4}$ $\left.\begin{matrix} \\ \end{matrix}\right\} \frac{1}{2} = \frac{2}{4}$ 

Example #2: $\frac{5 \times 2 = 10}{6 \times 2 = 12}$ $\left.\begin{matrix} \\ \end{matrix}\right\} \frac{5}{6} = \frac{10}{12}$ 

Example #3: $\frac{2 \times 3 = 6}{3 \times 3 = 9}$ $\left.\begin{matrix} \\ \end{matrix}\right\} \frac{2}{3} = \frac{6}{9}$ 

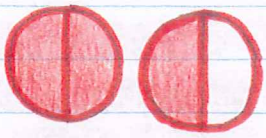
Example #4: $\frac{3 \times 4 = 12}{5 \times 4 = 20}$ $\left.\begin{matrix} \\ \end{matrix}\right\} \frac{3}{5} = \frac{12}{20}$ 

What are improper fractions?

An improper fraction is a fraction in which the numerator (a part of the whole) is greater than the denominator (the whole). An improper fraction is called "improper" because the numerator is greater than the denomina-r since in a fraction the numerator is always a portion (less than the whole) of the denominator (the whole). Therefore, this why an improper fraction is known as an "improper" fraction. Improper usually consist of 1 whole or more than 1 whole and parts of a whole with the whole/whole For example, 5/4 is an improper fraction. In this fraction there is 1 whole a-d 1/4 since 5 goes into 4 once, therefore 5/4 can also be written as 1 ar 1/4. By writing 5/4 into 1 1/4 is called creating an improper fraction into a mixed fraction. You will learn more about mixed fractions next after finish-g to learn about improper fractions. Since these two concepts are very similar to learn about, and to understand. Now I will show you more examples of improper fractions on the next page with diagrams to explain the improper fraction in a more clear way. Look onto next pa

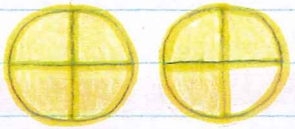
Here are some more examples of improper fractions with diagrams (below):

Example #1: $\frac{3}{2}$ =



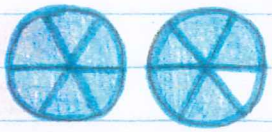
Example #2: $\frac{5}{3}$ =

Example #3: $\frac{7}{4}$ =

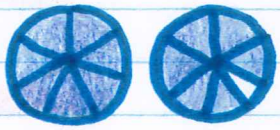


Example #4: $\frac{9}{5}$ =

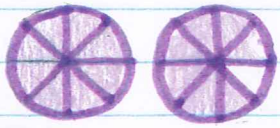
Example #5: $\frac{11}{6}$ =



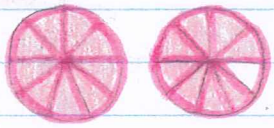
Example #6: $\frac{13}{7}$ =



Example #7: $\frac{15}{8}$ =



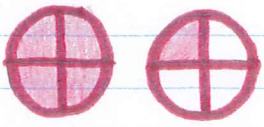
Example #8: $\frac{17}{9}$ =



What are mixed fractions?

A mixed fraction is a whole number and a fraction combined into one "mixed number". A mixed fraction can also be created by converting improper fractions. You can convert an improper fraction into a mixed fraction by simply just seeing how many times the numerator of an improper fraction goes into the denominator of the improper fraction and then just simply write down how many times it goes into the fraction as the number which is a whole. So then beside it write down the remaining parts of the improper fraction into a fraction and there you go a mixed fraction. Here are a few examples of how improper fractions converted make mixed fractions and there are also diagrams to support my examples (below):

Example #1: $\frac{5}{4}$ } goes into 4 (denominator) once so the mixed fraction is $1\frac{1}{4}$



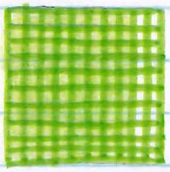
Example #2: $\frac{7}{5}$ } goes into 5 (denominator) once so the mixed fraction is $1\frac{2}{5}$

How can you convert fractions into decimals?

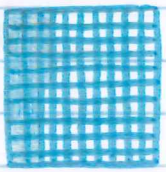
Firstly, the definition of a decimal is a number relating to or denoting a system of numbers and arithmetic based on the number ten tenth parts, and powers of ten. Also the figures of a decimal are placed to the right of a decimal point and decimals are basically a type of a fraction since they are a part of a whole. So in other words, a decimal is a fraction written in a special form. Now I'd like to explain how a fraction can be converted into a decimal. A fraction can be converted into a decimal very easily. In just one step. What you have to do is take the numerator of the fraction and divide it by the denominator and the answer which is in decimal form is the decimal. This is how you convert a fraction into a decimal. Now that I have taught you how to convert a fraction into a decimal, I would like to give some examples of fractions which are converted into decimals. There are also diagrams to support each example (below):

Example #1: $\frac{1}{2}$ } $1 \div 2 = 0.5$ } $\frac{1}{2} = 0.5$ }

Example #2: $\frac{3}{4}$ } $3 \div 4 = 0.75$ } $\frac{3}{4} = 0.75$ }



Example #3: $\frac{2}{8}$ } $2 \div 8 = 0.25$ } $\frac{2}{8} = 0.25$ }



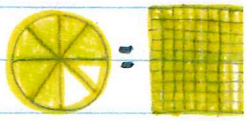
Example #4: $\frac{6}{10}$ } $6 \div 10 = 0.6$ } $\frac{6}{10} = 0.6$ }

How can you convert fractions into percentages?

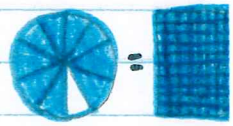
First of all, before I begin teaching you how to convert fractions into percentages I would like to start off by telling you the definition of percentages. The definition of a percentage is a rate, number or amount in each hundred (out of a hundred). A percentage can also be any proportion or share in relation to a whole. Now I will teach you about how to convert a fraction into a percentage. There are two very easy steps to converting a fraction into a percentage. The first step is to follow the same step as when converting fractions into decimals. So step one is to take the numerator of the fraction and divide it by the denominator. After that, the next step is to take the decimal form of the fraction and then multiply it by a hundred and then the whole number(s) is the percentage for the fraction. This is how you can convert a fraction into a percentage. Below are a few examples of how fractions can be converted into percentages and also there are diagrams to support each example. Here are the examples (the following):

Example #1: $\frac{2}{4} \} 2 \div 4 = 0.5 \} 0.5 \times 100 = 50 \} 50\% \} \frac{2}{4} = 50\% \}$

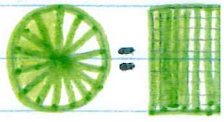
Example #2: $\frac{6}{8} \} 6 \div 8 = 0.75 \} 0.75 \times 100 = 75 \} 75\% \} \frac{6}{8} = 75\% \}$



Example #3: $\frac{9}{10} \} 9 \div 10 = 0.9 \} 0.9 \times 100 = 90 \} 90\% \} \frac{9}{10} = 90\% \}$



Example #4: $\frac{6}{15} \} 6 \div 15 = 0.4 \} 0.4 \times 100 = 40 \} 40\% \} \frac{6}{15} = 40\% \}$



How can you order and compare fractions?

You can order and compare fractions by changing them into decimals, percentages or even equivalent fractions so then all of them are the same. Since in order to order or compare fractions all the fractions should have the same denominator. Otherwise the ordering or the comparing of the fractions will be unaccurate and false

results would occurr. Here are the ways you can order or compare fractions. The first way is by converting all the fractions into decimals and then to order them from either least to greatest or greatest to least and compare them in the same way but by using the signs >, < and =. So since I've just taught you above 2 paragraphs back about how to convert fractions into decimals and so you can use that strategy to first convert all fractions into decimals and then compare them. Here is an example of how you can order and compare fractions which are in decimal form (below):

There are 6 fractions: $\frac{4}{5}, \frac{6}{15}, \frac{17}{21}, \frac{26}{30}, \frac{41}{100}, \frac{52}{68}$

Convert them into decimal form. Here is the decimal form for each fraction:

$\frac{4}{5} \} 4 \div 5 = 0.8 \} \frac{4}{5} = 0.8$ $\quad \frac{6}{15} \} 6 \div 15 = 0.4 \} \frac{6}{15} = 0.4$

$\frac{17}{21} \} 17 \div 21 = 0.80952381, \text{rounded} = 0.81 \} \frac{17}{21} = 0.81$

$\frac{26}{30} \} 26 \div 30 = 0.86666667, \text{rounded} = 0.87 \} \frac{26}{30} = 0.87$

$\frac{41}{100} \} 41 \div 100 = 0.41 \} \frac{41}{100} = 0.41$

$\frac{52}{68} \} 52 \div 68 = 0.76470588, \text{rounded} = 0.76 \} \frac{52}{68} = 0.76$

Now, order the fractions by using the decimal forms, but still write the fractions when ordering. Order the fractions below (from least to greatest (smallest first)):

(1 to 6: $\frac{4}{5} < \frac{6}{15} < \frac{41}{100} < \frac{52}{68} < \frac{17}{21} < \frac{26}{30}$

Fraction (Think Sheet)

By: Tamara Mitrovic♥

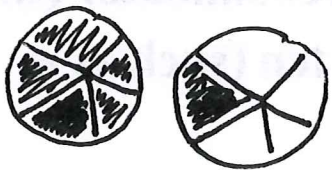
Definition:

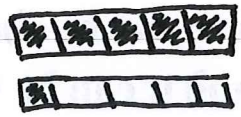
A number that describes part of a whole or part of a group. Which in easier words means fraction (⅓) is a whole that is in pieces.

 = ⅓

Examples: a) Least To Greatest

$\frac{6}{5}, \frac{1}{10}, \frac{25}{100}, \frac{261}{103} = \frac{1}{10}, \frac{25}{100}, \frac{6}{5}, \frac{261}{103}$ ✓

b)  = $\frac{6}{5}$

c)  = $\frac{6}{5}$ ✓

d) $\frac{6}{5} = 1\frac{1}{5} = 1.2$ = one and two tenths ✓

Concepts related to fractions:

-Equivalent Fractions:

-Equivalent fractions are fractions that may look different, but are equal to each other. Two equivalent fractions may have a different numerator and a different denominator. (A fraction is also equivalent to itself. In this case, the numerator and denominator would be the same.)

Ex. 1 /3 = 2/6 = 4/12

-Decimal Fraction:

-A fraction where the denominator (the bottom number) is a power of ten (such as 10, 100, 1000, etc).

Ex.

7/10 is a decimal fraction and it can be shown as 0.7
43/100 is a decimal fraction and it can be shown as 0.43
51/1000 is a decimal fraction and it can be shown as 0.051

-Improper Fractions:

-A fraction in which the numerator is greater than the denominator, such as 5/4.

Ex. 5/4 = 1 (¼)

diagram would be great.

-Lowest Terms:

-A fraction is in lowest terms when the greatest common factor (GCF) of the numerator and denominator is 1.

yes. how else can you describe it?

Ex. 3/6 = ½ ← Lowest Terms

-Mixed Fractions:

-A mixed fraction is a whole number and a fraction combined into one "mixed" number. Example: 1½ (one and a half) is a mixed fraction.

Ex. 1(⅖) = 7/5

-Adding and Subtracting Fractions:

-You can add and subtract like fractions easily, simply

add or subtract the numerators and write the sum over the common denominator. Before you can add or subtract fractions with different denominators, you must first find equivalent fractions with the same denominator.

Ex.

$3/4 - 1/4 = 3 - 1 = 2/4$

$1/100 + 50/100 = 1 + 50 = 51/100$

Feb. 24, 2015

{3-PL}

Jay Patel

Jay

Detailed explanations with diagrams, number examples, and sentences.

(9.5)

Think Sheet - Fractions

Can I keep this?

A fraction is a type of number repersentation of a part of a whole. It is composed of a numerator (top number) and denominator (bottom number). The denominator shows the amount of equal peices/sections the whole is divided into and the numerator shows the amount peices of the whole are being repersented.

Example: $\frac{3}{4}$ → 3 Numerator, 4 → Denominator. IF this fraction was repersenting a pizza, then the pizza would be divided into 4 equal peices and 3 of those pieces are being expressed.

All Fractions have equivalent Fractions. They are fraction that have the same value, but have different numbers in them. To find an equivalent fraction of a fraction you can either divide or multiply the numbers in the fraction. For example, $\frac{2}{4} \div 2 = \frac{1}{2}$ or $\frac{2}{4} \times 2 = \frac{4}{8}$. However, you have to divide or multiply the denominator and numerator by the same number. So when you are dividing to find an equivalent fraction, you have to make sure that the number you are dividing by can go into the numerator and denominator evenly.

proportions.

Numerator is greator than the denominator, the Fraction becomes a Improper Fraction. Its called that because its improper, a Fraction isn't supposed to show above a whole, its supposed to show part of a whole. To change this you can make it into a mixed number. A mixed number is whole number plus a Fraction. To turn an Improper Fraction into a mixed number you have to figure how many times the denominator can go into the numerator. Then write that amount beside the Fraction, multiply that number by the denominator and subtract the product from the numerator. To change a mixed number to a improper fraction reverse these steps.

Example: $\frac{13}{4}$ → $13 \div 4 = 3 - R1$ → $3\frac{13}{4}$ → $13 - 3 \times 4 = 1$ → $3\frac{1}{4}$ ← Mixed Number

$\frac{13}{4}$ ↑ Improper Fraction

The simplest form or lowest term (both are same) of a Fraction is the smallest numbers a Fraction can be in. To put a fraction in lowest terms you have to find an equivalent fraction that cant be divided equaly anymore.

Examples: $\frac{4}{12} \div \frac{4}{4} = \frac{1}{3}$

$\frac{2}{5} \div \frac{1}{1} = \frac{2}{5}$

*This fraction is already in simplest form. It can only be divided by 1.

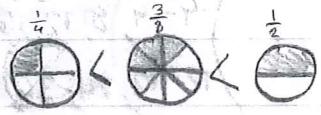
$\frac{36}{120} \div \frac{2}{2} = \frac{18}{60} \div \frac{3}{3} = \frac{6}{20} \div \frac{2}{2} = \frac{3}{10}$

*Sometimes with big numbers you can divide a few times to make it easier.

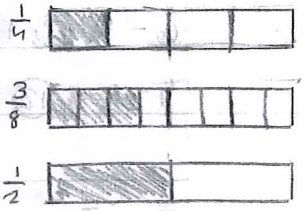
There are many ways to compare & order fractions You can use manipulatives (pattern blocks, actual things like pizza, ect.), Fraction strips, number lines, and other stuFF. One main thing you do to orde and compare is convert the fractions into decimals or percents. To convert a fraction into a decimal, you have to divide the numerator by the denominator and youre done. To convert a fraction into a percent, you follow the same steps as fraction to decimal, then you multiply the decimal by 100 and round it to the nearest one.

Examples: Ordering $\frac{3}{8}, \frac{1}{2}, \frac{1}{4}$

- Manipulatives →



Fraction Strips



- Number line →

Fraction form ↓ Decimal form ↓ Percent form ↓

- Converting →

$\frac{3}{8} = 3 \div 8 = 0.375 \times 100 = 37.5 = 38\%$

$\frac{1}{2} = 1 \div 2 = 0.5 \times 100 = 50 = 50\%$

$\frac{1}{4} = 1 \div 4 = 0.25 \times 100 = 25 = 25\%$

Decimal – $0.25 < 0.375 < 0.5$

Percent – $25\% < 38\% < 50\%$

You can also add and subtract fractions. To do so you have to find the Lowest Common Denominator (LCD) of the fractions that you have to add or subtract. To find th LCD you have to find the Lowest Common Multiple (LCM) of the denominators of your fractions. When you find it you have to make equivalent fractions with the LCM/LCD as the new denominators. After that you do simple additio or subtraction with the numerators.

Why do you need to do that?

Examples:

Add - $\frac{2}{6} + \frac{1}{4}$

6 - 6, (12), 18, 24

4 - 4, 8, (12), 16

$\frac{2}{6} \times \frac{2}{2} = \frac{4}{12}$ & $\frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$

$\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$

Subtract - $\frac{3}{5} - \frac{1}{4}$

4 - 4, 8, 12, 16

12 - 12, 24, 36, 48

$\frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$ & $\frac{1}{4} \times \frac{5}{5} = \frac{5}{20}$

$\frac{12}{20} - \frac{5}{20} = \frac{7}{20}$

Fraction- Think sheet

Feb 26, 2015

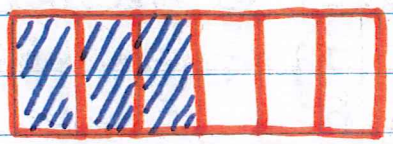
Hello there! My name is Bianca and today I'll be teaching you all about fractions! What is a fraction you might ask? Well, a fraction is a part of a whole, for instance if there are 6 slices of pizza and you ate 3, this is how you would show how much you ate in fraction form $\frac{3}{6}$, and if you wanted to show $\frac{3}{6}$ in a diagram this is how it would look like:

$\frac{3}{6}$ =

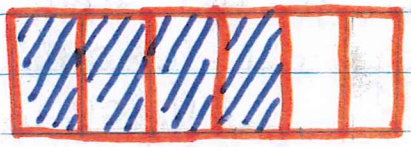
You can also use fractions strips to show $\frac{3}{6}$, but remember whenever you use fractions strips to compare or show any fraction, you have to make all the fractions strips the same size. For example if you to compare $\frac{3}{6}$ and $\frac{4}{6}$, this is how it would look like:

Good

$\frac{3}{6}$

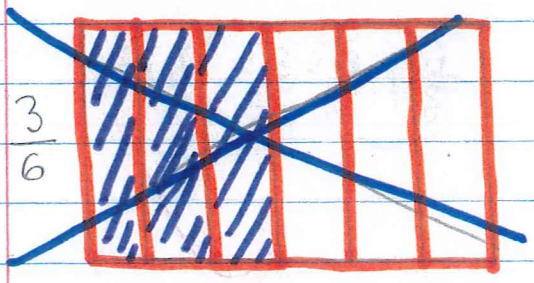


$\frac{4}{6}$

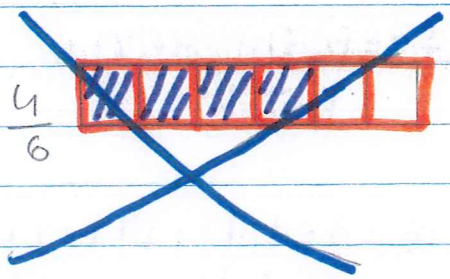


✓ Correct!

$\frac{3}{6}$

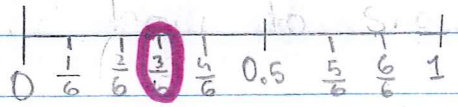


$\frac{4}{6}$

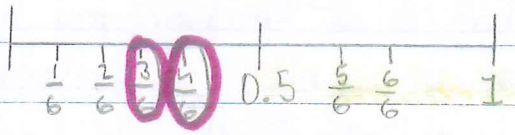


Wrong!

$\frac{3}{6}$ can also be shown in a number line.



If you still wish to compare $\frac{3}{6}$ and $\frac{4}{6}$ all you have to do is circle $\frac{3}{6}$ and $\frac{4}{6}$ in your number line that will show the comparision between $\frac{3}{6}$ and $\frac{4}{6}$.



Converting Fractions to decimals

Now that I have shaved has to draw a proper fraction strip, and how you can compare fractions with a number line, I'll now teach you how to convert fractions into decimals.

Coverting Fractions into decimal is very easy, all you have to do is divide the top of the fraction by the bottom (denominator). For example, if you were to order these fractions $\frac{17}{21}, \frac{7}{6}, \frac{5}{7}, \frac{6}{8}, \frac{10}{9}$ From least to greatest you would need to convert them into decimals in order to put them from least to greatest.

$\frac{17}{21}$ 17 ÷ 21 = 0.809523809
≈ 0.809 round it

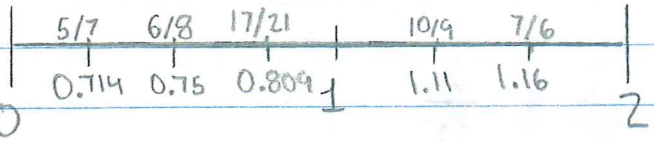
$\frac{7}{6}$ 7 ÷ 6 = 1.166666667
= 1.16

$\frac{5}{7}$ 5 ÷ 7 = 0.714285714
= 0.714

$\frac{6}{8}$ 6 ÷ 8 = 0.75

$\frac{10}{9}$ 10 ÷ 9 = 1.111111111
= 1.11

Now that we have converted these fraction into decimals, we can order them in a number line



Converting decimals to percent

Now I'll show how to turn these decimals into a percent. To convert a decimal to a percent, you multiply the decimal by 100, then add on the % symbol. An easy method to multiply a decimal by 100 is to move the decimal point two places to the right. This is done to the example bellow:

Solution	
Decimal	Percent
0.714	71.4%
0.75	75%
0.809	80.9%
1.11	111%
1.16	116%

Each decimal went out two places to the right of the decimal point.

Adding Fractions

Adding Fractions are easy and simple to do. The first step is to make sure the bottom numbers (denominators) are the same. Step two is to add the top numbers (numerators), put the answer over the denominator. Step three is simplifying the fraction (if needed), in other words put them in lowest term.

Example 1:

$$\frac{1}{4} + \frac{2}{4}$$

Step 1: Since the denominators are the same, you can go straight to step 2.

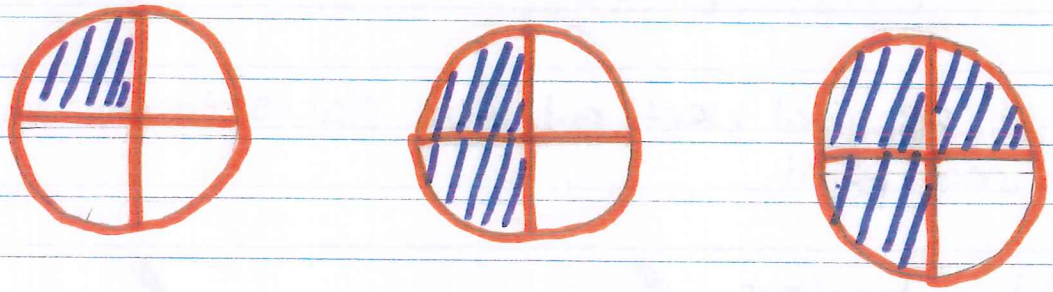
Step 2: Add the numerators together and put the answer over the same denominator:

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

Step 3: No simplifying needed for $\frac{3}{4}$ since it's already in lowest term.

In picture form it looks like this:

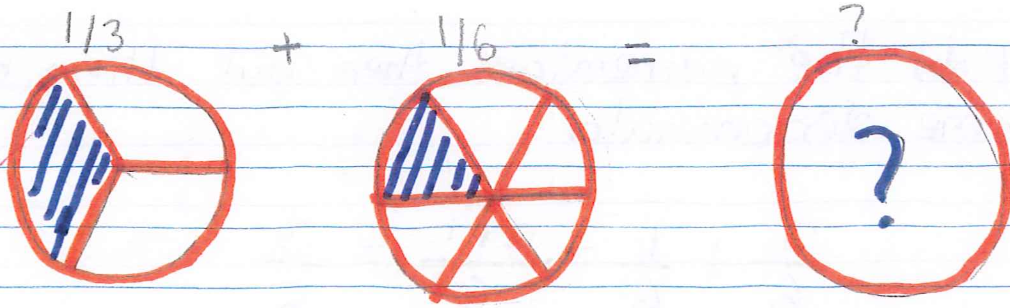
1/4 + 2/4 = 3/4



Example 2:

$$\frac{1}{3} + \frac{1}{6}$$

Step 1: The denominators are different. But as you see how the slices are different sizes?



Excellent that you addressed the "why" to get common denominators

Before we continue, we need to make the denominators are the same, we can't add them like that.

As you know the number "6" is twice as big as "3", so to make the denominators the same we can multiply the top and bottom of the first fraction by 2, like this:

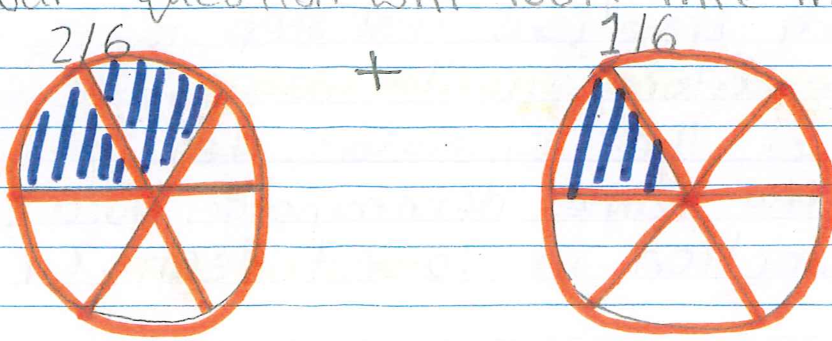
×2

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

×2

important: always multiply both top and bottom by the same amount, in order to keep the value of the fraction the same.

Now that the fractions have the same denominator (6), our question will look like this:

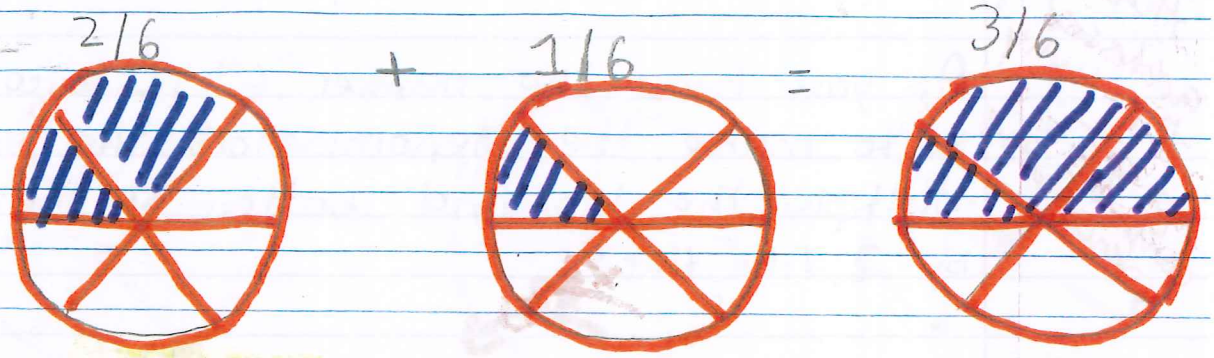


Now that the denominators are the same we can skip to step 2.

Step 2: Add the numerators, then put them over the same denominator:

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

In picture form will now look like this:



Step 3: Simplify the fraction:

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

Subtracting Fractions

Subtracting fractions is very easy, and similar to adding fractions. First step is to make sure the denominators are the same. Second step is to subtract the numerators, then put the answer over the same denominator. Third step is to put the fraction in lowest term (if needed)

Example 1:

$$\frac{3}{4} - \frac{2}{4}$$

Step1: The denominators are the same, so you can go ahead and skip to step 2.

Step2: Subtract the numerators and put the answer over the same denominator.

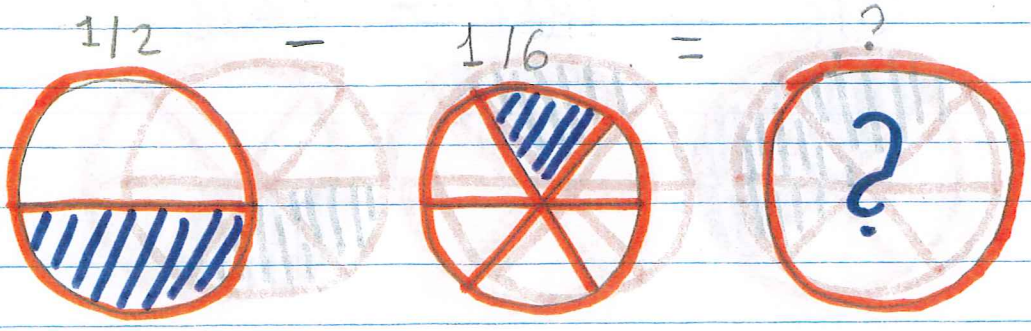
$$\frac{3}{4} - \frac{2}{4} = \frac{3-2}{4} = \frac{1}{4}$$

Step3: No simplifying is needed for $\frac{1}{4}$, because it is already at its lowest term.

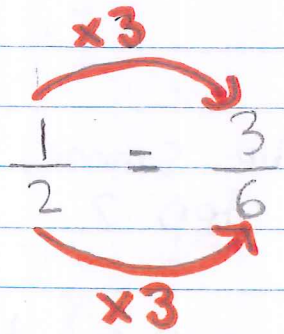
Example 2:

$$\frac{1}{2} - \frac{1}{6}$$

Step1: The denominators are different. As you can see how the sizes are different? We need to make the denominators alike before we continue, because we cannot subtract them like this:

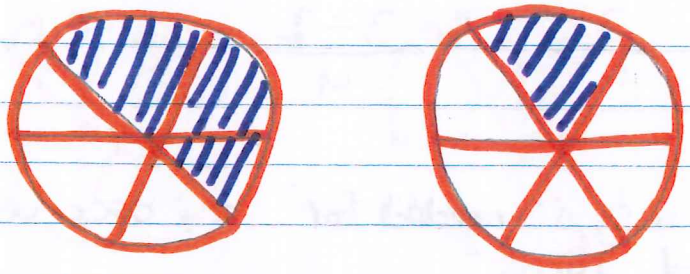


In order to make the denominators the same, multiply the numerator and the denominator of the first fraction (1/2) by 3 like this



Now the question will look like this:

3/6 − 1/6



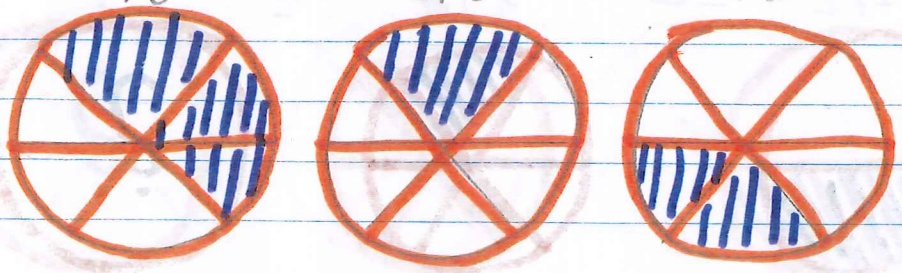
The denominators are the same, so now we a able to skip to step 2.

Step2: Subtract the numerators and put the answer over the same denominator:

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

In picture form will now look like this:

3/6 − 1/6 = 2/6

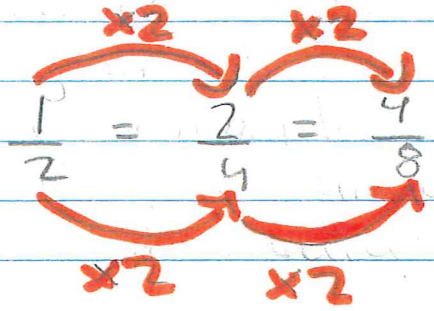


Step3: Simplify the Fraction:

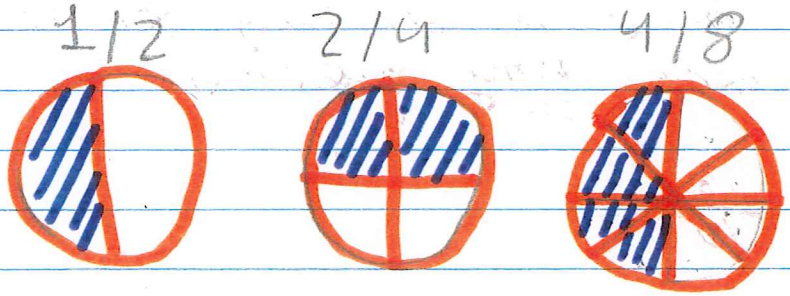
$$\frac{2}{6} = \frac{1}{3}$$

Equivalent Fractions

Equivalent Fractions have the same value, even if they may look different. For example $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$, those three fractions are actually the same. Why you might ask? Well because when you multiply or divide both numerator and denominator by the same number, the fraction has it's value.

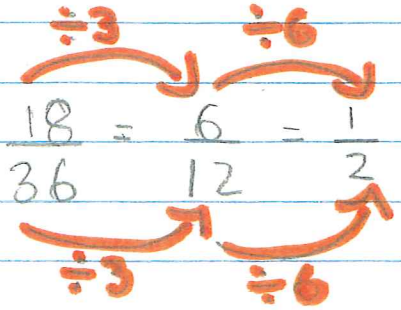


In picture form:



Divinding

Here are others equivalent fractions, this time by diving:



Whenever you are divinding choose your number care