U1:L3 Fractions

$$\frac{3}{4}$$ ← Numerator
← Denominator

Three types of fractions:

PROPER FRACTIONS	The top number (numerator) is **smaller** than the bottom number (denominator)	$\dfrac{3}{4}$
IMPROPER FRACTIONS	The top number (numerator) is **bigger** than the bottom number (denominator)	$\dfrac{7}{3}$
MIXED FRACTIONS	A whole number and a fraction beside each other.	$5\dfrac{3}{4}$

MIXED → IMPROPER

a) Multiply the whole number by the denominator
b) Add the numerator
c) Put that number over the original denominator

$$3\frac{3}{4} = \frac{[(3\times4)+3]}{4} = \frac{15}{4}$$

IMPROPER → MIXED

a) How many times does the denominator go into the numerator? This is your whole number.
b) How many are leftover? This is your numerator?
c) The denominator stays the same.

$$\frac{16}{3} = 5\frac{1}{3}$$

a) 3 goes into 16 five times (whole number =5)

b) 3 fives is 15...16 − 15 = 1 (numerator = 1)

c) Denominator stays 3

PRACTICE!

CONVERT the FOLLOWING MIXED → IMPROPER		
$4\frac{3}{5}$	$6\frac{2}{6}$	$10\frac{1}{4}$
CONVERT the FOLLOWING IMPROPER → MIXED		
$\frac{13}{5}$	$\frac{19}{4}$	$\frac{103}{10}$

Equivalent Fractions

A fraction can be written MANY ways. *Equivalent Fractions* have the same value, even though they may look different.

These fractions are the same:

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

They all represent **HALF**. Same with…
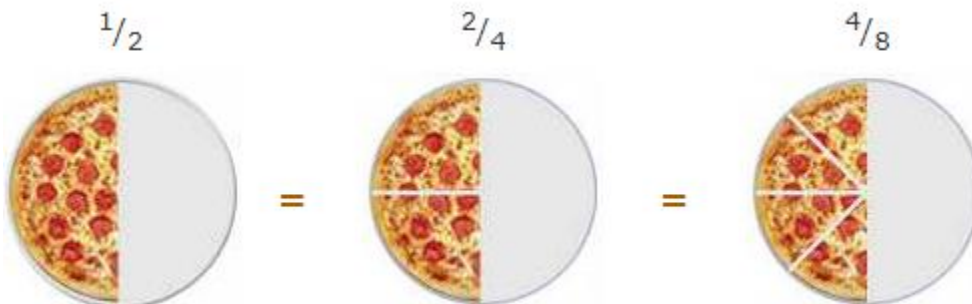
$$\frac{10}{20} = \frac{200}{400} = \frac{4000}{8000}$$

If you **multiply** or **divide** the top and bottom by **the same number**, the ratio stays the same!

Let's Practice!

$\dfrac{1}{2} =$	$\dfrac{}{4}$	$\dfrac{}{16}$	$\dfrac{}{50}$
$\dfrac{1}{3} =$	$\dfrac{}{6}$	$\dfrac{}{12}$	$\dfrac{}{33}$
$\dfrac{2}{5} =$	$\dfrac{}{10}$	$\dfrac{}{15}$	$\dfrac{}{500}$
$\dfrac{10}{25} =$	$\dfrac{}{50}$	$\dfrac{}{100}$	$\dfrac{}{5}$
$\dfrac{8}{12} =$	$\dfrac{}{24}$	$\dfrac{}{36}$	$\dfrac{}{6}$

ADDING & SUBTRACTING

STEPS:

1) Put each fraction over the same <u>denominator</u>
2) Add or subtract the <u>numerator.</u>
3) Leave the denominator <u>the same</u>
4) <u>Simplify</u> the answer if possible!

EXAMPLES:

$\dfrac{3}{4} + \dfrac{2}{8}$	
Put fractions over the same denominator	$\dfrac{6}{8} + \dfrac{2}{8}$
Add numerators. Leave the denominator the same.	$\dfrac{6+2}{8} = \dfrac{8}{8}$
Simplify if possible!	1

$\dfrac{4}{5} - \dfrac{1}{15}$	
Put fractions over the same denominator	$\dfrac{12}{15} - \dfrac{1}{15}$
Add numerators. Leave the denominator the same.	$\dfrac{12-1}{15} = \dfrac{11}{15}$
Simplify if possible!	$\dfrac{11}{15}$

PRACTICE:

$\dfrac{4}{6} + \dfrac{1}{3}$	$\dfrac{2}{6} + \dfrac{1}{18}$	$\dfrac{4}{13} + \dfrac{1}{13}$
$\dfrac{3}{16} - \dfrac{1}{8}$	$\dfrac{4}{3} - \dfrac{1}{9}$	$\dfrac{99}{100} - \dfrac{7}{10}$
$\dfrac{11}{12} - \dfrac{3}{4}$	$\dfrac{3}{5} + \dfrac{1}{3}$	$5\dfrac{1}{5} - 3\dfrac{1}{8}$