

FRACTIONS – (Compares a part to a whole) numerator denominator

FORMS of FRACTIONS

1. Proper – numerator is smaller than denominator; less than 1 whole; examples: $\frac{3}{5}$, $\frac{1}{4}$, $\frac{2}{9}$
2. Improper – numerator is larger than denominator; more than 1 whole; examples: $\frac{8}{3}$, $\frac{5}{2}$, $\frac{9}{4}$, $\frac{16}{5}$
3. Mixed Number – Whole number and a standard fraction; more than 1 whole; examples $4\frac{1}{2}$, $2\frac{3}{4}$

****A fraction bar can be read as “divided by” so $\frac{3}{4}$ is read as “3 divided by 4” (TOP # goes in the box)

TO CHANGE FROM IMPROPER TO MIXED NUMBER:

- | | |
|---|---------------------------|
| 1. Divide the top by the bottom | $\frac{9}{4}$ |
| 2. Answer is the whole number | $9 \div 4 = 2 \text{ r}1$ |
| 3. Put the remainder over the divisor (denominator) | $\frac{1}{4}$ |

TO CHANGE FROM MIXED NUMBER TO IMPROPER:

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|---|-------------------|
| 1. Multiply the denominator by the whole number | $6 \times 2 = 12$ |
| 2. Add the numerator to the answer | $12 + 1 = 13$ |
| 3. Put the new number over the original denominator | $\frac{13}{2}$ |

TO SIMPLIFY FRACTIONS (Simplified fractions have NO common factors except 1)

1. Change all improper fractions to mixed numbers (above) $\frac{5}{4}$ becomes $1\frac{1}{4}$
2. Divide out all common factors out of the top and bottom. $\frac{10}{24}$ both have a common factor of 2. Divide each by 2.
 $\frac{10}{24}$ becomes $\frac{5}{12}$

TO WRITE EQUIVALENT FRACTIONS:

1. Example: $\frac{3}{5} \times \frac{4}{4} = \frac{12}{20}$ $\frac{3}{5} = \frac{12}{20}$ Multiply or Divide by 1 ($\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, $\frac{5}{5}$, $\frac{6}{6}$...)
 $\frac{3}{5}$ was multiplied by 1 ($\frac{4}{4}$) so it remains the same amount.

To ADD or SUBTRACT Fractions *FIND* a common denominator

1. Convert to equivalent fractions in common denominator form $\frac{1}{5} + \frac{2}{3} =$
The common denominator is 15. $\frac{1}{5}(\frac{3}{3}) = \frac{3}{15}$ AND $\frac{2}{3}(\frac{5}{5}) = \frac{10}{15}$
2. Add or Subtract the numerators (tops) $\frac{3}{15} + \frac{10}{15} = \frac{3+10}{15} = \frac{13}{15}$
3. Leave the Denominators (bottoms) alone
4. SIMPLIFY if necessary

To MULTIPLY Fractions *1st CONVERT* to improper fraction form

1. MAKE SURE the fractions are in improper form $2\frac{1}{2} \times \frac{3}{4} = \frac{5}{2} \times \frac{3}{4} =$
2. MULTIPLY across both the numerators and denominators $\frac{5 \times 3}{2 \times 4} = \frac{15}{8}$
3. SIMPLIFY if necessary $1\frac{7}{8}$

To Divide Fractions *1st CONVERT* to improper fraction form

1. MAKE SURE the fractions are in improper form $5\frac{1}{2} \div \frac{5}{8} = \frac{11}{2} \div \frac{5}{8} =$
2. Flip the second fraction to its RECIPROCAL $\frac{11}{2} \div \frac{8}{5}$
3. Change the sign to MULTIPLICATION $\frac{11}{2} \times \frac{8}{5}$
4. Follow MULTIPLICATION Rules (multiply tops and bottoms) $\frac{11 \times 8}{2 \times 5} = \frac{88}{10}$
5. SIMPLIFY if necessary $8\frac{4}{5}$