Fractions

Knowledge Organiser

Key Vocabulary

- numerator
- denominator
- proper fraction
- improper fraction
- factor
- highest common multiple
- lowest common multiple
- equivalents
- common numerator
- common denominator
- decimal equivalent
- simplify
- simplest form
- mixed number
- whole number
- mixed number

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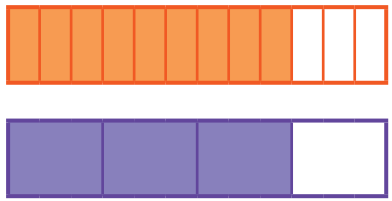
Simplify Fractions

$\frac{9}{12}$

Factors of 9:
1, **3**, 9

Factors of 12:
1, 2, **3**, 4, 6, 12

$\frac{9}{12} \overset{\div 3}{=} \frac{3}{4}$



Compare and Order Fractions

Use the Common Denominator

Multiples of 5:
5, 10, **15**

$\frac{3}{5} \square \frac{2}{3}$

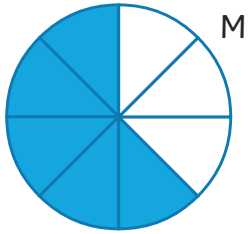
Multiples of 3:
3, 6, 9, 12, **15**

$\frac{3}{5} \overset{\times 3}{=} \frac{9}{15}$

$\frac{9}{15} < \frac{10}{15}$

$\frac{2}{3} \overset{\times 5}{=} \frac{10}{15}$

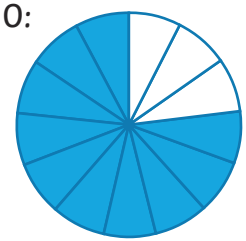
Use the Common Numerator

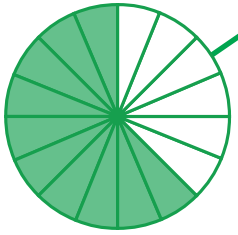


Multiples of 5:
5, **10**, 15

$\frac{5}{8} \square \frac{10}{13}$

Multiples of 10:
10, 20

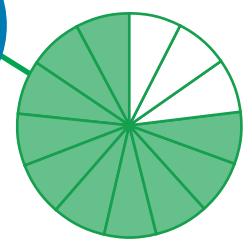




$\frac{5}{8} \overset{\times 2}{=} \frac{10}{16}$

$\frac{10}{16} < \frac{10}{13}$

$\frac{10}{13} = \frac{10}{13}$



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Adding and Subtracting Proper Fractions

Same Denominators

$\frac{4}{7}+\frac{2}{7}=\frac{6}{7}$

$\frac{8}{11}-\frac{3}{11}=\frac{5}{11}$

Different Denominators

$\frac{2}{7}+\frac{3}{5}$

Multiples of 7: 7, 14, 21, 28, **35**
Multiples of 5: 5, 10, 15, 20, 25, 30, **35**

$\frac{2}{7}=\frac{10}{35}, \frac{3}{5}=\frac{21}{35}$

$\frac{10}{35}+\frac{21}{35}=\frac{31}{35}$

$\frac{9}{10}-\frac{1}{4}$

Multiples of 10: 10, **20**
Multiples of 4: 4, 8, 12, 16, **20**

$\frac{9}{10}=\frac{18}{20}, \frac{1}{4}=\frac{5}{20}$

$\frac{18}{20}-\frac{5}{20}=\frac{13}{20}$

Multiplying Proper Fractions

Multiplying Fractions by Fractions

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

Multiplying Fractions by Whole Numbers

$\frac{2}{5}\times 3 \rightarrow$

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

$\frac{2}{5}\times\frac{3}{1}=\frac{6}{5}=1\frac{1}{5}$

Adding and Subtracting Mixed Numbers

Add or subtract the whole numbers and fractions separately.

$2\frac{2}{5}+1\frac{3}{10}$

$2+1=3$

$\frac{2}{5}+\frac{3}{10}=\frac{4}{10}+\frac{3}{10}=\frac{7}{10}$

$3+\frac{7}{10}=3\frac{7}{10}$

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

$2-1=1$

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

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

Convert the mixed numbers to improper fractions.

$2\frac{2}{5}+1\frac{3}{10}$

$2\frac{2}{5}=\frac{12}{5}$ $\quad 1\frac{3}{10}=\frac{13}{10}$

$\frac{12}{5}+\frac{13}{10}=\frac{24}{10}+\frac{13}{10}=\frac{37}{10}$

$\frac{37}{10}=3\frac{7}{10}$

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

$2\frac{1}{2}=\frac{5}{2}$ $\quad 1\frac{1}{4}=\frac{5}{4}$

$\frac{5}{2}-\frac{5}{4}=\frac{10}{4}-\frac{5}{4}=\frac{5}{4}$

$\frac{5}{4}=1\frac{1}{4}$

Dividing Fractions by Whole Numbers

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

Multiplication and division are the inverse of one another so:

$\div 2$ is the same as $\times \frac{1}{2}$

$\frac{2}{5}\times\frac{1}{2}=\frac{2}{10}$

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