

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

Simplify Fractions

$$\frac{9}{12}$$

Factors of 9:
1, 3, 9

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

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



Compare and Order Fractions

Use the Common Denominator



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

$$\frac{3}{5} = \frac{\square}{15}$$

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

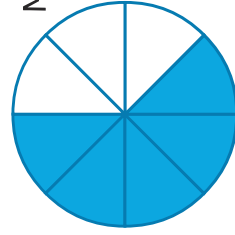
$$\frac{3}{5} = \frac{9}{15}$$

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

$$\frac{2}{3} = \frac{10}{15}$$



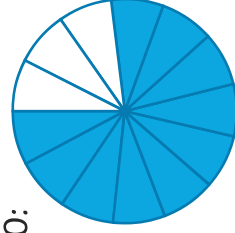
Use the Common Numerator



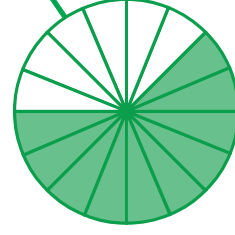
Multiples of 5:
5, **10**, 15

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

Multiples of 10:
10, 20

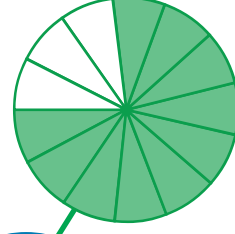


$$\frac{5}{8} = \frac{10}{16}$$



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

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



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

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

Multiplying Fractions by Whole Numbers



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



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

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

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.

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

$$2\frac{2}{5} = \frac{12}{5}$$

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

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

$$1\frac{3}{10} = \frac{13}{10}$$

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

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

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

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

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

Dividing Fractions by Whole Numbers

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

Multiplication and division are the inverse of one another so:

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

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