

# Fractions

# Knowledge Organiser

## Key Vocabulary

## Simplify Fractions

## Compare and Order Fractions

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

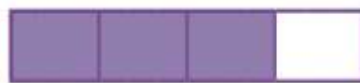
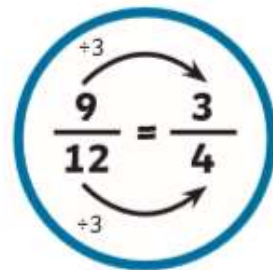
whole number

mixed number



Factors of 9:  
1, 3, 9

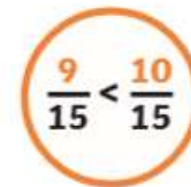
Factors of 12:  
1, 2, 3, 4, 6, 12



### Use the Common Denominator



Multiples of 5:  
5, 10, 15



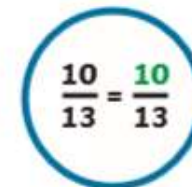
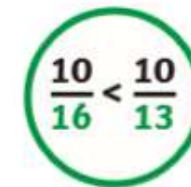
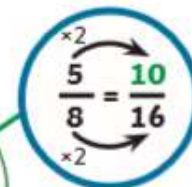
Multiples of 3:  
3, 6, 9, 12, 15



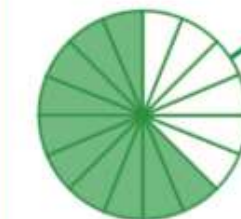
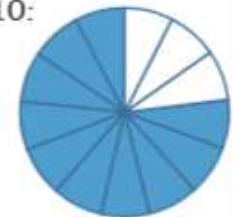
### Use the Common Numerator



Multiples of 5:  
5, 10, 15



Multiples of 10:  
10, 20




# Fractions


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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

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

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

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

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

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

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

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


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


## 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.

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

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

$$2 + 1 = 3$$

$$2 - 1 = 1$$

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

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

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

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

### Convert the mixed numbers to improper fractions.

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

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

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

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

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

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

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

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

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

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

## 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  $\times \frac{1}{2}$

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

