Fraction	Part of a whole	
Numerator	the number on the top of a fraction	$\frac{Numerator}{Denominator}$
Denominator	the number on the bottom of a fraction	
Equivalent Fractions	Fractions which have the same value but look different	e.g. $\frac{1}{2} = \frac{3}{6} = \frac{10}{20}$
Simplifying Fractions	Divide numerator and denominator by HCF	e.g. $\frac{24}{30} = \frac{4}{5}$
Fraction of an Amount	Amount divided by the denominator then multiplied by the numerator.	e.g. $\frac{5}{7}\ of\ 42$ $42 \div 7 \times 5 = 30$
Mixed Number	A number made from integer and fraction parts	e.g. $1\frac{3}{8}$
	Before multiplying, dividing, adding or subtracting, always change mixed numbers into Improper fractions	
Improper Fraction	A fraction with a numerator bigger than the denominator	$e.g\ \frac{11}{3}$
Compare Fractions	Write them with a common denominator	
Unit Fraction	Has a numerator of 1	e.g. $\frac{1}{6}$
Reciprocal	The reciprocal of a number is one divided by the number.	e.g. reciprocal of 7 is $\frac{1}{7}$
	Dividing by a number is the same as multiplying by its reciprocal	e.g. ÷2 is the same as $\times\frac{1}{2}$
Multiply Fractions	Multiply the numerators and multiply the denominators.	e.g. $\frac{6}{7} \times \frac{4}{5} = \frac{6\times4}{7\times5} = \frac{24}{35}$
Divide Fractions	Flip the second fraction (find the reciprocal). Change the divide to a multiply. Multiply the fractions.	e.g. $\frac{4}{7} \div \frac{5}{6} = \frac{4}{7} \times \frac{6}{5} = \frac{24}{35}$
Add or Subtract Fractions	Write as fractions with a common denominator. Add or subtract the numerators.	e.g. $\frac{2}{8} + \frac{1}{6} = \frac{6}{24} + \frac{4}{24} = \frac{10}{24} = \frac{5}{12}$

Convert between Improper and Mixed fractions	**Divide the numerator by the denominator. The answer gives the whole number part. The remainder goes on top of the fraction, with the same denominator.**	**e.g.** $\frac{43}{6} = 7\frac{1}{6}$
Convert between Mixed and Improper fractions	Multiply the denominator by the whole number part and add the numerator. Put the answer over the numerator.	e.g. $7\frac{1}{6} = \frac{6\times7+1}{6} = \frac{43}{6}$

Fractions and recurring decimals

Terminating decimals are where the number stops after a certain decimal places.

Recurring decimals have a pattern of numbers which repeat forever, e.g. $\frac{1}{3} = 0.333\ldots.\ or\ 0.143143143\ldots.$

- To convert a fraction to a recurring decimal, use the bus-stop division method.; e.g. **Write $\frac{8}{33}$ as a recurring decimal.**

$$33\overline{)8.0^{14}0^{3}0^{14}0^{8}00} \quad 0.2\ 4\ 2\ 4\ldots$$

$\frac{8}{33} = 0.\dot{2}\dot{4}$

- To convert a recurring decimal to a fraction, it is important to notice where the pattern in a recurring decimal starts.

Some of the basic ones can be converted by following the steps below:

EXAMPLE: **Write $0.\dot{2}3\dot{4}$ as a fraction.**

1) Name your decimal — I've called it r. — Let $r = 0.\dot{2}3\dot{4}$
2) Multiply r by a power of ten to move it past the decimal point by one full repeated lump — here that's 1000: — $1000r = 234.\dot{2}3\dot{4}$
3) Now you can subtract to get rid of the decimal part:

$$\begin{array}{rr} 1000r = & 234.\dot{2}3\dot{4} \\ -\ \ r = & 0.\dot{2}3\dot{4} \\ \hline 999r = & 234 \end{array}$$

4) Then just divide to leave r, and cancel if possible: — $r = \frac{234}{999} = \frac{26}{111}$

An example of a trickier recurring decimal is below:

EXAMPLE: **Write $0.1\dot{6}$ as a fraction.**

1) Name your decimal. — Let $r = 0.1\dot{6}$
2) Multiply r by a power of ten to move the non-repeating part past the decimal point. — $10r = 1.\dot{6}$
3) Now multiply again to move one full repeated lump past the decimal point. — $100r = 16.\dot{6}$
4) Subtract to get rid of the decimal part:

$$\begin{array}{rr} 100r = & 16.\dot{6} \\ -\ \ 10r = & 1.\dot{6} \\ \hline 90r = & 15 \end{array}$$

5) Divide to leave r, and cancel if possible: — $r = \frac{15}{90} = \frac{1}{6}$

Linked Prior Topics
Place value, Multiplication facts, Division facts, Solving liner equations

Vocabulary
Fraction, decimal, tenths, hundredths, thousandths, recurring; terminating

Linked Future Topics
Comparing fractions, decimals and percentages