

Decimals and Fractions

Essential information

Fractions are rational numbers; that is, numbers of the form $\frac{a}{b}$ where a and b are integers (whole numbers) and $b \neq 0$

Decimals are the extension of whole numbers into tenths, hundredths, thousandths, etc.
For example, 5.4 means $5\frac{4}{10}$ (or $5\frac{2}{5}$); 0.23 means $\frac{23}{100}$, etc.

Equivalence of fractions and decimals see examples shown in the table opposite.

<i>Fraction</i>	<i>Decimal</i>
$\frac{1}{10}$	0.1
$\frac{1}{8}$	0.125
$\frac{1}{5}$	0.2
$\frac{1}{4}$	0.25
$\frac{1}{3}$	$0.\dot{3}$
$\frac{1}{2}$	0.5
$\frac{2}{3}$	$0.\dot{6}$
$\frac{3}{4}$	0.75
1	1.0

Equivalent fractions are different forms of the same fraction, obtained by multiplying or dividing the numerator and denominator by the same factor.

For example, $\frac{1}{2} = \frac{5}{10} = \frac{23}{46} = \frac{250}{500}$, etc.

The **simplest form** is where there are no common factors in the numerator and denominator.

For example, $\frac{1}{2}$ or $\frac{2}{7}$ or $\frac{3}{20}$

Estimation

This is when we estimate the answer to a calculation by making appropriate approximations.

For example,
$$\frac{21.5 \times 9.7}{41.4} \approx \frac{20 \times 10}{40} = 5$$

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Significant figures

This is when a number is approximated to a specified number of important (significant) figures. The significance of a digit is dependent on the place value of that digit; hence we count significant figures from left to right (from greater to lesser place values) starting from the first non-zero digit.

For example, 11.747 to 1 significant figure is 10
 2 significant figures is 12
 3 significant figures is 11.7
 4 significant figures is 11.75

Decimal places

This is when a number is given to a specified number of decimal places; decimal places are counted after (to the right of) the decimal point.

For example, 11.747 is 11.7 to 1 decimal place
 11.75 to 2 decimal places
 0.0749 is 0.1 to 1 decimal place
 0.07 to 2 decimal places
 0.075 to 3 decimal places