Mathematics	Developing Number	Year 8	Term 4

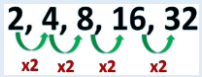
Sequences

Term – each number or object in a sequence.

Linear sequence – a number pattern that increases or decreases by a **common difference** each time.

Common difference – the amount a linear sequence increases or decreases by.
e.g. 1, 5, 9, 13… has a common difference of +4.

Geometric sequence – a number pattern made by multiplying by the same value each time.
They are non-linear.



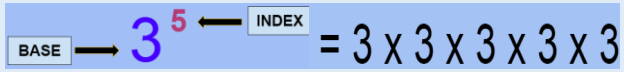
Ascending – smallest to largest.

Descending – largest to smallest.

Indices

Index - a number which tells you how many times a number is used in a multiplication *e.g.* $2^3 = 2 \times 2 \times 2$

Base - the number that gets multiplied when using an index.



Laws of Indices

$a^m \times a^n = a^{m+n}$

$\frac{a^m}{a^n} = a^m \div a^n = a^{m-n}$

$(a^m)^n = a^{m \times n}$

Examples

$3^8 \times 3^2 = 3^{10}$

$\frac{3^8}{3^2} = 3^8 \div 3^2 = 3^6$

$(3^8)^2 = 3^{16}$

FDP Equivalences

Tenth = $\frac{1}{10} = 0.1 = 10\%$

Hundredth = $\frac{1}{100} = 0.01 = 1\%$

Half = $\frac{1}{2} = 0.5 = 50\%$

Third = $\frac{1}{3} = 0.333333\ldots = 0.\dot{3} = 33.\dot{3}\%$

Quarter = $\frac{1}{4} = 0.25 = 25\%$

Fifth = $\frac{1}{5} = 0.2 = 20\%$

To change a percentage to a decimal, **divide it by 100**.

Examples
5% = 0.05

17% = 0.17

104% = 1.04