

SUBJECT: Maths

UNIT:

Year 8 Number

SANDHILL VIEW

EST. 1953



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Key Concept

Standard Form

We use standard form to write a very large or a very small number in scientific form.

Must be $\times 10^b$
 b is an integer

$$a \times 10^b$$

Must be $1 \leq a < 10$

Examples

Write the following in **standard form**:

- 1) $3000 = 3 \times 10^3$
- 2) $4580000 = 4.58 \times 10^6$
- 3) $0.0006 = 6 \times 10^{-4}$
- 4) $0.00845 = 8.45 \times 10^{-3}$

Key Concepts

Rounding

Digits are the individual components of a number.

Integers are whole numbers.

Rounding rules:

A value of 5 to 9 rounds the number up.

A value of 0 to 4 keeps the number the same.

Key Words

Estimate: Round each value to 1 significant figure, then complete the calculation using the rounded values.

Multiplier: A percentage wrote as a decimal, which can then be multiplied by an amount.

Integer: A whole number, a number with no decimal or parts of.

Key Concept

FDP

A **fraction** is a numerical quantity that is not a whole number.

A **decimal** is a number written using a system of counting based on the number 10.

Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
8	7	6	5	.	4	3 2

A **percentage** is an amount out of 100.

Key Concept

Percentages

Calculating percentages of an amount without a calculator:

10% = divide the value by 10

1% = divide the value by 100

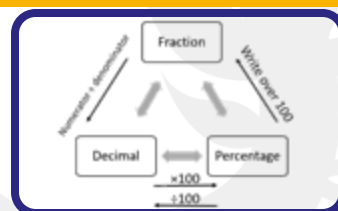
Calculating percentages of an amount with a calculator:

Amount $\times$ percentage as a decimal

Key Concept

Percentage increase/decrease:

Amount $\times (1 \pm \text{percentage as a decimal})$



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Key Concept

Laws of Indices

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

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

$$(a^m)^n = a^{mn}$$

Examples

$$1) a^6 \times a^4 = a^{6+4} = a^{10}$$

$$2) a^6 \div a^4 = a^{6-4} = a^2$$

$$3) (a^6)^4 = a^{6 \times 4} = a^{24}$$

Key Concept

Types of Sequence

Sequence as pictures:



Linear sequence:

4, 7, 10, 13, 16, ...



Fibonacci sequence:

(add the previous two terms)

1, 1, 2, 3, 5, 8, ...

Key Words

Linear: A sequence that has a term to term rule with a common difference. When graphed, is a straight line

Equation: A mathematical statement that shows that two expressions are equal.

Indices: These are the squares, cubes and powers.

Key Concepts

Inequalities show the **range** of numbers that satisfy a rule.

$x < 2$ means x is less than 2

$x \leq 2$ means x is less than or equal to 2

$x > 2$ means x is greater than 2

$x \geq 2$ means x is greater than or equal to 2

On a **number line** we use circles to highlight the key values:

○ is used for less/greater than

● is used for less/greater than or equal to

Key Concept

Expanding Double Brackets

To multiply out brackets, we use the grid method.

Examples

$$(x - 2)(x + 9)$$

x	x	-2
x	x^2	$-2x$
$+9$	$+9x$	-18

$$= x^2 - 2x + 9x - 18 = x^2 + 7x - 18$$