



Your teacher will tell you which topic you should revise. Read and learn all the information in the topic, ready for a Quiz in lesson.

Topic 1: Working With Numbers

Square Numbers and Roots

- Square Number - the product of a number multiplied by itself
- Square Root - a factor of a number that, when multiplied by itself, gives the original number.

Square root

$$5 \times 5 = 25$$

$$\sqrt{25} = 5$$

Order of Operations:

- Brackets
- Indices
- Division
- Multiplication
- Addition
- Subtraction

Rounding

- 4 or less let it rest, 5 or more raise the score!

Prime Factors, HCM and LCM

- A prime factor is a natural number, other than 1, whose only factors are 1 and itself.
- HCF – Highest Common Factor. The HCF of two or more numbers is the greatest factor that divides the numbers. For example, 2 is the HCF of 4 and 6.
- LCM – Lowest Common Multiple. The least common multiple is defined as the smallest multiple that two or more numbers have in common.

2 millions
6 hundred thousands
2 ten thousands
4 thousands
3 hundreds
4 tens
5 ones
. decimal point
2 tenths
3 hundredths
4 thousandths
5 ten thousandths

Square Numbers

1^2

1

$1 \times 1 = 1$

2^2

1	2
3	4

$2 \times 2 = 4$

3^2

1	2	3
4	4	6
7	8	9

$3 \times 3 = 9$

4^2

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

$4 \times 4 = 16$

5^2

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

$5 \times 5 = 25$

6^2

1	2	3	4	5	6
7	8	9	10	11	12
13	14	15	16	17	18
19	20	21	22	23	24
25	26	27	28	29	30
31	32	33	34	35	36

$6 \times 6 = 36$

PlanBee

Order of Operations

B	Brackets	$10 \times (4 + 2) = 10 \times 6 = 60$
I	Indices	$5 + 2^2 = 5 + 4 = 9$
D	Division	$10 + 6 \div 2 = 10 + 3 = 13$
M	Multiplication	$10 - 4 \times 2 = 10 - 8 = 2$
A	Addition	$10 \times 4 + 7 = 40 + 7 = 47$
S	Subtraction	$10 + 2 - 3 = 5 - 3 = 2$

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Topic 2: Basic Algebra

Term – a part of an expression, equation or formula. Terms are separated by + and – signs.

Expression – a collection of numbers, letters, symbols and operators representing a number or amount. For example, $x^2 - 3x + 4$
Variable – a quantity that may take many values.

Substitute – replace a variable in an expression with a number and work it out. For example, if we substitute 4 for t in $3t + 5$ the answer is 17 because $3 \times 4 + 5 = 17$.

Coefficient – a number written in front of a variable in an algebraic term to show multiplication; for example, in $8p$, 8 is the coefficient of p and means 8 times p.

Like terms – terms in which the variables are identical, but have different coefficients; for example, $2ax$ and $5ax$ are like terms but $5xy$ and $7y$ are not like terms as they contain different letters.

Simplifying expressions: In the expression $2a + b + 3a + b$ you need to collect the like terms. $2a + 3a = 5a$ $b + b = 2b$ so the answer is $5a + 2b$

More examples: $a + a + a = 3a$ $3x + 7x = 10x$ $9t - 4t = 5t$ $2xy + 5xy - 3xy = 4xy$

Substitution example: to work out the value of this expression when $a = 8$ and $b = 4$

a) $5a$ $5a$ means $5 \times a = 5 \times 8 = 40$

b) $a + 3b$ $a + 3b$ means $a + (3 \times b) = 8 + (3 \times 4) = 20$

c) $a^2 - 2b$ $a^2 - 2b$ means $(a \times a) - (2 \times b) = (8 \times 8) - (2 \times 4) = 64 - 8 = 56$

Formula example: a rule for calculating the cost of hiring a hall for a wedding is £200 plus £6 per person. Written as a formula: taking c = cost in pounds and n = number of people. $C = 200 + 6n$

Expanding brackets examples: expressions such as $2(g+4)$ and $5n(n+3)$ can be expanded by multiplying them out. See images

Factorising: is the opposite of expanding. See images

$$\begin{array}{l} \text{Divide '6' out of} \\ \text{each term} \\ 6a + 18 = \\ = 6(a + 3) \end{array}$$

$$\begin{array}{l} \text{Divide 'a' out of} \\ \text{each term} \\ a^2 + 4a = \\ = a(a + 4) \end{array}$$

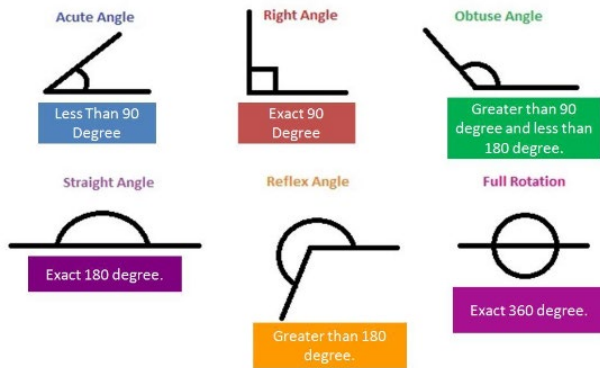
$$\begin{array}{l} \text{Expanding} \\ 2(g + 4) \\ = 2g + 8 \\ \text{Multiply in} \end{array}$$

$$\begin{array}{l} \text{Expanding} \\ 5n(n + 3) \\ = 5n^2 + 15n \\ \text{Multiply in} \end{array}$$



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Topic 3: Calculating Angles



- The sum of angles in a quadrilateral is 360°
- The sum of angles in a triangle is 180°
- The sum of angles around a point is 360°
- Vertically opposite angles are equal

Angles in a Pentagon

$n = \text{number of sides}$
 $n = 5$

$$(n - 2) \times 180^\circ$$

$$3 \times 180^\circ = 540^\circ$$

Angle Facts

What is an angle?

An angle measures a turn

Angles are measured in degrees

$\frac{1}{4}$ turn = 90°
A right angle

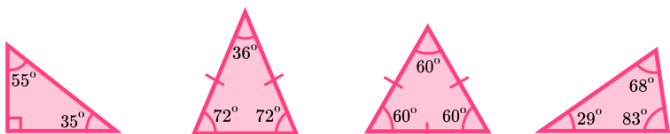
$\frac{1}{2}$ turn = 180°

1 full turn = 360°

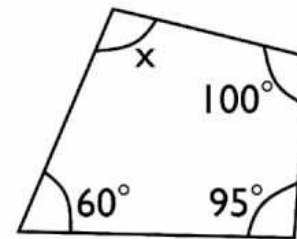
Angles in a Triangle

Angles in a triangle refers to the sum (total) of the angles at each vertex in a triangle. The sum of the interior angles of a triangle is 180°.

E.g.



- | | | | |
|---|---|---|---|
| Right angled triangle
One right angle
$90+55+35 = 180^\circ$ | Isosceles triangle
Two equal sides & angles
$72+72+36 = 180^\circ$ | Equilateral triangle
Three equal sides & angles
$60+60+60 = 180^\circ$ | Scalene triangle
All sides & angles different
$83+68+29 = 180^\circ$ |
|---|---|---|---|



Angles in a quadrilateral add up to 360°



Vocabulary	Wider Research	Apply
Square Number Square Root Prime Number Prime Factor BIDMAS Highest Common Factor (HCF) Lowest Common Multiple (LCM) Rounding Term Expression Substitute Coefficient Simplify Like Terms Expression Factorising Acute Right Angle Obtuse Reflex Quadrilateral Polygon	<p>Topic 1 https://corbettmaths.com/2012/08/11/1336/ https://corbettmaths.com/2019/09/26/square-roots-textbook-exercise/ https://www.mathsgenie.co.uk/rounding.html https://www.mathsgenie.co.uk/BIDMAS.html https://www.mathsgenie.co.uk/HCF_LCM.html</p> <p>Topic 2 https://www.mathsgenie.co.uk/simplifyingalgebra.html https://www.mathsgenie.co.uk/writing-an-expression.html https://www.mathsgenie.co.uk/expanding-and-factorising.html https://corbettmaths.com/2019/09/18/collecting-like-terms-textbook-exercise/</p> <p>Topic 3 https://corbettmaths.com/2012/08/10/angles-in-a-triangle/ https://corbettmaths.com/2013/03/17/angles-in-quadrilaterals/ https://www.bbc.co.uk/bitesize/topics/zb6tyrd/articles/zg68k7h</p>	<ol style="list-style-type: none">1. What is the first prime number?2. What is 8^2?3. What is the square root of 36?4. What is 42 as a product of its prime factors?5. What is the HCF of 21 and 35?6. What is the LCM of 12 and 28?7. What is the 10th prime number?8. Simplify $6g + 2h - 3g + 3h$9. When $p = 4$ what is $7p + 2$?10. Expand $6(w + 5)$11. Expand $a(a - 4)$12. Factorise $6m + 12t$13. Expand $(m + 3)(m + 2)$14. Expand $(n + 10)(n - 7)$15. Draw and label an angle of 20°16. Draw and label an angle of 100°17. Draw and label an angle of 178°18. Find the size of angle x 