

Maths Knowledge Organiser

YEAR 7 – PART 4

Key Language

1	Ascending	Order numbers from smallest to largest
2	Descending	Order numbers from largest to smallest
3	Difference	The result of subtracting one number from another. E.g. the difference between -2 and 3 is 5
4	Zero pair	Two numbers that combine to make zero. E.g. 1 and -1 make 0
5	Product	When you multiply two or more numbers the answer is the product. e.g. $5 \times 7 = 35$ 35 is the product.
6	Partition	To split into its component parts. E.g. 6 is made from 5 and 1 .
7	Inverse operations	The opposite operation. E.g. the inverse of adding is subtracting.
8	Evaluate	To evaluate an expression means to find a numerical value for it, to 'work it out'
9	Simplify	To simplify an expression means to remove brackets, unnecessary terms and numbers To simplify a fraction to its simplest form means to reduce the numerator and denominator in a fraction to the smallest numbers possible
10	Estimate	Find an approximate answer to a calculation (normally by rounding numbers to 1 significant figure)
11	Calculate	To do a sum either with or without a calculator.
12	Directed numbers	Directed numbers have a direction as well as a size. E.g. -7 , $+1$
13	Expression	Expressions can contain letter and number terms along with symbols e.g. $7 + 3$, $a^2 + 2b$
14	Equation	A statement showing two expressions are equal. The expressions are linked with a $=$ sign e.g. $7 - 2 = 4 + 1$, $5x = 10$
15	Solution	A value that can take place of a variable to make an equation true. e.g. $x + 5 = 7$, when we put x as 2 it makes the equation true
16	Solve	find the solution of an equation.
17	Balance	When we balance an equation we do the same operations on both sides of the equal sign.



Know

Fractions

$$\frac{3}{5}$$

← numerator
← denominator

$$2\frac{1}{2} \rightarrow \frac{5}{2}$$

Mixed fraction Improper fraction

To add or subtract fractions the denominators must be the same. If they are not you will have to find equivalent fractions.

Equivalent fractions have the same value. Eg $\frac{3}{6} = \frac{1}{2} = \frac{5}{10}$

Mixed fractions contain a whole number and a fraction.

Improper fractions have a numerator greater than the denominator.

Powers and roots

10^4 means 10 to the **power** 4 which is $10 \times 10 \times 10 \times 10$.

The **Square** of a number is the product of the number with itself.

E.g. the square of 5 is $5 \times 5 = 25$

Square root is a number whose square is equal to a given number. Erg square root of 25 is 5 because the square of 5 is 25.

$\sqrt{\quad}$ means square root. On a calculator the button is



Cube is the result of multiplying to the power 3. Four cubed is $4 \times 4 \times 4 = 64$. This can be written as 4^3 .

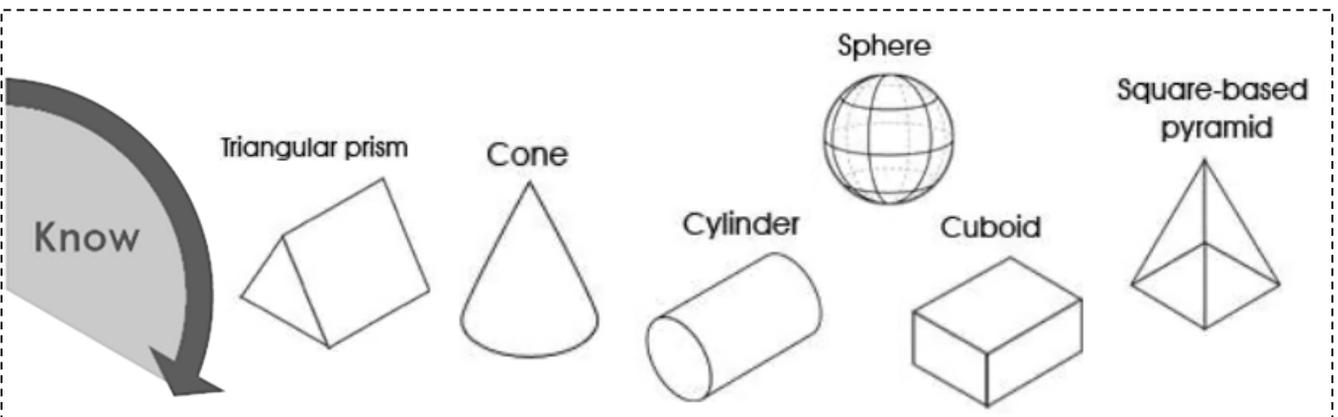
The symbol $\sqrt{\quad}$ is called a **radical**.

Exponent is another word for index or power

E.g. $n^4 \rightarrow 4$ is the exponent

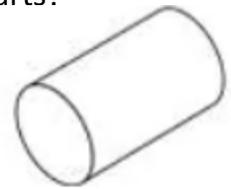
Square and square root are the **inverse** of each other.

Solids

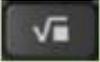




1. Which part of this is the denominator? $\frac{2a}{5b}$
2. Put these numbers in descending order: -3, 9, 2, -7, 8.
3. What is the inverse operation of squaring a number?
4. What number makes a zero pair with -2.1?
5. What is 11^{2^2} ?
6. What is the square root of 400?
7. What is it called when you split a number into its component parts?
8. Which of these fractions is equivalent to $\frac{3}{4}$? $\frac{4}{5}, \frac{2}{4}, \frac{9}{12}$ or $\frac{3}{40}$?
9. Solve $x + 9 = 12$
10. Which of these is an equation? $2x$, $a + a + a$, $4a = 12$
11. Name this solid. 
12. What does a directed number tell you?
13. Which button do you press on the calculator to find the square root of a number?
14. How many faces does a triangular prism have?
15. How many edges does a sphere have?
16. What do we call this? Is it an equation or an expression? $a^2 + 2b$
17. What do we do to balance an equation?
18. How accurately do we round a number when we estimate?
19. Estimate the answer to $83.1 - 8.9$.
20. Write $5 \times 5 \times 5 \times 5$ using an exponent.
21. How can you tell if a fraction is an improper fraction?
22. What is the product of 6 and 2?
23. What is the difference between 6 and 2?
24. What is the difference between 6 and -2?
25. What do you need to check before adding fractions?



ANSWERS

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|---|---|
| <ol style="list-style-type: none"> 1. 5b 2. 9, 8, 2, -3, -7 3. Square root. 4. 2.1 5. 121 6. 20 7. Partition 8. $\frac{9}{12}$ 9. $x = 3$ 10. $4a = 12$ 11. Cylinder 12. Size and direction 13. $\sqrt{\quad}$ or  14. 5 | <ol style="list-style-type: none"> 15. 0 16. Expression 17. Do the same to both sides. 18. 1 significant figure. 19. $80 - 9 = 71$. 20. 5^4 21. The numerator is bigger than the denominator. 22. 12. 23. 4 24. 8 25. The denominators are the same. |
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