## Maths Knowledge Organiser <br> YEAR 7 Core/Higher- PART 1

Key Language

| 1 | Sequence | a succession of terms formed according to a rule |
| :---: | :---: | :---: |
| 2 | Terms | the numbers in a sequence |
| 3 | Term to term rule | lets you find the next term in a sequence if you know the previous term |
| 4 | Difference | the numerical difference between two numbers |
| 5 | Linear sequence | a number pattern which increases (or decreases) by the same amount each time. $\text { E.G. } 3,7,11,15 \ldots \text { or } 10,8,6,4 \ldots$ |
| 6 | Common difference. | The amount a linear sequence increases or decreases by. |
| 7 | Non-linear sequence | a number pattern which does not increases (or decreases) by the same amount. |
| 8 | Geometric | A sequence that multiplies (or divides) by the same value each time. E.g. $3,6,12,24,48$... or $40,20,10,5,2.5$... |
| 9 | Fibonacci | Formed by adding the previous two terms. Eg. $1,1,2,3,5,8,13 . .$. |
| 10 | Ascending | means to go up in value |
| 11 | Descending | means to go down in value |
| 12 | Square | multiply a number by itself e.g. The square of 5 is $5 \times 5=5^{2}=25$ |
| 13 | Inverse operations | the opposite operations e.g. the inverse of multiplication is division |
| 14 | Commutative | where a calculation can be done in any order to give the same result e.g. $5 \times 4=4 \times 5 \quad 6+3=3+6$ |
| 15 | Substitute | where we replace a letter with a number. |
| 16 | Evaluate | means to calculate the value of. |
| 17 | Equation | a statement that two things are equal |
| 18 | Consecutive numbers | numbers which follow in order without gaps. e.g. 12, 13, 14... |
| 19 | Unknown | another word for a variable, a value we don't know yet. |
| 20 | Solve | find the value of the unknown |
| 21 | Equality | having the same value <br> e.g. 1 minute $=60$ seconds <br> Know |
| 22 | Equivalent $\equiv$ | means of equal value <br> e.g. $2 x+3 x \equiv 5 x$ is true for all values of $x$ |

Vertical axis is
Coefficient Variable



Expressions are made up of terms which may include letters, number and operators
Variable is a quantity that can take on a range of values, often denoted by a letter, $x, y$ etc.
Coefficient is the number in front of a variable
Constant is a number or quantity that does not vary
Equation is a statement that two things are equal, it contains expressions on both sides of the equal sign. e.g. $5=2 x+1$.
We solve equations by doing the inverse operation
Terms in algebra are single numbers, variables or product of several numbers and variables.
Like terms contain the same variable e.g. 4a and - 2 a or 8 and 13 or $9 \mathrm{~m}^{2}$ and $3 \mathrm{~m}^{2}$ Unlike terms do not contain the same variable e.g. $4 y$ and $3 x$ are unlike terms The Index of a number tells you how many times to multiply the number by itself e.g. $y^{3}$ means $y \times y \times y$.

We say $y^{3}$ as " $y$ to the power of 3 " or $y$ cubed. Indices is the plural of index

Functions
INPUTx


Linear functions result in a straight line graph

## PRACTICE QUESTIONS

1. What is $6^{2}$ ?
2. Write down the next three consecutive numbers after 20.
3. What is the difference between 3 and 10 ?
4. What is the product of 3 and 10 ?
5. What type of sequence is this? $5,15,45,135$...
6. What type of sequence is this? $5,11,16,27,43$..
7. What type of sequence is this? $11,8,5,2$...
8. What does substitute mean in maths?
9. What letter do we use for the vertical axes?
10. Write these numbers in ascending order.: $3,8,1,5,12$
11. What is an equation?
12. What symbol do we use for equivalent?
13. What is the inverse operation to division?
14. What is the index in $t^{5}$ ?
15. Which part of this is the coefficient of $x$ ? $6 x+2$.
16. Which two of these terms are like terms? $5 x, 5 y, 5,4 x, x^{5}$.
17. What do we call a number that goes into a function machine?
18. What type of functions produce a straight line graph?
19. What does commutative mean?
20. Is $10-8$ commutative?
21. What is a variable?
22. What does equality mean?
23. How do we solve equations?
24. What is the term to term rule for this sequence: $6,11,16,21 \ldots$
25. What is the term to term rule for this sequence: $81,27,9,3,1$...

ANSWERS

1. 36
2. $21,22,23$
3. 3
4. 30
5. Geometric (non-linear)
6. Fibonacci type (non- linear)
7. Linear
8. Replace a letter with a number
9. $Y$
10. $1,3,5,812$
11. a statement that two things are equal
12. $\equiv$
13. Multiplication
14.5
15.6
14. $4 x$ and $5 x$
15. Input
16. Linear
17. where a calculation can be done in any order to give the same result
18. No as $10-8=2$ but $8-10=-2$
19. a quantity that can take on a range of values
20. Having the same value.

23 By doing the inverse operation.
24. Add 5
25. Divide by 3

