



**Whitworth Park  
Academy**

# **Maths Department**

## **Summer 2020**

**Welcome Year 6**

**Class of 2020 - 2025**

**Name:** \_\_\_\_\_

**Primary School:** \_\_\_\_\_

## Maths Word Search

This word search contains twenty-five words related to Maths.

How many can you find?

C	P	R	L	M	O	D	E	N	O	C	S	A	Q	Q
T	S	F	Z	E	H	D	X	T	B	V	E	N	F	A
A	E	L	X	L	E	H	E	Q	U	A	T	I	O	N
L	L	H	D	C	F	H	Q	I	M	D	A	Q	N	F
L	G	D	I	R	G	R	A	P	H	D	N	R	N	E
Y	N	M	V	I	N	R	A	N	G	E	I	R	A	Q
W	A	J	I	C	T	R	U	C	H	A	D	K	E	U
L	X	G	D	M	S	I	R	P	T	C	R	N	M	A
F	D	M	E	I	P	R	M	B	E	I	O	T	G	L
N	O	I	T	R	O	P	O	R	P	F	O	V	G	T
F	A	S	Q	U	A	R	E	E	B	U	C	N	J	T
D	T	U	E	V	M	E	D	I	A	N	A	G	S	L
I	A	U	A	E	R	A	P	Y	R	A	M	I	D	J
L	D	V	C	L	T	C	A	R	T	B	U	S	J	L
J	E	Y	C	Y	T	I	L	I	B	A	B	O	R	P

## Colour by Number

### Instructions


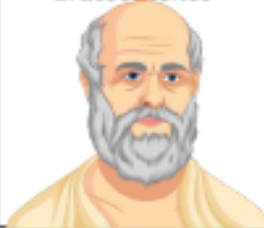

Calculate each answer then use the key to shade each section in the correct colour.

Red	0-100
Yellow	101-200
Orange	201-300
Blue	301 or more

## Famous Mathematicians

Your task is to find out about six famous mathematicians. You might want to think about:

- what their full name was and how long they were alive for;
- when they were alive;
- what they are famous for/what they discovered.

Mathematician	Fact 1	Fact 2	Fact 3
<b>Archimedes</b> 			
<b>Eratosthenes</b> 			
<b>Fibonacci</b> 			

Lovelace



Pascal



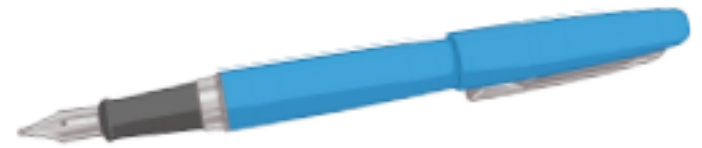
Pythagoras



## Key Terms

### Instructions

Write a definition for each key term. You may use a dictionary.



acute angle	
area	
average	
circumference	
cube number	
cube root	
diameter	
difference	
equation	
equal	
expression	
factor	

formula	
hexagon	
integer	
isosceles triangle	
length	
multiple	
obtuse angle	
octagon	
pentagon	
polygon	
prime number	
probability	
product	
quadrilateral	

radius	
reflex angle	
scalene triangle	
square number	
square root	
sum	
variable	
volume	



## The Value of Words

### Instructions

Use the key to calculate the value of each word, in pounds. The first question has been completed for you.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
50p	£1.03	£0.62	£0.15	10p	72p	22p	£0.15	£0.08	£1.21	£2.50	£1.08	42p	£0.78	£0.05	£1.65	£3.00	45p	68p	£0.18	95p	£0.27	£1.11	£1.85	£2.05	£2.88

1 NUMBER	$£0.78 + 95p + 42p + £1.03 + 10p + 45p = £3.73$
2 ALGEBRA	
3 PROBABILITY	
4 STATISTICS	
5 GEOMETRY	
6 RATIO	
7 MEASURE	
8 OPERATION	
9 ADDITION	
10 SUBTRACTION	
11 MULTIPLICATION	
12 DIVISION	

13	SUM	
14	TOTAL	
15	PRODUCT	
16	CALCULATOR	

#### Extension

- Does the longest word have the largest value?

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- Does the shortest word have the smallest value?

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- Create a mathematical word which has a bigger value than any of the words in the list.

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## The Broken Calculator

### Instructions

- Both calculators are broken and most of the buttons have fallen off.
- Using the buttons that are left over on each calculator, how could you make each of the numbers below?  
You don't have to use all the digits and you may use each number more than once.

Calculator 1				
				AC
+	+		x	
2	3			
		+	=	

### Example

How could you make 26?  
 $23 + 3 = 26$

Calculator 2				
			÷	AC
+	+		x	
1	2			
	0	+	=	

### Example

How could you make 3?  
 $120 + 20 + 2 = 3$

a	How could you make 6?	
b	How could you make 7?	
c	How could you make 12?	

a	How could you make 4?	
b	How could you make 5?	
c	How could you make 6?	
d	How could you make 10?	

## Times Table and Division Challenge

Complete each question without a calculator.

$4 \times 5$	
$9 \times 8$	
$7 \times 2$	
$12 \times 11$	
$10 \times 9$	
$13 \times 3$	
$2 \times 12$	
$4 \times 6$	
$7 \times 8$	
$2 \times 11$	
$9 \times 7$	
$11 \times 9$	
$8 \times 4$	
$12 \times 9$	
$5 \times 6$	
$7 \times 4$	
$3 \times 8$	
$9 \times 6$	
$8 \times 1$	
$0 \times 7$	

$108 \div 9$	
$72 \div 6$	
$35 \div 5$	
$40 \div 8$	
$28 \div 4$	
$66 \div 11$	
$144 \div 12$	
$36 \div 2$	
$45 \div 5$	
$99 \div 9$	
$120 \div 10$	
$84 \div 6$	
$96 \div 8$	
$48 \div 6$	
$49 \div 7$	
$21 \div 3$	
$16 \div 2$	
$12 \div 4$	
$15 \div 5$	
$60 \div 12$	

$2 \times 13$	
$3 \times 12$	
$11 \times 7$	
$6 \times 12$	
$8 \times 5$	
$5 \times 12$	
$15 \times 2$	
$3 \times 20$	
$2 \times 18$	
$3 \times 4$	
$4 \times 4$	
$0 \times 5$	
$2 \times 6$	
$3 \times 9$	
$7 \times 12$	
$13 \times 11$	
$10 \times 9$	
$15 \times 10$	
$13 \times 4$	
$2 \times 14$	

$65 \div 5$	
$2 \div 2$	
$8 \div 4$	
$25 \div 5$	
$56 \div 8$	
$77 \div 11$	
$117 \div 9$	
$132 \div 12$	
$169 \div 13$	
$156 \div 12$	
$35 \div 7$	
$42 \div 6$	
$54 \div 9$	
$63 \div 7$	
$48 \div 4$	
$30 \div 5$	
$40 \div 10$	
$88 \div 8$	
$130 \div 10$	
$121 \div 11$	

## Addition and Subtraction Challenge

Complete each question without a calculator.

$45 + 101$	
$23 + 27$	
$68 + 43$	
$112 + 45$	
$145 + 62$	
$132 + 98$	
$43 + 56$	
$98 + 35$	
$114 + 232$	
$101 + 98$	
$85 + 67$	
$42 + 55$	
$109 + 156$	
$246 + 398$	
$312 + 497$	
$458 + 984$	
$1092 + 48$	
$456 + 86$	
$549 + 290$	
$236 + 641$	
$1032 + 1067$	

$67 - 34$	
$98 - 55$	
$104 - 89$	
$256 - 87$	
$567 - 314$	
$312 - 49$	
$687 - 563$	
$981 - 607$	
$604 - 239$	
$345 - 268$	
$938 - 412$	
$656 - 437$	
$298 - 131$	
$385 - 215$	
$1085 - 617$	
$2567 - 678$	
$9875 - 567$	
$2050 - 498$	
$114 - 89$	
$262 - 119$	
$562 - 229$	

$1088 + 478$	
$2056 + 789$	
$295 + 498$	
$312 + 714$	
$896 + 747$	
$409 + 6802$	
$608 + 7897$	
$2145 + 421$	
$3987 + 318$	
$803 + 746$	
$1043 + 157$	
$952 + 986$	
$475 + 9042$	
$1037 + 2498$	
$5682 + 492$	
$632 + 1084$	
$783 + 209$	
$6013 + 549$	
$619 + 8014$	
$378 + 504$	
$409 + 656$	

$4506 - 216$	
$9997 - 658$	
$2054 - 417$	
$1081 - 804$	
$670 - 487$	
$248 - 119$	
$902 - 675$	
$9783 - 406$	
$8962 - 434$	
$786 - 387$	
$962 - 908$	
$4894 - 1394$	
$561 - 416$	
$896 - 516$	
$7845 - 2478$	
$2398 - 1304$	
$9987 - 4377$	
$9832 - 984$	
$736 - 698$	
$295 - 117$	
$8978 - 3659$	

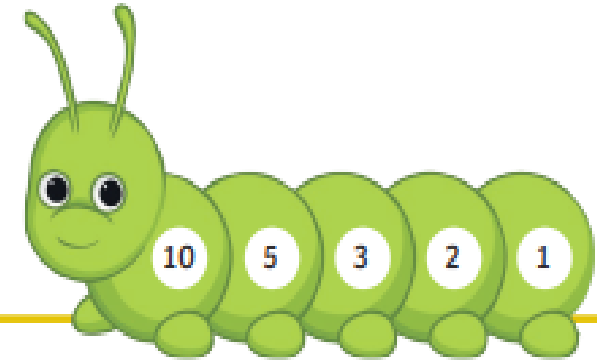
# Numberpillars

## Instructions

Your task is to find the number with the most 'links'.

## Rules

- Start with any number less than 100.
- If the number is even, then halve it.
- If the number is odd, add 1 and then halve it.
- Carry on until you get to the number 1.



## For example: 5 links

- Start with any number less than 100:
- If the number is even, then halve it:
- If the number is odd, add 1 and then halve it:
- The answer is odd, so you must add 1 and then halve it again:
- If the number is even, then halve it:

So, the number 10 has 5 links: 10, 5, 3, 2, 1

10

$$10 \div 2 = 5$$

$$5 + 1 = 6 \text{ then } 6 \div 2 = 3$$

$$3 + 1 = 4 \text{ then } 4 \div 2 = 2$$

$$2 \div 2 = 1$$

## Lagrange's Four-Square Theorem

### Instructions

Lagrange's theorem states that every positive integer can be made by adding four square numbers.

For example, 7 is made by  $2^2 + 1^2 + 1^2 + 1^2$  (or  $4 + 1 + 1 + 1$ ).

Your task is to find eight different ways to make 214 using Lagrange's theorem.

1

5

2

6

3

7

4

8

## Maths Riddles

- I am a cube number and a square number below 100.
- 8, 4 and 16 are factors.

**What number am I?**

- I am a square number.
- I am an even number.
- I am between 20 and 50.

**What number am I?**

- I am a prime number.
- I am less than 20 and I have two digits.
- If you double me and subtract 9, you get a square number.

**What number am I?**

- I am a square number.
- I am an odd number.
- I am between 20 and 50.
- 7 is one of my factors.

**What number am I?**

- I am an even number.
- I am more than 80 but less than 90.
- 6, 12 and 7 are some of my factors.

**What number am I?**



Fill in grids so that each column, row and diagonal add up to the given sum.

The sum is 15.

2		
	5	3

The sum is 60.

32		
		28
		8

The sum is 30.

	10	6
12		

The sum is 60.

		16
28		
24		

> Draw the hands on the clock

1:

**3:40 AM**



2:

**1:45 AM**



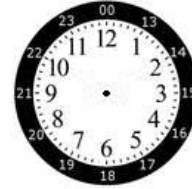
3:

**12:05 AM**



4:

**12:20 AM**



5:

**10:30 AM**



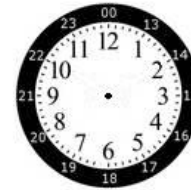
6:

**3:50 AM**



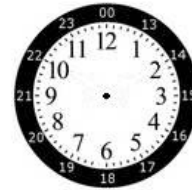
7:

**1:35 AM**



8:

**2:10 AM**



## TIMES TABLES PUZZLE

	32											48
		44									110	
			3							6		
				18					2			
					35			10				
						30	66					
						40	88					
					63			18				
				63					7			
			30							60		
		12									30	
	96											144

Study the 1-12 Times Tables grid above and taking into consideration the squares already filled see if you can work out what numbers should be in the orange boxes so that you can complete the multiplications for the rest of the grid

*[The orange boxes left to right and top to bottom should both contain every number from 1-12]*