

## KS3 Easter Maths!

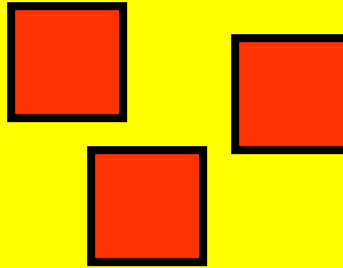
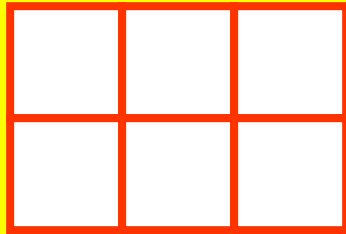
All of these maths tasks will help you to improve your critical thinking and how to approach problems systematically.

**Have fun doing these! Share with your parents/carers and siblings. Maybe you can do some together?**

- You can submit your answers in a power point format, or hand written.
- Email any solutions to your maths teacher

# Finding all possibilities:

Here is an oblong (rectangle) 3 squares long and 2 squares wide.

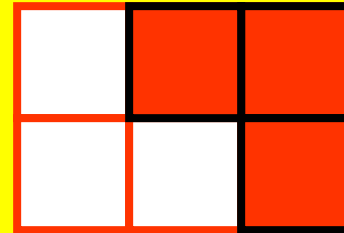
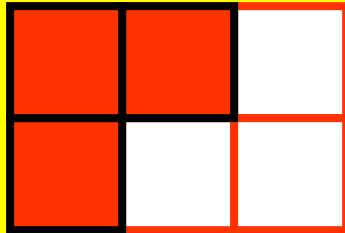


You have three smaller squares. The smaller squares fit in the oblong.

How many different ways can you fit the 3 smaller squares in the large oblong so that half the oblong is shaded?

Rotations and reflections count as the same shape.

# Finding all possibilities:



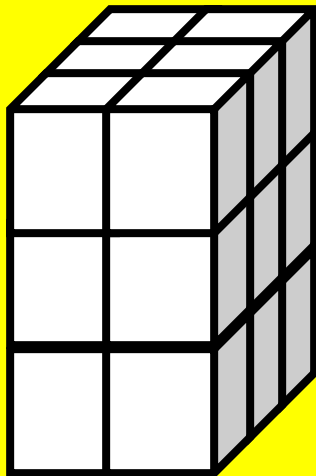
The two above count as the same possibility

There are six possibilities

Write all six possibilities and submit your answer to your teacher

# A visualisation problem:

A model is made from cubes as shown.



a) How many cubes make the model?

b) How many part cubes can you see?

c) How many cubes can't you see?

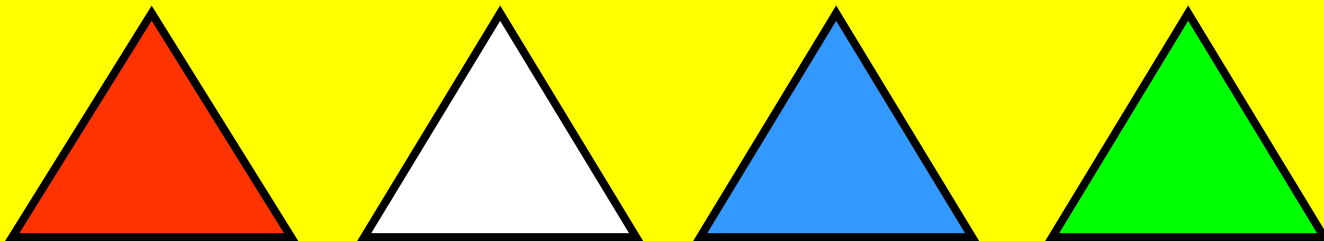
d) If the cubes were arranged into a tower what is the most number of the square faces could you see at one time?

Write answers to parts a, b, c & d and submit your answers to your teacher

# Finding all possibilities:

You have 4 equilateral triangles.

a) How many different shapes can you make by joining the edges together exactly?

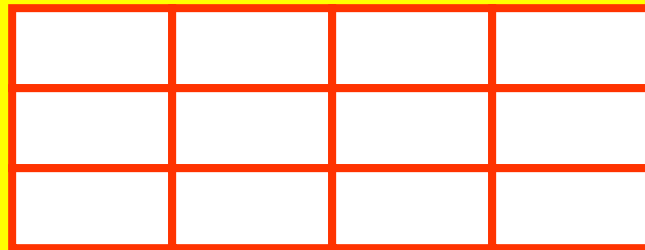


b) How many of your shapes will fold up to make a tetrahedron?

Write answers to parts a & b and submit your answers to your teacher

# Finding all possibilities:

How many oblongs (rectangles) are there altogether in this drawing?

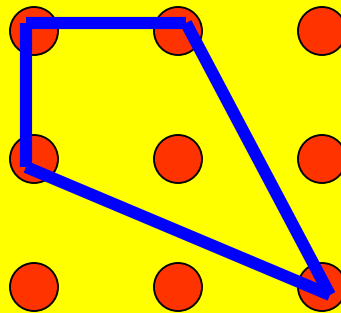


Draw all possible rectangles (use different colours if you have) and submit your answers to your teacher

## Finding all possibilities:

Draw as many different quadrilaterals as you can on a 3 x 3 dot grid.

One has been done for you.



Use a fresh grid for each new quadrilateral.

Repeats of similar quadrilaterals in a different orientation do not count.

There are 16 possibilities. Can you find them all?

Draw as many as possible out of 16 and submit your answer to your teacher

# Adding to make twenty:

1	2	3
4	5	6
7	8	9

Add any four digits to make  
the total 20

There are 12 possible solutions - can you find the  
other 11?

Use the grids on next slide, find all 11  
possibilities and submit your answer to your  
teacher



# Making twenty:

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

1	2	3
4	5	6
7	8	9

# Finding cubes of numbers

To find the cube of a number multiply the number by itself and multiply your answer again by the number,  
e.g.

3 x 3 x 3 becomes

$$3 \times 3 = 9$$

$$9 \times 3 = 27$$

27 is a cube number without a decimal.

3 x 3 x 3 is sometimes written as;

$3^3$  or 3 to the power 3.

Practice:

Find the cubes of these numbers:

2

5

9

10

Now find the cubes of the numbers 10 to 21

10

11

12

13

14

15

16

17

18

19

20

21

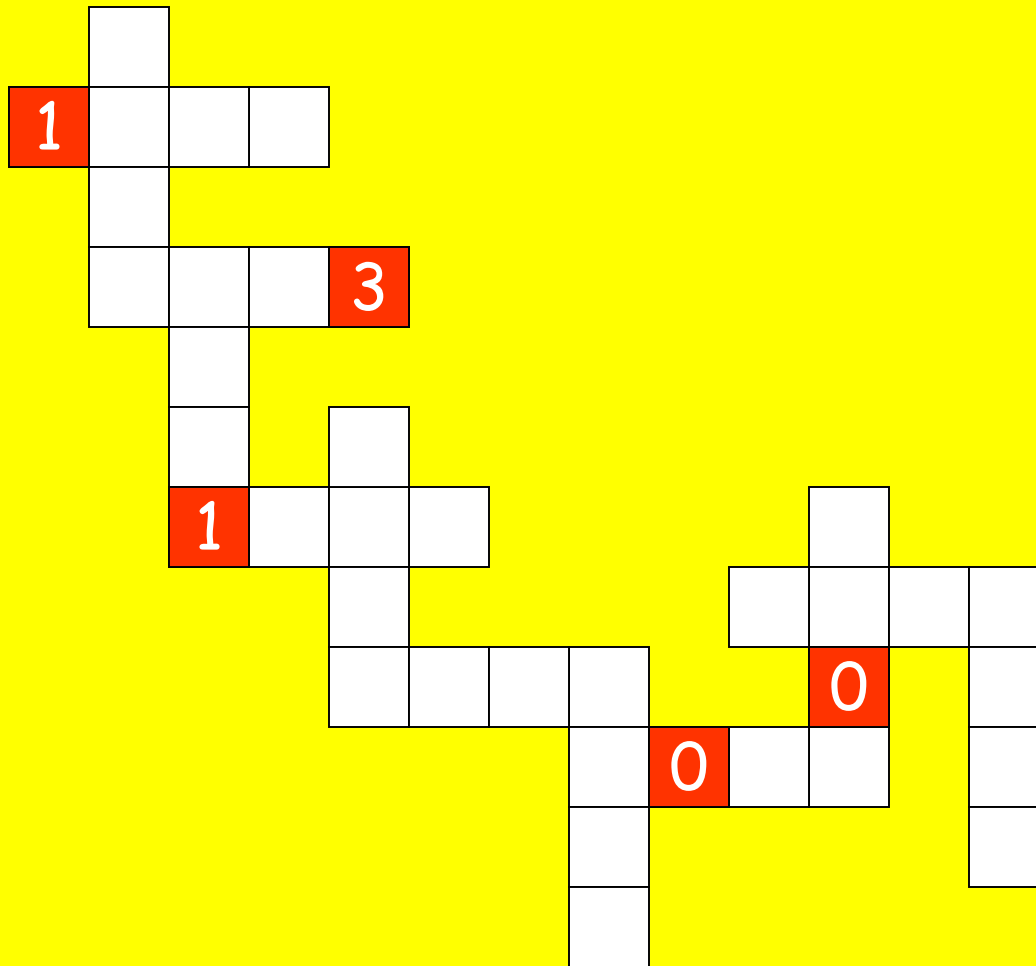
Now use the cubes of the numbers 10 to 21

1000 1331 1728 2197 2744 3375  
4096 4913 5832 6859 8000 9261

These cube numbers are the only ones with four digits  
Arrange the numbers on the grid in cross number fashion.

Next 

1000 1331 1728 2197 2744 3375  
4096 4913 5832 6859 8000 9261



Submit your answer to your teacher

Find the link:

The set of numbers below are linked by the same mathematical process.

5	1	7	+ 4
9	5	11	x 7
63	35	77	

Answer: Add 4 to the top box and multiply your answer by 7.

Try these 

Find the process ... mild

A

2	3	5
4	5	
16	20	

B

10	8	13
12	10	
6	4	

C

3	5	8
9	15	
19	25	

D

21	7	35
3	1	
8	6	

Submit your answer to your teacher



Find the process ... moderate

A

40	76	22
27	63	
3	7	

B

4	7	8
16	49	
50	83	

C

100	60	10
20	12	
10	6	

D

55	99	121
5	9	
50	54	

Submit your answer to your teacher

Find the process ... more taxing

A

36	81	16
6	9	
-1	2	

B

-10	0	-3
2	12	
10	60	

C

4	10	7
16	100	
64	1000	

D

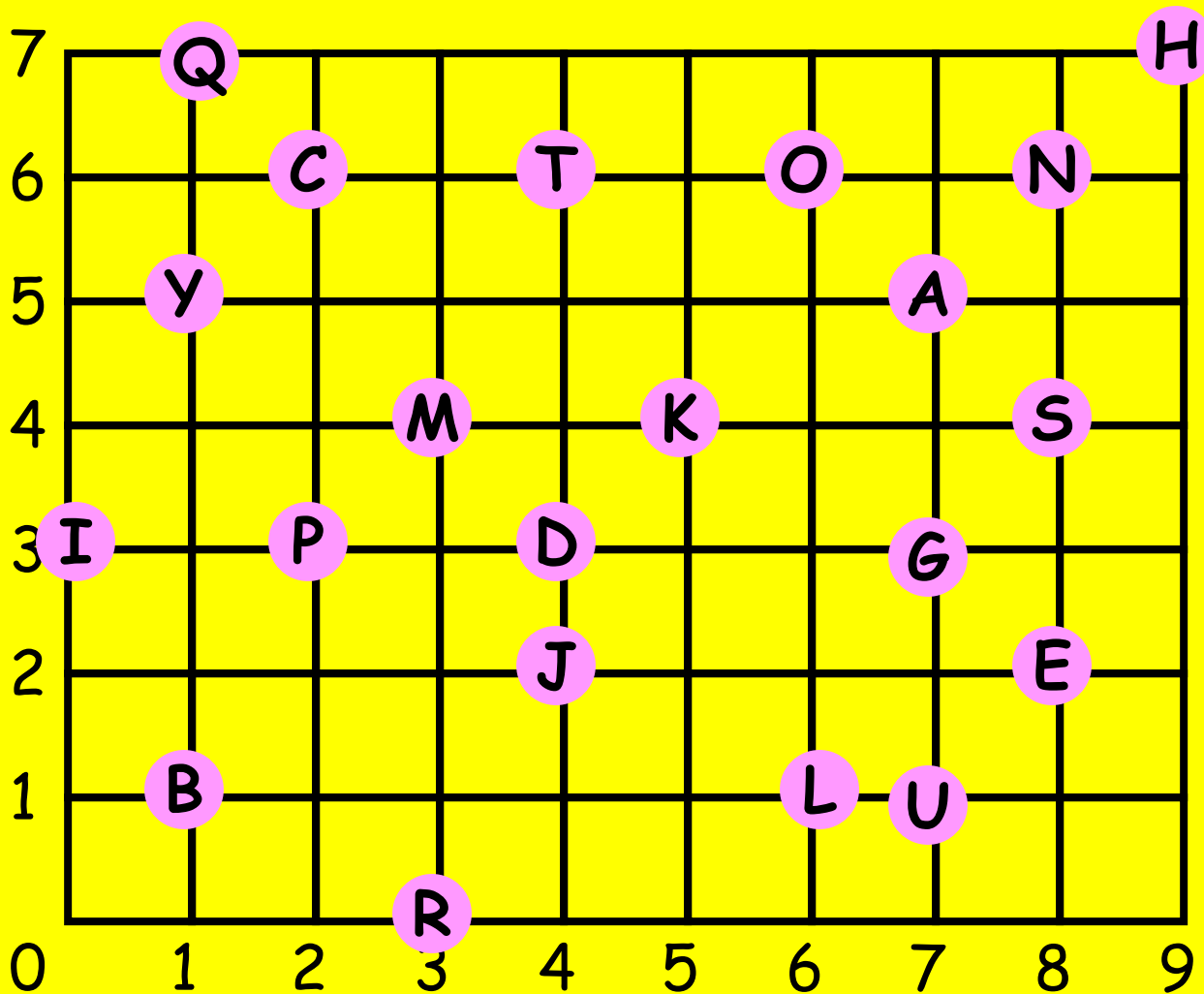
0.03	0.08	0.24
30	80	
7.5	20	

Submit your answer to your teacher

## Co-ordinate words

The grid shows letters at certain co-ordinates.

Look at the groups of co-ordinates and identify the hidden words.

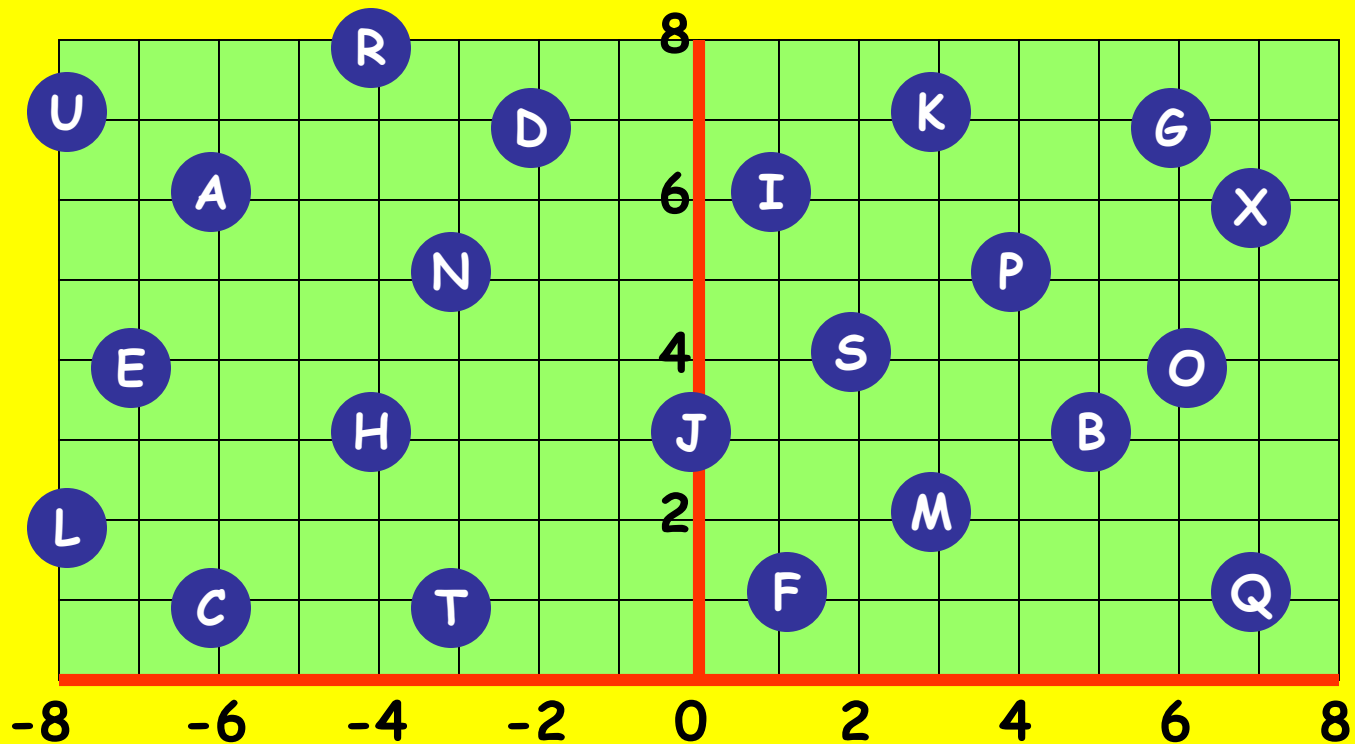


a) [7,5] [3,0] [8,2] [7,5]

b) [8,4] [1,7] [7,1] [7,5] [3,0] [8,2]

c) [2,3] [6,6] [6,1] [1,5] [7,3] [6,6] [8,6]

Submit your answers to  
your teacher



a)  $[-4, 8]$   $[-4, 3]$   $[6, 4]$   $[3, 2]$   $[5, 3]$   $[-8, 7]$   $[2, 4]$

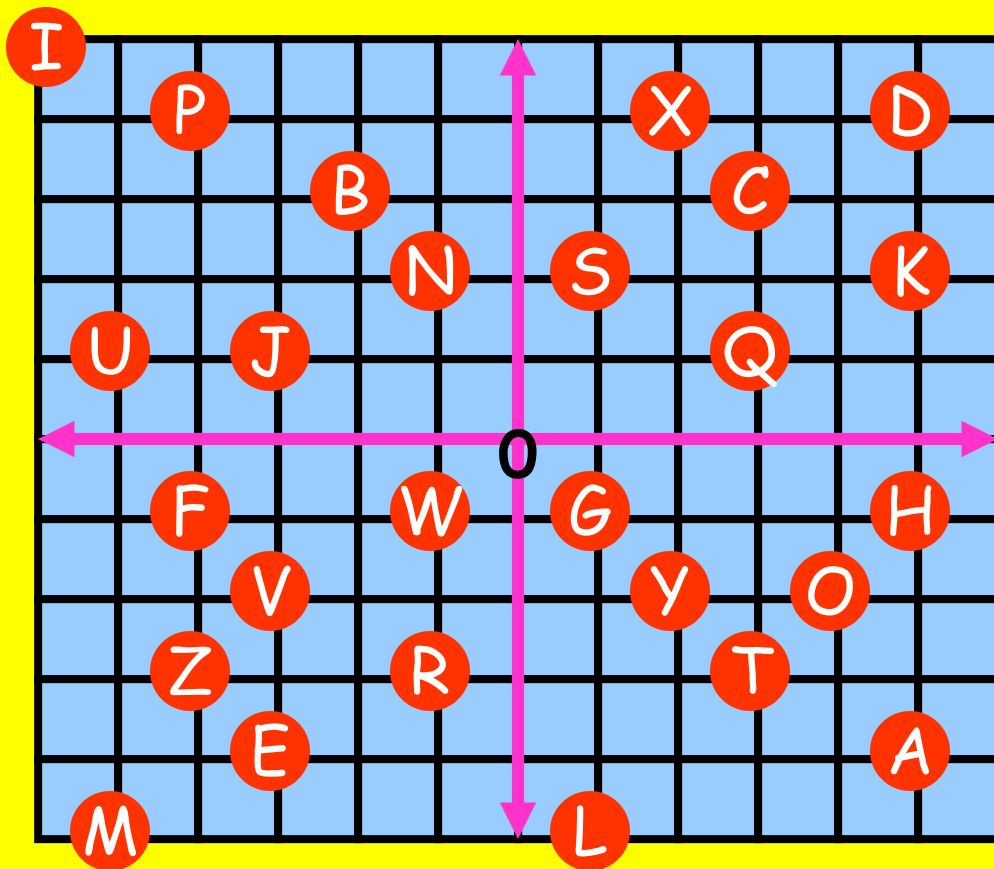
b)  $[-6, 6]$   $[-3, 5]$   $[6, 7]$   $[-8, 2]$   $[-7, 4]$

c)  $[6, 4]$   $[5, 3]$   $[-8, 2]$   $[6, 4]$   $[-3, 5]$   $[6, 7]$

d)  $[-4, 3]$   $[-7, 4]$   $[7, 6]$   $[-6, 6]$   $[6, 7]$   $[6, 4]$   $[-3, 5]$

e) Give co-ordinates for MODE

Submit your answers to your teacher



GRID LINES ARE 1 UNIT APART

a)  $[-3, -4]$   $[5, 4]$   $[1, -1]$   $[-3, -4]$

b)  $[5, -4]$   $[2, 4]$   $[-6, 5]$   $[1, 2]$

c)  $[-4, -1]$   $[5, -4]$   $[3, 3]$   $[3, -3]$   $[4, -2]$   $[-1, -3]$

d)  $[-3, -4]$   $[3, 1]$   $[-5, 1]$   $[5, -4]$   $[1, -5]$

e)  $[-5, -5]$   $[-6, 5]$   $[-1, 2]$   $[-5, 1]$   $[1, 2]$

f) Give co-ordinates for TRIANGLE

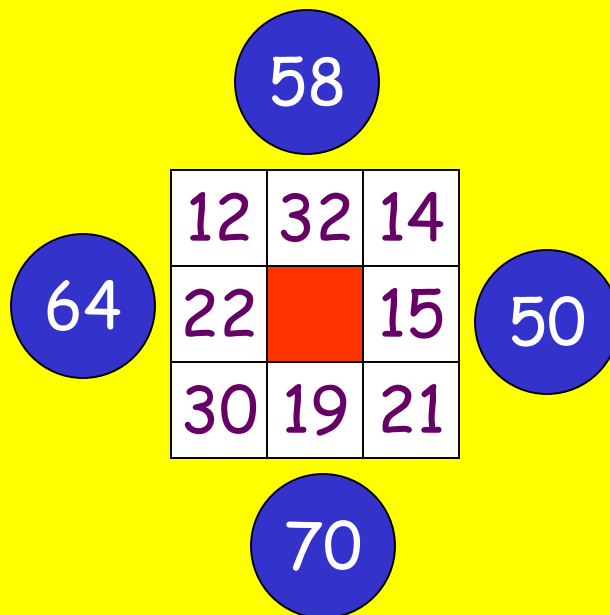
Submit your answers to your teacher

# Arranging numbers around squares ...

Here are nine numbers.

30 19 47 14 32 22 15 21 12

Arrange eight of them in the blank squares so that the sides make the total shown in the circle. Each number may be used once only. E.G.

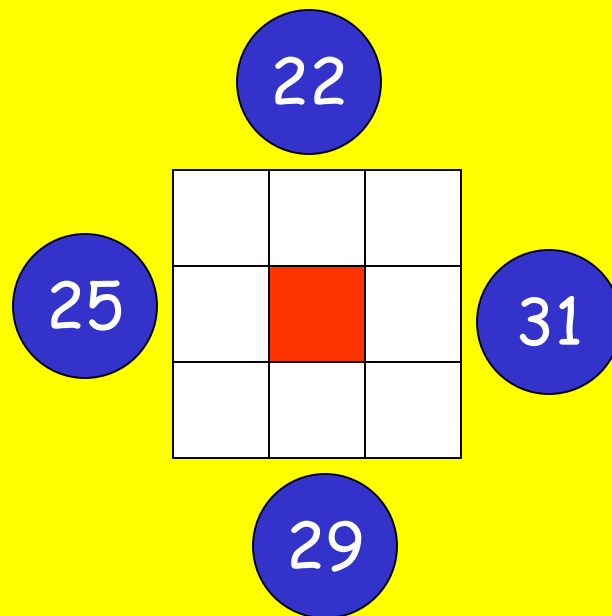


# Arranging numbers around squares ...

Here are nine numbers.

8 9 7 3 5 2 15 16 11

Arrange eight of them in the blank squares so that the sides make the total shown in the circle.



Submit your answer to your teacher

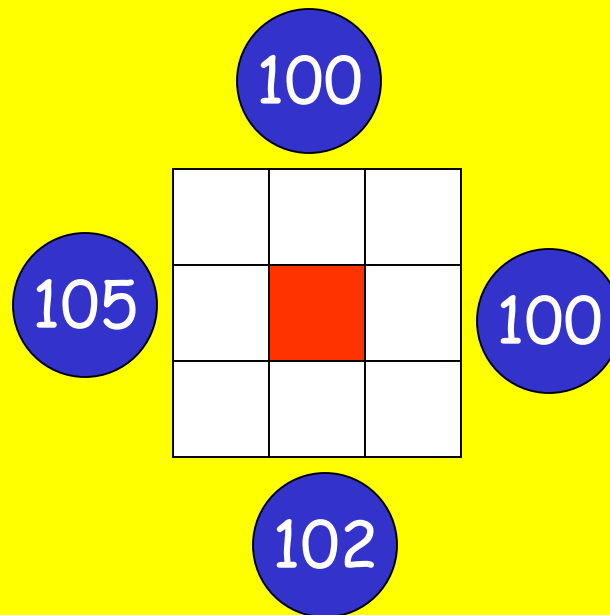


# Arranging numbers around squares ...

Here are nine numbers.

30 33 37 34 32 36 35 31 38

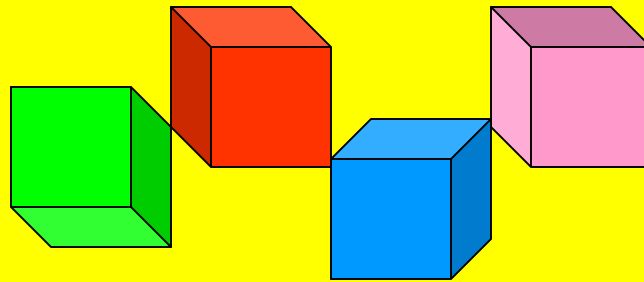
Arrange eight of them in the blank squares so that the sides make the total shown in the circle.



Submit your answer to your teacher

## Nets of a cube ...

A cube may be unfolded in many different ways to produce a net.

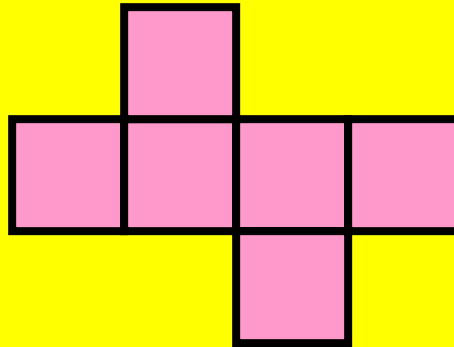
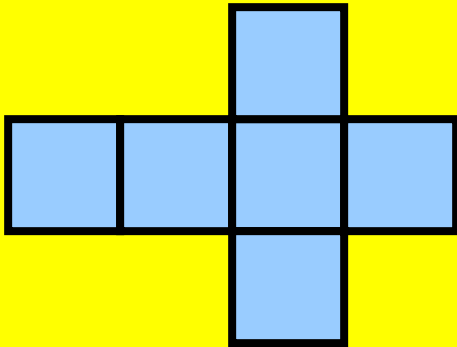
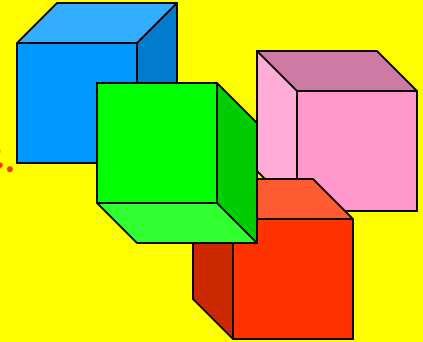


Each net will be made up of six squares.

There are 11 different ways to produce a net of a cube.  
Can you find them all?

## Nets of a cube ...

There are 11 different ways to produce a net of a cube.  
Can you find them all? Two are done for you



Submit the other 9 possibilities to your teacher

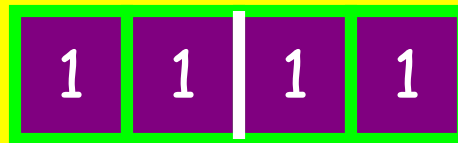
# DIGITAL CLOCK

The display shows a time on a digital clock.



It uses different digits

The time below displays the same digit



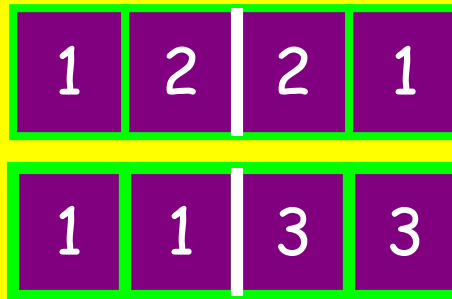
There are two other occasions when the digits will be the same on a digital clock.

Can you find them?

Submit your answers to your teacher

# DIGITAL CLOCK

The displays show time on a digital clock.



The display shows 2 different digits, each used twice.

Can you find all the occasions during the day when the clock will display 2 different digits twice each?

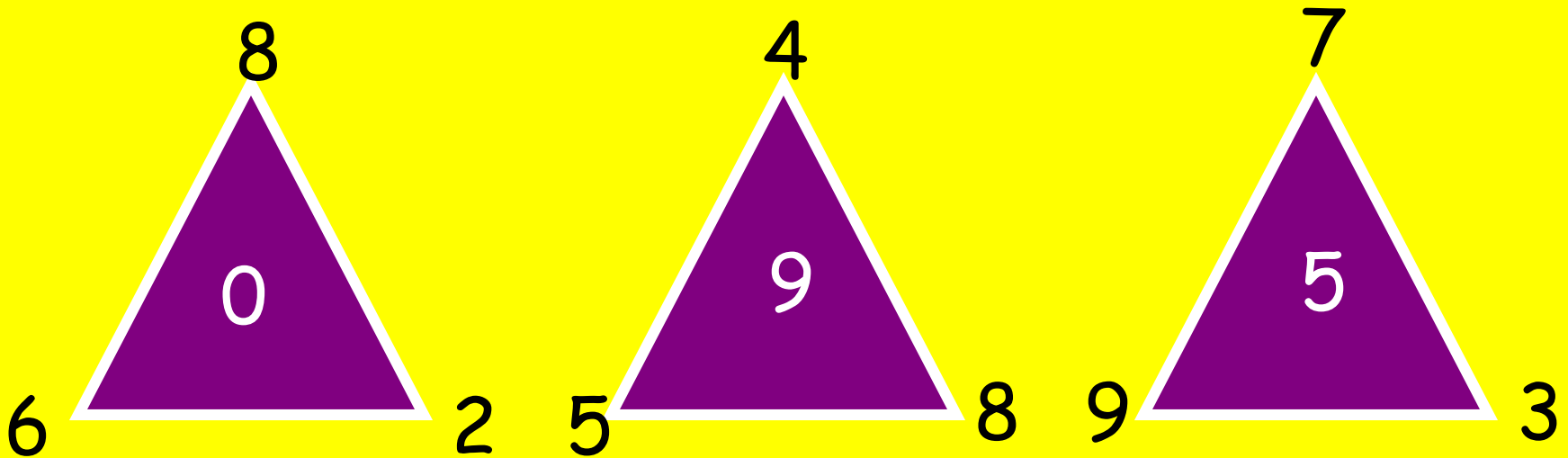
There are **49** altogether

Look for a systematic way of working

Submit your answers to your teacher

## Triangle test

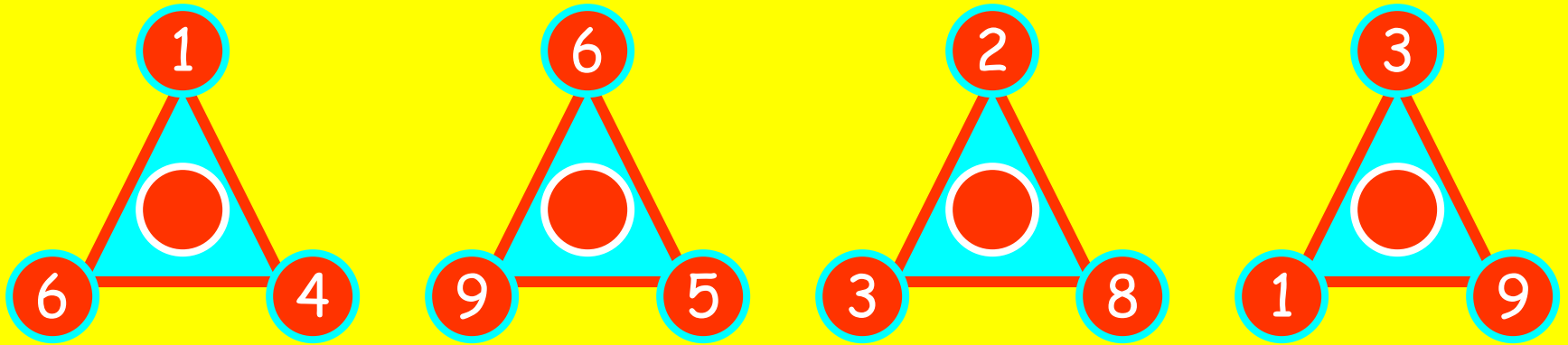
Each of the triangles below use the same rule to produce the answer in the middle.



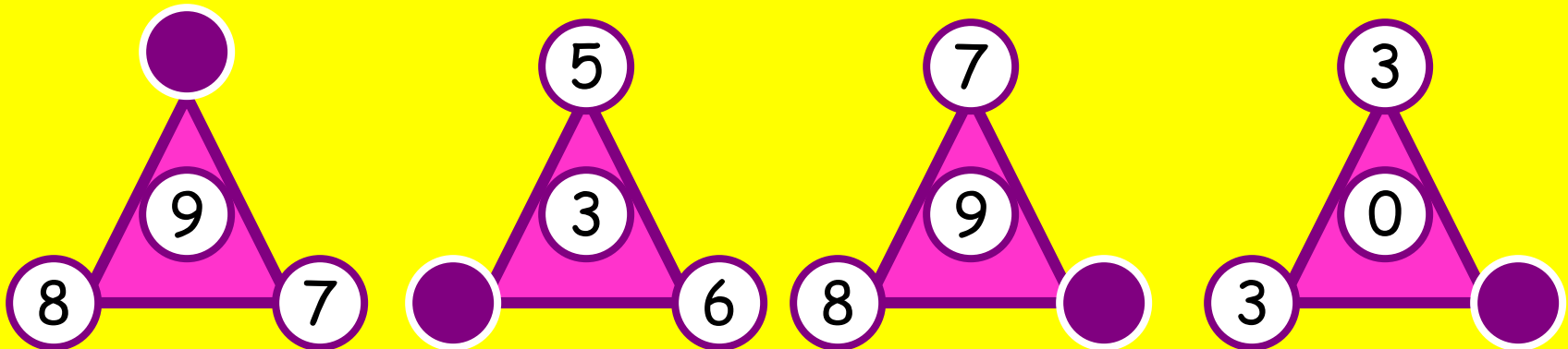
Can you find the rule?

Submit your answer to your teacher

Using the rule on the previous slide which numbers fit in these triangles?



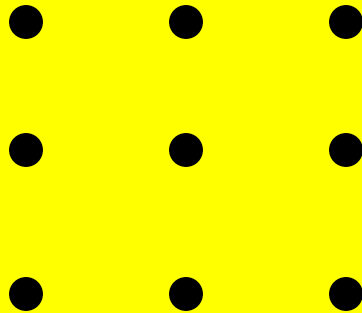
Using the same rule can you find which numbers fit at the missing apex of each triangle?



Submit your answers to your teacher

# Nine dots

Nine dots are arranged on a sheet of paper as shown below.



**TASK:** Start with your pencil on one of the dots.

Do not lift the pencil from the paper.

Draw four straight lines that will connect all the dots

**Clue 1** Start with a dot in a corner

**Clue 2** The line does not have to finish on a dot



Fifteen coins make a pound.

How many different combinations of 15 coins can you find that will make exactly £1?

Coins may be used more than once.

TRY: starting with two fifty pence pieces and cascading [changing them] coins until you reach £1 with 15 coins.

THINK: Once you have found one combination change coins to find others.

Submit your answers to your teacher

# Marble exchange

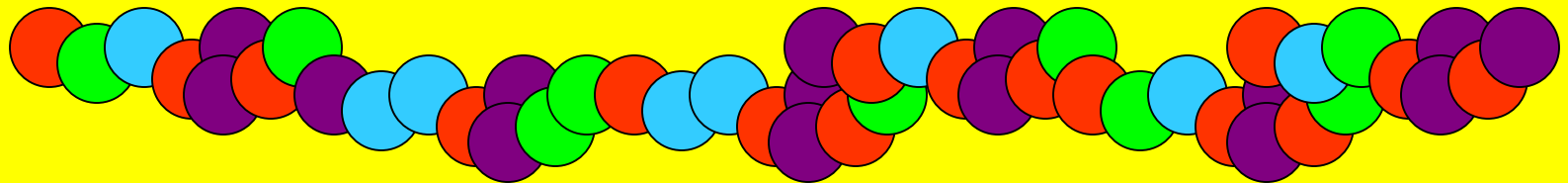
The exchange rate for marbles is as follows:

3 **GREEN** marbles has the same value as 5 **BLUE** marbles

2 **RED** marbles have the same value as 1 **PURPLE** marble

4 **RED** marbles have the same value as 3 **GREEN** marbles

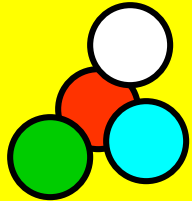
How many **BLUE** marbles can you get for 8 **PURPLE** marbles?



TRY: using marbles to represent exchanges.

Submit your answer to your teacher

## Counters.

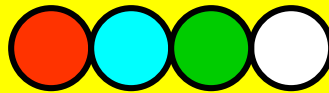


Jack has four different coloured counters.

He arranges them in a row.

How many different ways can he arrange them?

One has been done for you.

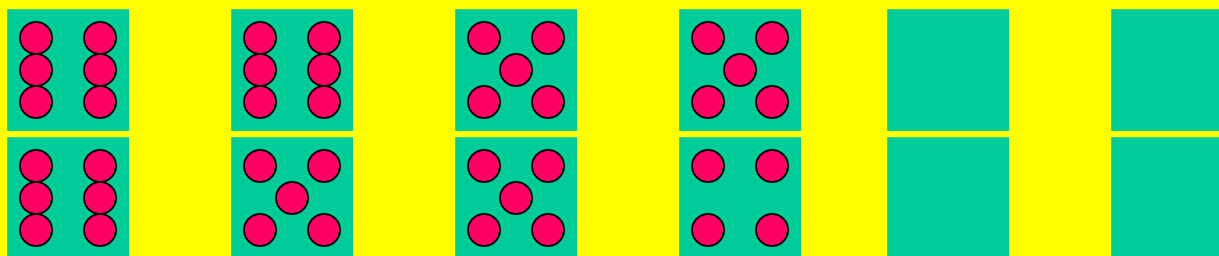
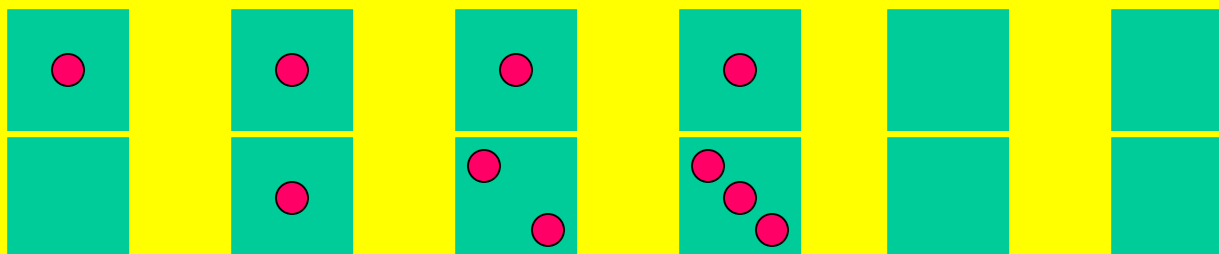


There are 24 possible combinations.

Submit your answer to your teacher

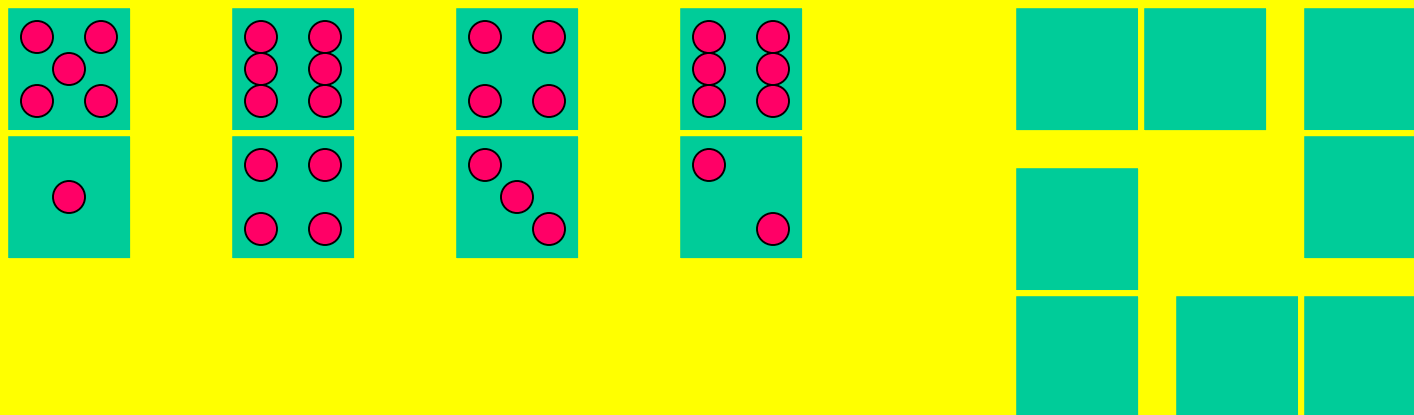
# Domino sequences.

Find the next two dominoes in each of these sequences.



Submit your answers to your teacher

# Domino squares.



The four dominoes above are arranged in a square pattern.

Each side of the pattern adds up to 12.

How might the dominoes be arranged?

Are there any other possible solutions?

Can you find four other dominoes that can make a number square?

Submit your answers to your teacher

# Patio pathways

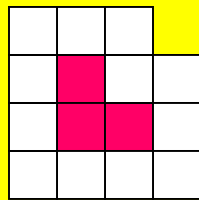
Jodie is making a patio.

She uses red tiles and white tiles.

She first makes an L shape with equal arms from red slabs.

She then puts a grey border around the patio.

The smallest possibility has been done for you.



Arm length	2
red slabs	3
grey slabs	12
total slabs	15

Draw the next four patios and record your results in the table

Submit your answers to your teacher

# Playing with consecutive numbers.

The number 9 can be written as the sum of consecutive whole numbers in two ways.

$$9 = 2 + 3 + 4$$

$$9 = 4 + 5$$

Think about the numbers between 1 and 20.

Which ones can be written as a sum of consecutive numbers?

Which ones can't?

Can you see a pattern?

What about numbers larger than 20?

Submit your answers to your teacher