Glebe

Primary School

Maths Minder

Number Extras

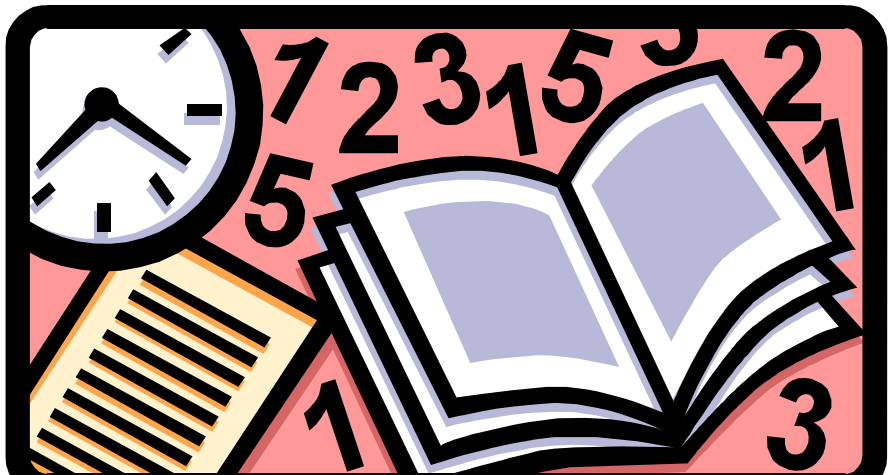
Factors: All the numbers that divide exactly into that number.
Factors of 8 are 2 4 8 1

PRIME Numbers: Numbers that only have 2 factors- 1 and the number itself.
Eg 3, 5,7,9,

SQUARE Numbers: A number multiplied by itself:
3 squared : 3x3=9

A helpful little book of SATS hints

Name:……..



Problem Solving:

1. **Underline key words**
2. **Decide which operation:**

   + - x or ÷
3. **Estimate**
4. **Calculate**
5. **Check**
6. **Answer with correct unit.**

Key Advice: Learn These

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	54	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

KNOW YOUR TABLES: A daily session to keep sharp will make you a confident mathematician.

Addition

Learn your number facts e.g. pairs of numbers that add to 10, 100, and 1000

How to add:

1. **Partitioning** the number into hundreds, tens and units.
   Add the tens first, starting with the larger number and then the units:

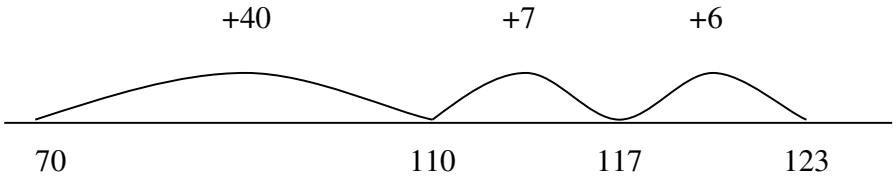
   36 + 27 = 30 + 6 and 20 + 7

   = 30 +20 and 7 + 6

   = 50 and 13 (could partition 13 into 10 and 3)

   = 63

   Use number lines to record and to help work out these calculations e.g. 76 + 47



2. **Vertical layout:**

A

```
  47
+ 76
----
 110  (70+40)
  13  (7+6)
----
 123
```

B

```
  368
+ 495
-----
 700 (300+400)
 150 (90+60)
  13 (8+5)
-----
 863
```

3. Advanced layout:

In examples C and D, start to add the units first, followed by the tens and hundreds.

C

```
  47
+ 76
----
 13 (7+6)
110 (40+70)
----
123
```

D

```
  368
+ 495
-----
 13 (8+5)
150 (90+60)
700 (300+400)
-----
 863
```

4. **Vertical layout,** contracting the working to a compact efficient form:

```
  47
+ 76
----
 123
----
  11
```

```
  368
+ 495
-----
 863
-----
  11
```

5. Now try with larger numbers and decimals

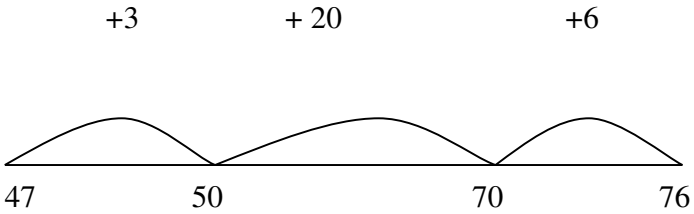
Subtraction

1. **Subtraction as taking away** (e.g. to take 2 from 7, use 7 objects, take 2 away and count how many are left).
2. **Counting back** (e.g. start at 7 using a number line count back 2 hops).

Learn your number facts: e.g. learning the corresponding subtractions to addition pairs of numbers e.g. If you learn that 5 add 3 = 8, you also know that 8 – 5 equals 3 and 8 – 3 equals 5.

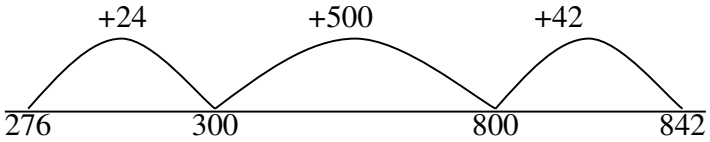
3. **Mental method** – counting up (complementary addition):

E.g. 76 – 47



3 + 20 + 6 = **29**

842 – 276



24 + 500 + 42 = **566**

4. Vertical layout of complementary addition

For example:

```
  842
 -276
 ____                                  _____

    4  (280)
   20  (300)
+ 542  (842)
 _____
  566
```

Count on from 276 and add on 4 to get to 280.

Add 20 to get to 300.

Now add 542 to get to 842.

Finally add together 4, 20, and 542 to obtain the answer 566.

Multiplication

You need to :

1.Count in steps
2. Use doubling and halving
3. Use an array: eg

4 x 2 = 8

2 x 4 = 8

4 lots of 2, and 2 lots of 4.

Know your tables.

4.Mental method using partitioning to multiply a multiple of 10 by a single digit number.

38 x 7 = (30 x 7) + (8 x 7)

Partition 38 into 30 and 8. They would then multiply 30 by 7, and 8 by 7. Finally add the two answers.

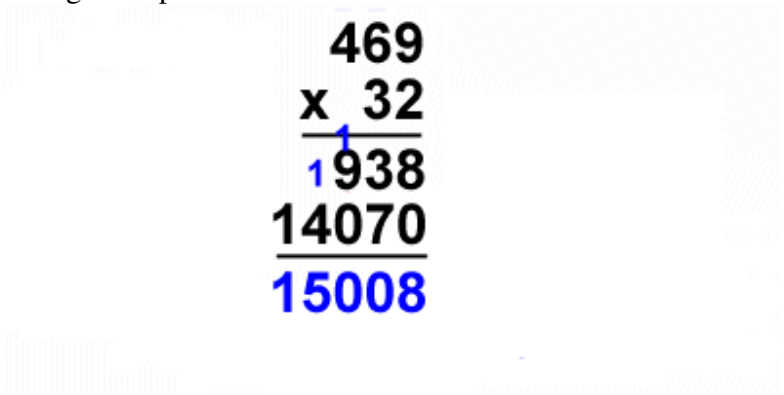
5. Grid layout

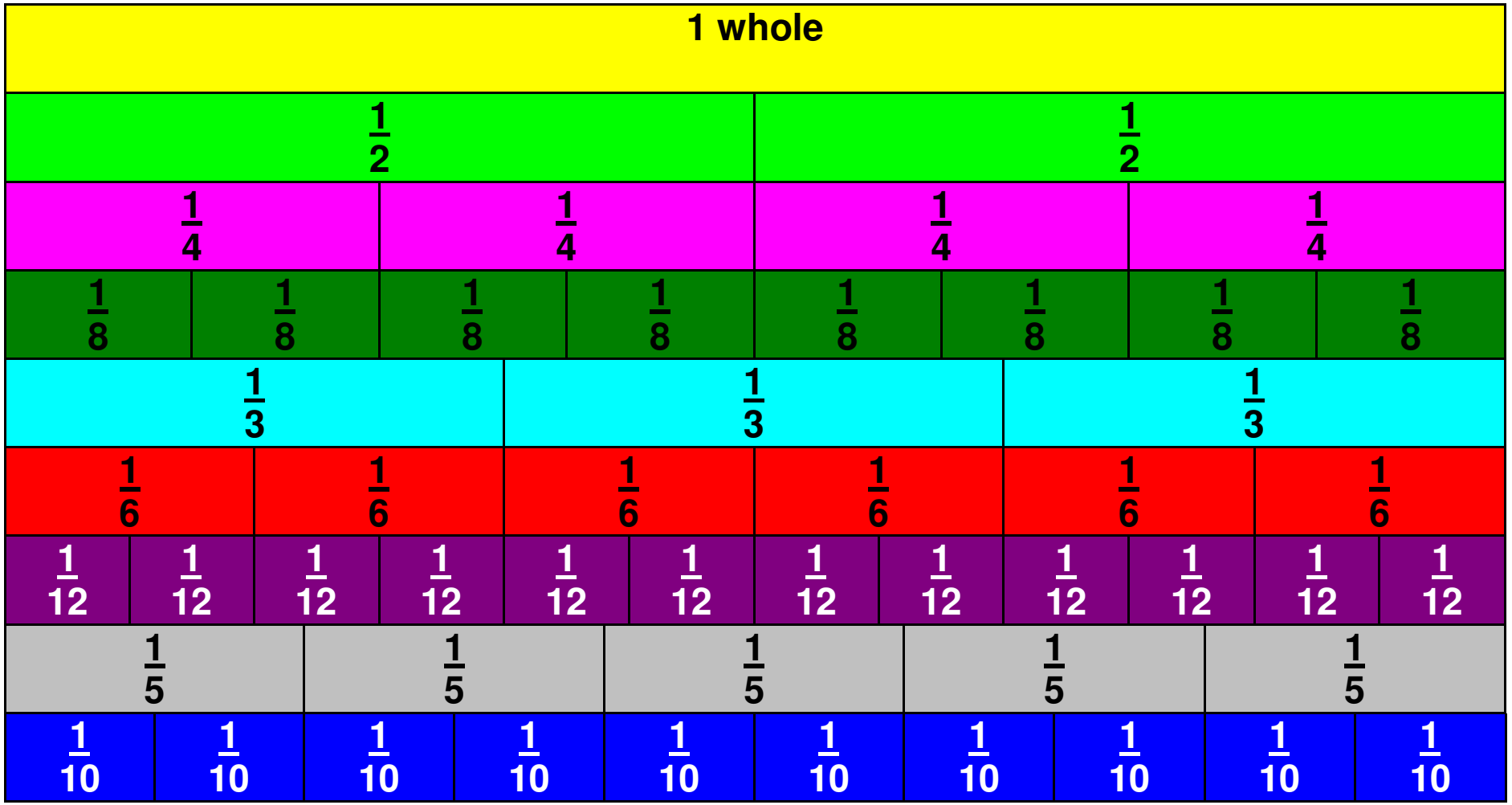
X	30	8	
7	210	56	266

Larger number grids:

X	50	6	
20	1000	120	1120
7	350	42	392
			1512

6.Long Multiplication method





Fraction Wall

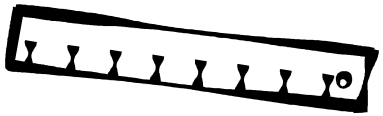
Look carefully at the sizes of the fractions

Calculations

1. Can I do it in my head?

2. Do I need to make a jotting or draw a number line?

3. Do I need a pencil and paper method?



4. Should I use a calculator?

Whatever method feels safe to you is OK.

Calculations which are good on a number line:

Addition
Subtraction
Multiplication
Division
AND

TIME

Don't forget temperature on a vertical line

Useful measurements:

Liquid:

I Litre = 1000 millilitres
1L=1000ml

Mass

1 Kilogram=1000grams
1kg=1000g

0.5 kg ==1/2 kg
0.25kg=1/4 kg
0.75kg=3/4 kg

Length

kilometre = 1000 metres
1metre = 100centimetres
10 cm = 100mm
1cm=10 mm

Money

One Pound =100 pennies
£1 = 100p

50p= £0.50 pound
25p= £0.25 pound
75p= £0.75 pound

10x 10p = £1

20px5= £1

10% of one pound is 10p
50% of one pound is 50p

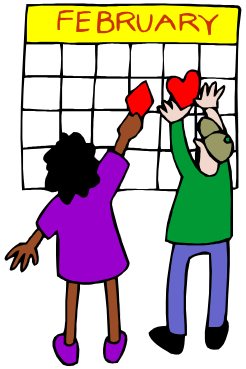
Time

One year = 365 days
One leap year 366 days

30 days hath September
April June and November
All the rest have 31
Excepting 28 in February
And 29 in a leap year.

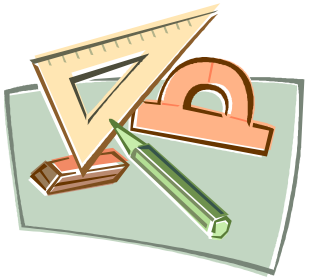
12 months in a year

A fortnight is 2 weeks
Seven days in a week
24 hours in a day
60 minutes in an hour
60 seconds in a minute



Useful Maths Language

Angles — angles are formed when 2 straight lines meet. Different sized angles have different names.



Acute angles are angles smaller than 90 degrees

Right angles are 90 degrees

Obtuse angles are larger than 90 degrees but smaller than 180 degrees.

Reflex angles are larger than 180 degrees but smaller than 360 degrees.

Area — the amount of surface space in a shape. Measured in squared centimetres or cm^2

Average — is the same as **mean**

Calculate — to work out

Capacity — the amount that something can hold. It can be measured in litres, millilitres or in cubic centimetres e.g. $100cm^3$

Century — a hundred, a century in time is 100 years

Decade Ten years

Degree the unit of measurement we use for measuring angles and temperatures

Difference to find the difference between 2 numbers, you need to take the smaller number away from the larger one. E.g. the difference between 10 and 4 is 6

Equilateral triangle a triangle with sides of equal lengths and equal angles (60 degrees)

Factors A factor is a whole number which will divide exactly into another whole number. E.g. 3 is a factor of 12

Inverse operation If you have a sum with a missing gap, you can use the inverse operation to solve it. E.g. + and – are the inverse of each other and x and – are the inverse of each other
To solve 124 + ☐ = 200 you could turn it to 200 – 124 = 76

Mean To find the mean you must have a set of results. You then need to find the total of the results and divide it by the number of results you have,

e.g. Here are a set of test marks
Paul 22, Sally 26,Tim 31,David 33
To find the mean of these scores add them all together (112) and then divide by 4 (28) so the mean score is 28

Median When the data is arranged in order of size the median is the one in the middle.

Mode Is the number which appears most frequently in a collection of data.

Multiple Multiples are whole numbers that a larger number can be made of by adding lots of the smaller number together. E.g. 12 is a multiple of 3

Percentages % means out of 100 so 20% is the same as 20/100. To find 20% of 50 you divide by 100 and times by 20

Prime numbers are numbers which will divide exactly only by themselves and 1. These are the prime numbers to 30
1 2 3 5 7 11 13 17 19 23 29.

Product The answer when something has been multiplied. e.g. the product of 3 and 4 is 12

Scalene triangle A **triangle with no equal sides**

Square number The total when a number is multiplied by itself. E.g. 1x1=1; 2x2 = 4, 3x3 = 9
Square numbers to 100 are

1 4 9 16 25 36 49 64 81 100

Sum **To find the sum of a group of numbers, you add the numbers together.**

Do you know what these mean?

units	tens	
hundreds	thousands	
ten thousand		
greater than		
less than	too few	
too many	round up	
round down		
roughly		
approximately		
add	plus	more
increase	decrease	
total	subtract	
minus	take away	
difference between		
double	halve	
lots of	groups of	
times	multiply	share
divide	remainder	
product	factor	
repeated addition		

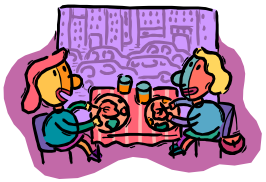
What operations are you going to use?
What method are you going to use?
What equipment will you need?
What questions will you need to ask?
How are you going to record your answers?
Can you estimate or predict the answer?

Finally: Our advice for Sats week is:

Prepare by studying

Sleep well and soundly

Eat well and frequently



Division:

Understanding division as grouping, sharing or repeated subtraction.

1.Grouping

12 ÷ 3

How many groups of 3 are there in 12?

○○○ ○○○ ○○○ ○○○

Answer = 4

2.Sharing

12 ÷ 3

What is 12 'shared between' 3?

▪▪▪▪ ▪▪▪▪ ▪▪▪▪

3. Beginning to use Repeated Subtraction

12 ÷ 3

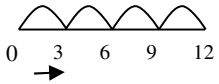
12 – 3 – 3 – 3 – 3 = 0

Understanding division as grouping, sharing or repeated subtraction.

Using the ÷ and = signs, recording horizontally 12 ÷ 3 = 4

4. Introducing **Number Line Division**

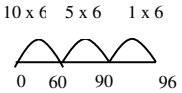
12 ÷ 3



Answer = 4

Using **Number Line Division**

How many 6s are there in 96? 96÷6



So 96 ÷ 6 = 16

5. Beginning to use **Chunking Method**

192 ÷ 8

8 | 192

80 (10 lots of 8)

+ 80 (10 lots of 8)

160

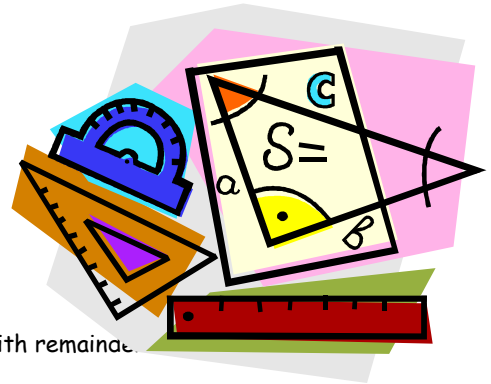
+ 24 (3 lots of 8)

184

+ 8

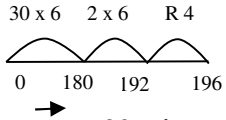
192

Answer = 24 (lots of8)



6. Using **Number Line Division**, with remainde

196 ÷ 6



Answer = 32 r 4

6. If ready, present in **Standard Format**

196 ÷ 6

16

6 | 196

160 (20 lots of 8)

+ 32 (6 lots of 6)

192

Answer = 24 r6

OR 24 6/8 OR 24 ¾

Using **Number Line Division** with remainders as decimals when appropriate

194÷ 8

7. If ready, present in **Standard Format** with a focus on language.

```
  2191
4 | 8764
  8↓
  07
  4↓
  36
  36↓
  04
  4
  0
```

```
   21
216 | 4536
  432↓
  216
  216
    0
```

```
   17 r 19
31 | 546
  31↓
  236
  217
   19
```

Pictograms

Our Primary School held a vote to decide on a name for their new school mascot.

This table shows the results

Name	**Tally**	**Total**
Joey	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	45
Fuzzy	𝍸 𝍸	10
Oggy	𝍸 𝍸 𝍸	
Dina	𝍸 𝍸 𝍸 𝍸 𝍸 𝍸	

1. Complete the table.
2. Complete this pictogram

Name	Symbol
Joey	
Fuzzy	
Oggy	
Dina	

3. What is the value of  ? _____

Remember you must look at the key to find out how much is represented by each symbol in the pictogram

Mean, Median, Mode and Range

Mean
The mean is when all the numbers are added then divided by how many numbers there were eg:

The mean of 12, 17, and 15 is

12+19+15=36

Mean = 36 divided by 3= 12

Median

The median is the middle or an ordered set of numbers eg

1,3,6,13,21,23,26 The median is 13

Mode

The group which is **largest** is the mode. If for examples, car colours are being compared and this information is collected:

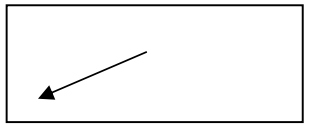
White 12; Black 14; Red 12; Blue 9; Green 11

Then **the mode is black** because more black cars were owned than any other colour.

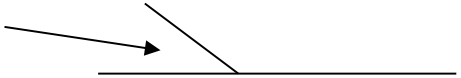
The **range** is **the difference between the highest and the lowest value of the thing being measured.** e.g. if the most number of times a week a child reads to a parent is 7, and the least is 1, the range is 6 (7 – 1).

Angles

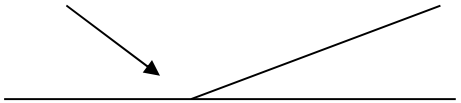
An angle at 90° is a special angle called a ***right angle.***



Remember – small angles (less than 90 degrees are called ACUTE angles (a cute angle)



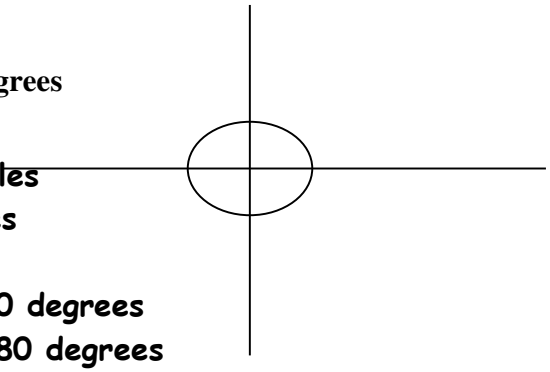
- angles bigger than (90 degerees, but less than 180 degrees are called OBTUSE angles.



Total 360 degrees

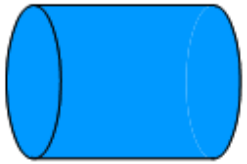
4 right angles
360 degrees

4 lots of 90 degrees
2 lots of 180 degrees



Properties of Triangles

Isosceles triai l sides and 2 **equal** angles .



Scalene Trian l sides and no equal angles. One angle is larger than 90 degrees

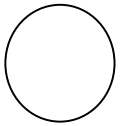
Equilateral Triangles have 3 equal sides and 3 equal angles.

Shape Vocabulary

2 Dimensional shapes:

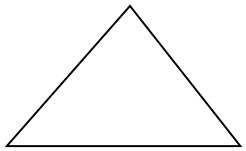
polygons – closed, flat, shapes with more than 3 straight sides

circle oval

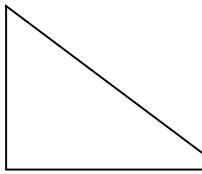


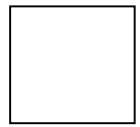
triangles:

[3 sides] equilateral
isosceles
right-angle
scalene

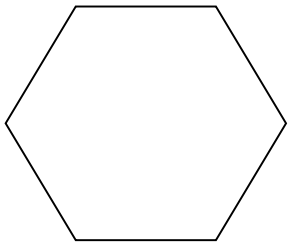


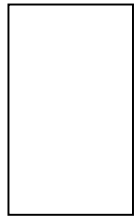
quadrilaterals
[4 sides] square
oblong
rectangle
parallelogram
rhombus
trapezium
chevron

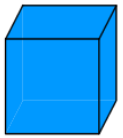




pentagon 5
hexagon 6
heptagon 7
octagon 8
nonagon 9
decagon 10
dodecagon 12

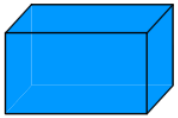






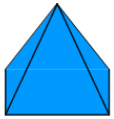
3 Dimensional shapes:

cube
cuboid

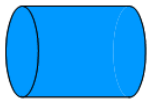


pyramid
tetrahedron – triangle base pyramid

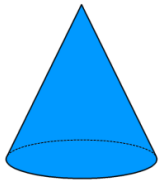
square base pyramid
prism



cylinder



cone
sphere
semi-sphere
ovoid



decahedron
dodecahedron
icosahedron

face edge vertex
angles vertices
triangular circular
pentagonal curved
hexagonal shape

Place Value

1. Circle the number which is **nearest in value to 750**.

699 810 852 1050

2. Write these numbers in **order of size**.

456 299 901 472 575

Smallest

3. Here are three number cards.

Write down the **smallest** number you can make using the three cards

_____

Write down the number **closest** to **754** you can make using the **three** cards.

_____

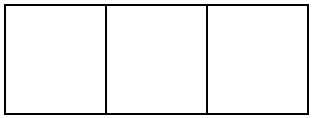
4. Which of these numbers is **nearest** to **400**?

310 *530* *460* *370* *420*

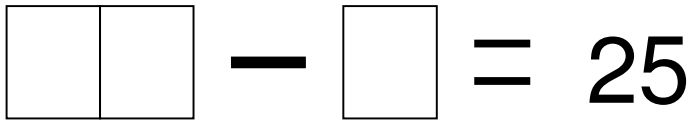
5. Here are three digits.

6 **1** **3**

Use **all** the digits **6**,**1** and **3** to write a number that is **between 100** and **140**.



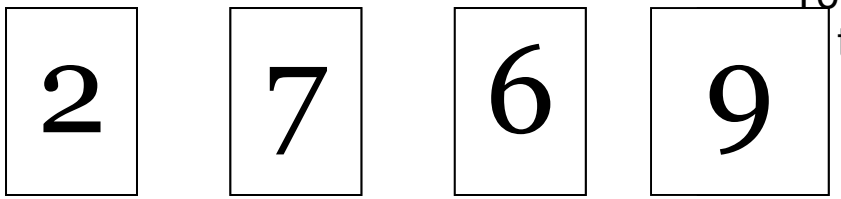
Use all the digits **6**, **1** and **3** to complete this **subtraction**.



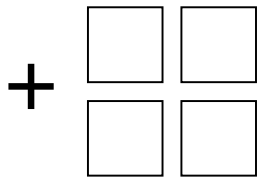
6. Circle the **two** numbers which add up to **1**.

0.1 0.65 0.99 0.45 0.35

Here are four number cards.



Use all the number cards to make an addition
The answer must be **MORE that 100**



Ordering Decimals:

0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.18	0.19	0.2
0.21	0.22	0.23	0.24	0.25	0.26	0.27	0.28	0.29	0.3
0.31	0.32	0.33	0.34	0.35	0.36	0.37	0.38	0.39	0.4
0.41	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.5
0.51	0.52	0.53	0.54	0.55	0.56	0.57	0.58	0.59	0.6
0.61	0.62	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.7
0.71	0.72	0.73	0.74	0.75	0.76	0.77	0.78	0.79	0.8
0.81	0.82	0.83	0.84	0.85	0.86	0.87	0.88	0.89	0.9
0.91	0.92	0.93	0.94	0.95	0.96	0.97	0.98	0.99	1

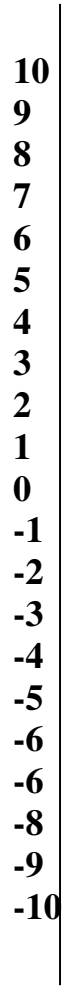
Remember the Decimal Point **NEVER** Moves

To multiply by 10 the numbers move one place the left: Don't forget the place holders

To Divide by 10 the numbers move one place to the right

Negative Numbers

Think Number Line



Measuring Shape

Perimeter:
Take a walk around the shape and add up how far you go.

Or If it is a quadrilateral shape:

P= 2l+2b

Area:
How much space does the shape take up?

Count the squares. Or
A=2(l+b)

Symmetry: The same both sides

Rotational Symmetry:
A shape turned through 90 degrees, 180 degrees or 270 degrees.

Tessellation:
Shapes which are the same and fit together with no gaps.

Transformations:

- Reflection
- Transformation, whole shape slides
- Rotation: Shape turns around central point.