

# **Workshops: The heart of the MagiKats Programme**

Every student is assigned to a Stage, based on their academic year and assessed study level.

Stage 2 students are approximately 7 to 9 years old.

**The sheets in this pack are a small sample of what is available! These are only samples of the student's worksheets - our teaching methods include discussion and hands-on activities.**

**Core skills sheets are also provided for independent completion by each student (usually at home).**

Topics offered at this level include: place value; developing number skills; ordering, comparing, estimating, rounding; fractions of numbers; working with decimals and fractions; shopping; time; measuring; area and perimeter; ratio and proportion; symmetry and reflections; drawing nets and shapes; handling data; problem solving.

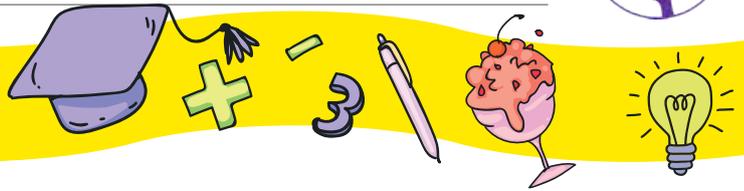


**MagiKats**  
**TUITION CENTRES**

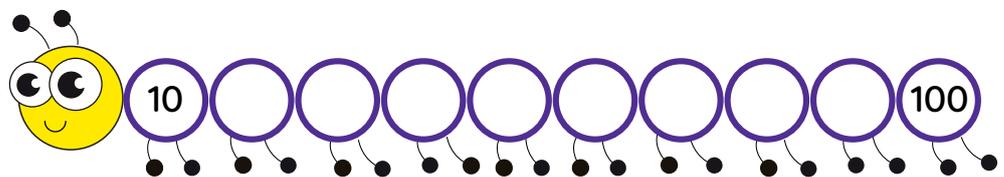
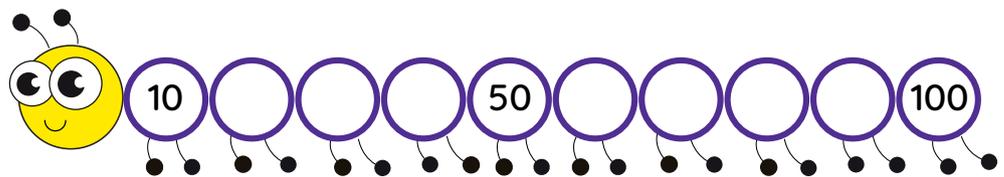
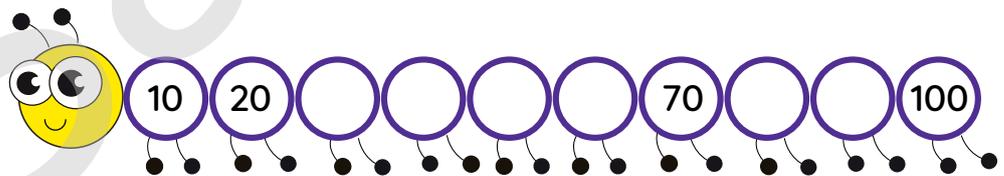
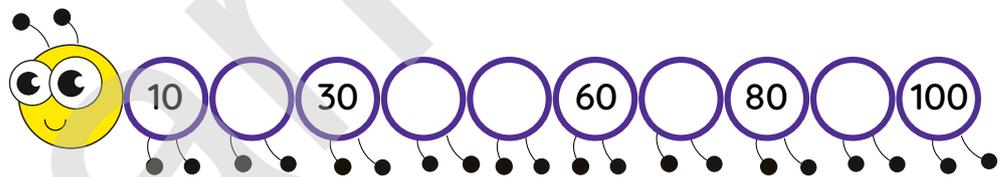
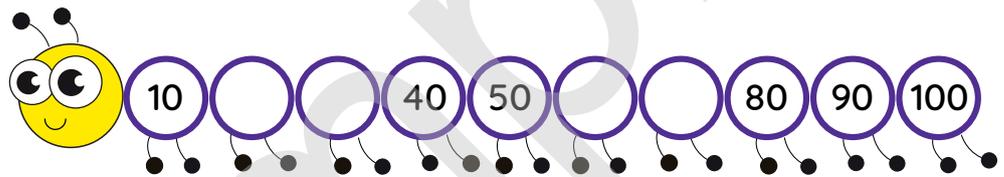
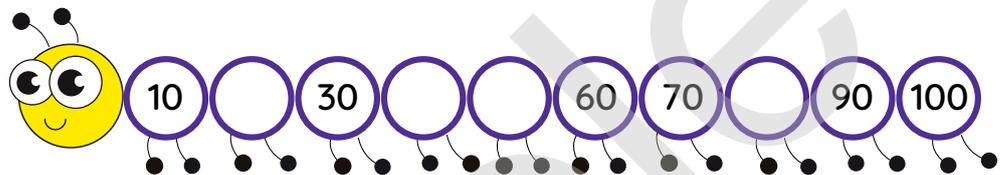
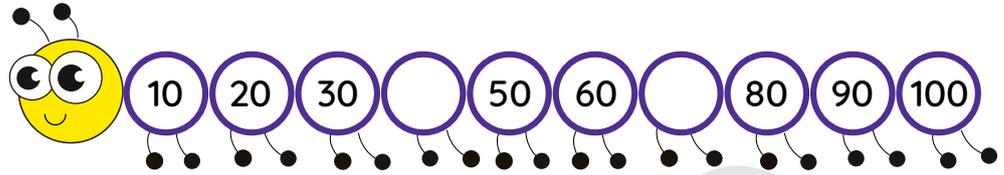
**MATHS STAGE 2**

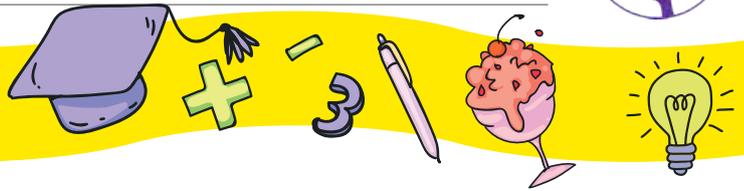


# Number Bonds to 100

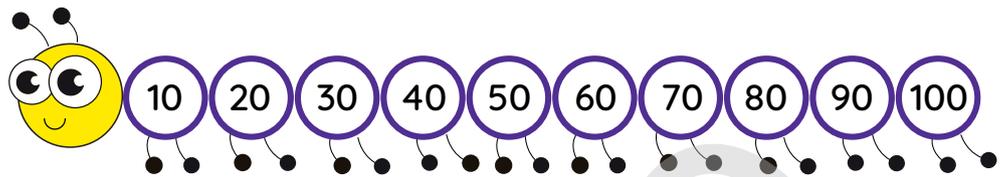


Fill in the missing gaps in the caterpillars, counting in 10s to 100.  
You can use a 100 board to help, if you want.





Find pairs on the caterpillar that add to 100. Colour pairs to match each other but no other numbers. Use different colours for each pair.



Now fill in the gaps in these sums:

$50 + \square = 100$

$20 + \square = 100$

$60 + \square = 100$

$40 + \square = 100$

$70 + \square = 100$

$30 + \square = 100$

$10 + \square = 100$

$80 + \square = 100$

$0 + \square = 100$

$90 + \square = 100$

$100 + \square = 100$

$\square + 40 = 100$

$\square + 50 = 100$

$\square + 60 = 100$

$\square + 20 = 100$

$\square + 10 = 100$

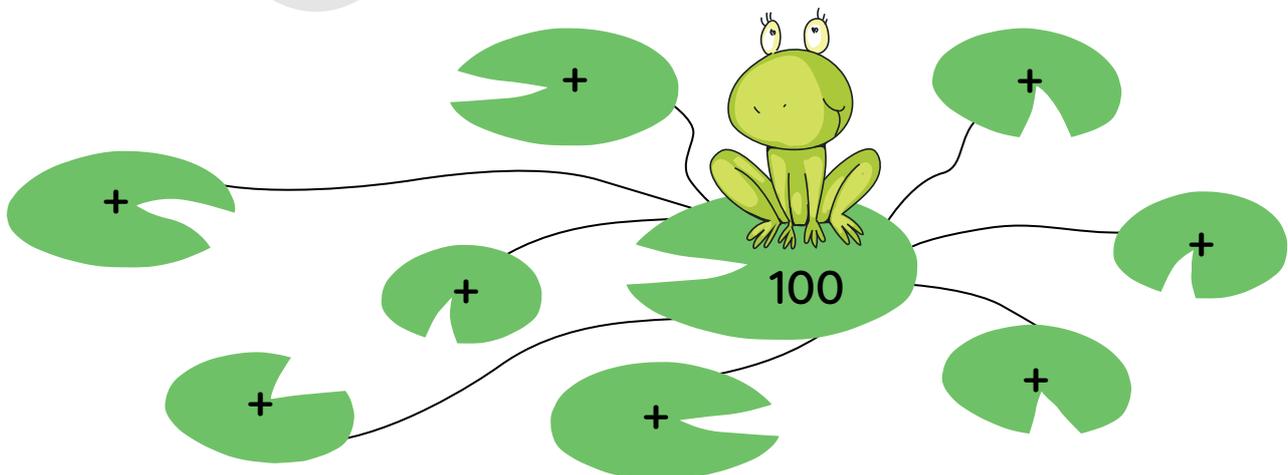
$\square + 30 = 100$

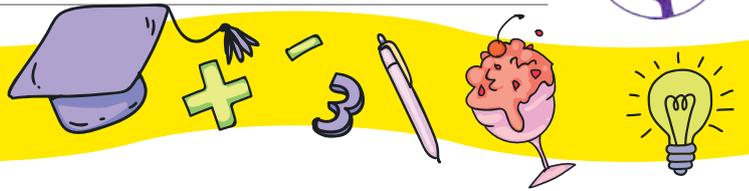
$\square + 80 = 100$

$\square + 70 = 100$

$\square + 0 = 100$

$\square + 90 = 100$





Draw a line to join the pairs of numbers that add to make 100.

60      50      70      90

10      80      40      20

30

Look at the numbers below. Find sets of three numbers to make a total of 100. You should find at least 3 sets of 3 numbers.

10	20	30
40	5	10
70	60	25
25	45	5
35	35	15
55	75	40



110

80

50

130

20

100

60

90

70

40

120

0

50

30

10

Use the numbers from the circles above to complete the sums.  
(Each one should be different, but you can use a number more than once.)

\_\_\_ + \_\_\_ = 100

\_\_\_ + \_\_\_ = 100

\_\_\_ + \_\_\_ = 100

\_\_\_ + \_\_\_ = 100

\_\_\_ + \_\_\_ = 100

\_\_\_ + \_\_\_ = 100

\_\_\_ - \_\_\_ = 100

\_\_\_ - \_\_\_ = 100

\_\_\_ - \_\_\_ = 100

\_\_\_ + \_\_\_ + \_\_\_ = 100

\_\_\_ + \_\_\_ + \_\_\_ = 100



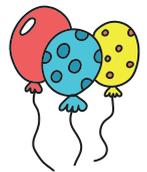
Now you've been over your number bonds to 100, can you think of any ways you can use these to help you in everyday life?

Can you use your number bonds to 100 to answer these questions?



1) I have 100 sweets and give 15 to my sister and 15 to my brother. How many do I have left?

2) A packet has 100 balloons in it. Sarah blows up 20, how many are left to blow up?



3) Out of a bumper pack of 100 Christmas cards, Joe gives 10 to his family and 15 to his friends. How many does he have left for next year?



4) There are 100 pink and blue cup cakes in a tin. 40 have pink icing, how many have blue?



5) Hannah's mother has a box of 100 mini chocolate bars. Hannah wants to give 30 to friends, and have at least 10 left for herself. Can she do this?

6) Keith has a bag of 100 batteries. He needs 4 for the radio, and 6 for the stereo. How many will he have left?



7) Mrs Kent has a box with 100 pencils in it. She keeps 30 for her class at school. How many does she have left for the other classes?





# Money



Just a reminder about using money! How much do you have here?



1)  +  +  +  \_\_\_\_\_

2)  +  +  \_\_\_\_\_

3)  +  +  \_\_\_\_\_

4)  +  +  +  \_\_\_\_\_

5)  +  +  +  \_\_\_\_\_

6)  +  +  +  \_\_\_\_\_

7)  +  +  +  \_\_\_\_\_



cola = £1.35  
ice cream cone = £1.22  
hamburger = £2.90

comic = £0.57  
shirt = £8.10  
T-shirt = £10.32

milk shake = £2.25  
deluxe cheeseburger = £3.19



1) What is the total cost of a hamburger and a milk shake?

\_\_\_\_\_

2) What is the total cost of two shirts?



\_\_\_\_\_

3) What is the total cost of a hamburger, a shirt and a comic?

\_\_\_\_\_

4) What is the total cost of five comics and four deluxe cheeseburgers?

\_\_\_\_\_

5) What is the total cost of a comic, a deluxe cheeseburger, a shirt and a hamburger?

\_\_\_\_\_

6) What is the total cost of three colas, two hamburgers and four milk shakes?



\_\_\_\_\_

7) What is the total cost of a deluxe cheeseburger and a cola?



\_\_\_\_\_

8) What is the total cost of four deluxe cheeseburgers?

\_\_\_\_\_



Write each amount in words.

1) £3.37

---

2) £43.24

---

3) £8.70

---

4) £86.23

---

5) £7.13

---

6) £56.55

---

7) £4.41

---

8) £39.61

---

9) £83.73

---

10) £5.22

---





Write each amount in numbers.

1) \_\_\_\_\_ eighty six pounds and ninety eight pence.

2) \_\_\_\_\_ eighty seven pounds and twenty eight pence.

3) \_\_\_\_\_ eighty six pounds and eight pence.

4) \_\_\_\_\_ nine pounds and two pence.

5) \_\_\_\_\_ ninety five pounds and ninety two pence.

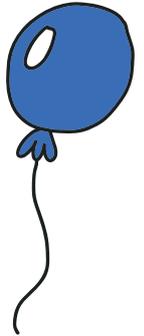
6) \_\_\_\_\_ one pound and forty seven pence.

7) \_\_\_\_\_ eight pounds and twenty three pence.

8) \_\_\_\_\_ two pounds and ninety five pence.

9) \_\_\_\_\_ twenty nine pounds and fifteen pence.

10) \_\_\_\_\_ fifty one pounds and twenty five pence.



5

8

7

6

9

1

4

0

3

2



## Percentages



Working with money and prices often involves using percentages.

“Per cent” means “out of 100” and is often written %.

So 10% means 10 out of 100.

Some common percentages are used all the time so try to remember them!

50% means 50 out of 100

As a fraction this would be  $\frac{50}{100}$  or  $\frac{1}{2}$

As a decimal it would be 50 hundredths so 0.50 (usually written 0.5)

1) Complete these statements: the first one is done for you.

a)  $\frac{1}{2}$  is the same as 0.5 which is the same as 50%

b)  $\frac{1}{4}$  is the same as 0.25 which is the same as \_\_\_\_\_ %

c)  $\frac{3}{4}$  is the same as \_\_\_\_\_ which is the same as 75%

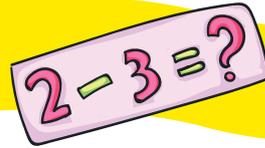
d)  $\frac{1}{10}$  is the same as \_\_\_\_\_ which is the same as \_\_\_\_\_ %

e)  $\frac{1}{1}$  is the same as \_\_\_\_\_ which is the same as \_\_\_\_\_ %



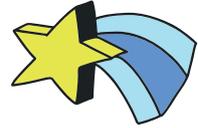


# Subtracting larger numbers in columns



Let's get warmed up!

Answer these sums as quickly as you can! Do not use your fingers!  
If you need to check an answer then draw in dots to help you count on.



- |                        |                        |                        |
|------------------------|------------------------|------------------------|
| 1) $11 - 5 = \square$  | 2) $12 - 6 = \square$  | 3) $12 - 7 = \square$  |
| 4) $14 - 8 = \square$  | 5) $13 - 7 = \square$  | 6) $15 - 6 = \square$  |
| 7) $16 - 8 = \square$  | 8) $14 - 9 = \square$  | 9) $14 - 6 = \square$  |
| 10) $15 - 7 = \square$ | 11) $18 - 9 = \square$ | 12) $16 - 7 = \square$ |
| 13) $15 - 8 = \square$ | 14) $13 - 8 = \square$ | 15) $16 - 9 = \square$ |
| 16) $17 - 9 = \square$ | 17) $17 - 8 = \square$ | 18) $12 - 8 = \square$ |
| 19) $13 - 6 = \square$ | 20) $14 - 6 = \square$ | 21) $13 - 5 = \square$ |
| 22) $12 - 5 = \square$ | 23) $14 - 5 = \square$ | 24) $12 - 9 = \square$ |

Do you know the difference between **digits** and **numbers**?

Digits are the individual figures that make up numbers. So, **digits** are like **letters** and **numbers** are like **words** – you use letters to make words, and digits to make numbers! e.g. 5238 – the **digits** are 5,2,3 and 8, and the **number** is five thousand, two hundred and thirty-eight.



Now, as you know, digits can mean different things depending on where they are in the number.

Can you tell what the digit 3 shows in these numbers? (i.e. ones, tens, hundreds, thousands...)

- 4321 \_\_\_\_\_
- 3622 \_\_\_\_\_
- 7103 \_\_\_\_\_
- 2436 \_\_\_\_\_



$2 - 3 = ?$



Break these numbers up to show what each digit represents.

	Thousands	Hundreds	Tens	Ones
e.g. 3851				

Now it's your turn!

1) 7920				
2) 358				
3) 6672				
4) 3451				

5) What are the digits in figure 1? \_\_\_\_\_

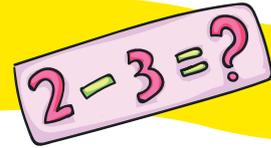
6) What is the number in figure 2? \_\_\_\_\_

7) What is the third digit in figure 3? \_\_\_\_\_

8) What are the second and fourth digits in figure 4? \_\_\_\_\_

9) Which is the biggest number? \_\_\_\_\_

10) Which has the least amount of hundreds? \_\_\_\_\_



Unfortunately, not all column subtraction is quite so straightforward.

If we take the sum

$$\begin{array}{r} 385 \\ - 127 \\ \hline \end{array}$$

Start from the ones column, work down.

But, what happens when we try to subtract the ones column?  
If we've got 5 apples on a table, can we take away 7 apples?

**No! We can't!**

Why can't we work upwards for this column?  
Because if we do, we change the sum to

$$\begin{array}{r} 387 \\ - 125 \\ \hline \end{array}$$

**Which means we are not doing the sum we've been asked to do!**

We have to keep the sum the same way round, so we need to find a way to change the top line so we have more than 5 to take away from. Can you think of any way we can do this?

Remember breaking down numbers into columns? Try it for this sum:-

385				
127				

This can help us see a way to give us more than 5 in the top of the ones column. But how?!  
We need to borrow a ten from the tens column and use it to make the ones column bigger!

At the moment, how many tens do we have on the top line? \_\_\_\_\_

If we 'borrowed' one of these tens from the top line  
(to add to the ones column), how many tens would we have left? \_\_\_\_\_

If we move that borrowed ten and add it to the ones  
column on the top line, how many ones will we have now? \_\_\_\_\_

So,

Becomes			



$2 - 3 = ?$



So,

$$\begin{array}{r} 7 \text{ } 15 \\ 3 \text{ } \cancel{8} \text{ } \cancel{5} \\ - 1 \text{ } 2 \text{ } 7 \\ \hline 2 \text{ } 5 \text{ } 8 \end{array}$$

we borrow a ten, meaning we have 7 tens instead of 8  
 we move the borrowed ten and add it onto the ones,  
 making 15 instead of 5  
 now we have enough ones to subtract downwards.  $15 - 7 = 8$

Now, we need to move on to subtract the next column (tens column),  
 remembering we are now doing  $7 - 2$ , Not  $8 - 2$

This is why we start in the ones column, so we can be sure to borrow  
 (if we need to) before we subtract.

So,

$$\begin{array}{r} 7 \text{ } 15 \\ 3 \text{ } \cancel{8} \text{ } \cancel{5} \\ - 1 \text{ } 2 \text{ } 7 \\ \hline 2 \text{ } 5 \text{ } 8 \end{array}$$

$15 - 7 = 8$

$7 - 2 = 5$

$3 - 1 = 2$



Example:

$$\begin{array}{r} 5 \text{ } 12 \\ 7 \text{ } \cancel{6} \text{ } \cancel{2} \\ - 2 \text{ } 2 \text{ } 6 \\ \hline 5 \text{ } 3 \text{ } 6 \end{array}$$

ones column     $2 - 6$  cannot be done, so need to borrow a ten  
 tens column    borrow 1 ten from 6 tens, leaving 5 tens  
 ones column gets the borrowed ten, making  $12 - 6 = 6$   
 tens column is now     $5 - 2 = 3$   
 hundreds column     $7 - 2 = 5$  (nothing borrowed from this column)





## Reviewing the rules and process of column subtraction



- 1) In which column should we start our subtraction? \_\_\_\_\_
- 2) On which side do we start subtracting, right or left? \_\_\_\_\_
- 3) We need to borrow when the top number is (circle one)  
bigger than the bottom number                      smaller than the bottom number
- 4) If there are 3 hundreds, and you have to borrow to give to the tens column, how many hundreds will you have left? \_\_\_\_\_
- 5) How important is it to write borrowed numbers clearly? \_\_\_\_\_
- 6) In which direction should you subtract - upwards or downwards? \_\_\_\_\_
- 7) How important is it to keep columns neat and in line? \_\_\_\_\_
- 8) If the first column is 7-4, do you need to borrow any extra? \_\_\_\_\_
- 9) If the first column is 7-8, do you need to borrow any extra? \_\_\_\_\_
- 10) If you give a borrowed ten to a column with 0 ones, how many ones will you have? \_\_\_\_\_
- 11) Write out in columns and complete this sum, making sure you apply ALL the rules!

$$730083 - 216554 =$$





# Reading and Writing Numbers

16



Write the number in words. Try to think hard about those spellings!



1) 841

---

2) 11

---

3) 550

---

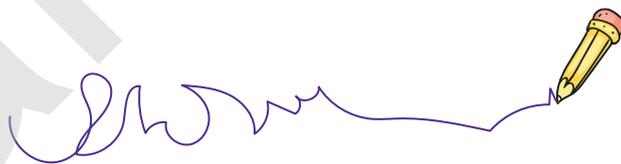
4) 791

---

5) 96

---

That's a lot of writing! Take a break!



6) 246

---

7) 461

---

8) 803

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9) 15

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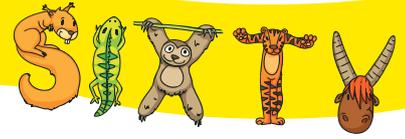
10) 14

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16 OR



Write the numbers.

1) \_\_\_\_\_

one hundred and eighteen

2) \_\_\_\_\_

sixty four

3) \_\_\_\_\_

nine hundred and four

4) \_\_\_\_\_

eighty five

5) \_\_\_\_\_

forty four

6) \_\_\_\_\_

five hundred and sixty two

7) \_\_\_\_\_

sixty

8) \_\_\_\_\_

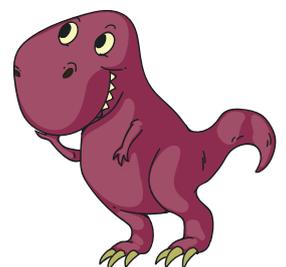
nine hundred and ninety three

9) \_\_\_\_\_

two hundred and forty five

10) \_\_\_\_\_

five hundred and twenty four





16 OR



Expand the numbers e.g. 47 becomes  $40 + 7$ .

1) 330 \_\_\_\_\_

2) 571 \_\_\_\_\_

3) 735 \_\_\_\_\_

4) 11 \_\_\_\_\_

5) 241 \_\_\_\_\_

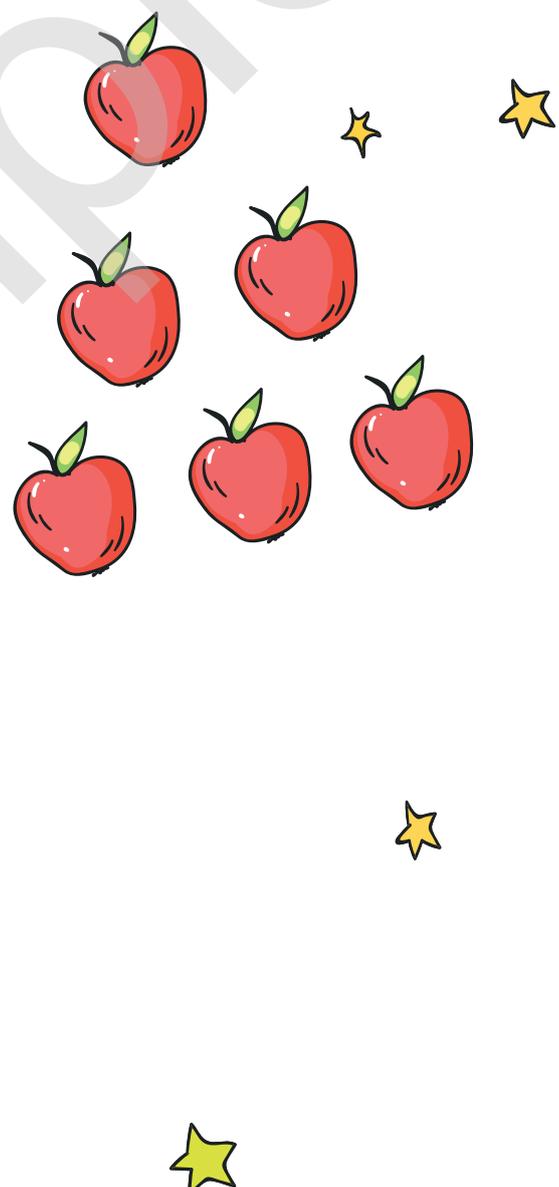
6) 584 \_\_\_\_\_

7) 850 \_\_\_\_\_

8) 242 \_\_\_\_\_

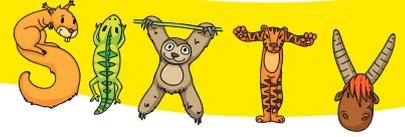
9) 23 \_\_\_\_\_

10) 596 \_\_\_\_\_





16 OR



1) Match the numbers:

134	two hundred and fifty seven		712	six hundred and twenty nine
320	five hundred and seventeen		629	one hundred and eighty three
517	eight hundred and six		821	nine hundred and thirty six
101	four hundred and fourteen		183	seven hundred and twelve
257	one hundred and thirty four		440	two hundred and two
806	one hundred and one		936	eight hundred and twenty one
911	three hundred and twenty		202	five hundred and sixty eight
414	nine hundred and eleven		568	four hundred and forty

2) Write the number that is:  
One more than

365 \_\_\_\_\_ 529 \_\_\_\_\_ 320 \_\_\_\_\_ 349 \_\_\_\_\_

301 \_\_\_\_\_ 199 \_\_\_\_\_ 330 \_\_\_\_\_ 821 \_\_\_\_\_

One less than

365 \_\_\_\_\_ 529 \_\_\_\_\_ 320 \_\_\_\_\_ 349 \_\_\_\_\_

301 \_\_\_\_\_ 199 \_\_\_\_\_ 330 \_\_\_\_\_ 821 \_\_\_\_\_



# Place Value

16 OR



Write out the **place values** of the numbers e.g. 212 is 2 hundreds, one ten and 2 ones.

1) 92 \_\_\_\_\_

2) 285 \_\_\_\_\_

3) 488 \_\_\_\_\_

4) 716 \_\_\_\_\_

5) 79 \_\_\_\_\_

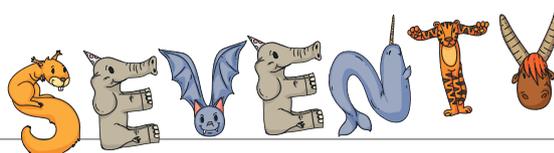
6) 247 \_\_\_\_\_

7) 551 \_\_\_\_\_

8) 881 \_\_\_\_\_

9) 32 \_\_\_\_\_

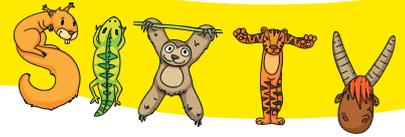
10) 209 \_\_\_\_\_



9



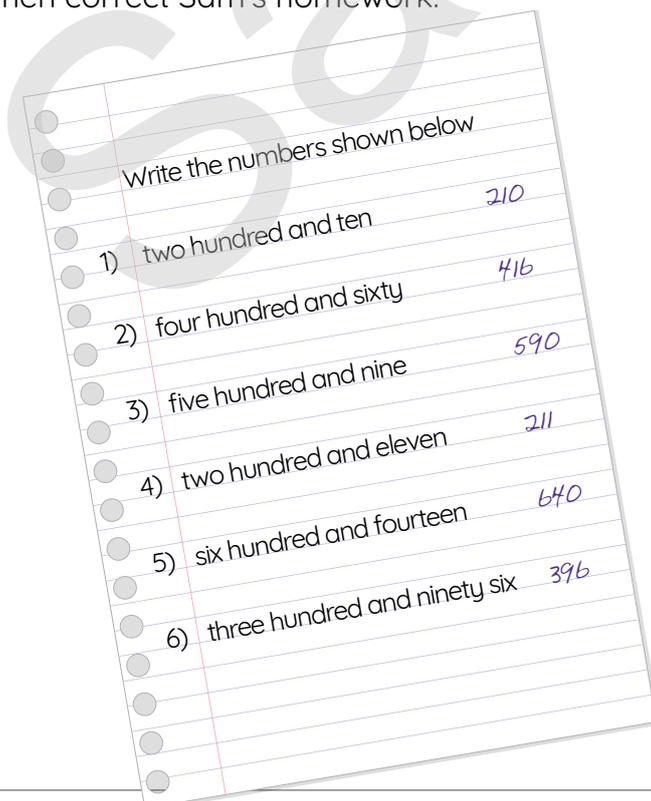
16 OR



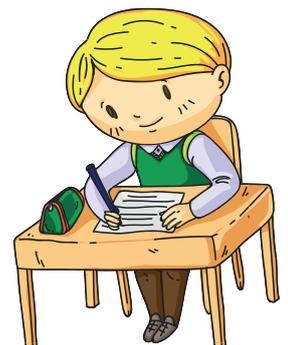
Colour the pairs that make the same number.

312	103	Three hundreds, zero tens and two ones	Three hundreds and two tens
Two hundreds three tens and two ones	302	Two hundred and thirty one	One hundred, one ten and three ones
Two hundred and one ten and three ones	One hundred and three	130	$200 + 10 + 3$
One less than three hundred	$200 + 30 + 2$	One more than five hundred and nine	Two hundred and twenty three
One hundred and thirteen	299	Three hundred and twelve	$100 + 30 + 0$
Five hundred and ten	$500 + 10 + 0$	223	231
$200 + 90 + 9$	320	510	Two hundred, nine tens and nine ones

Mark and then correct Sam's homework.

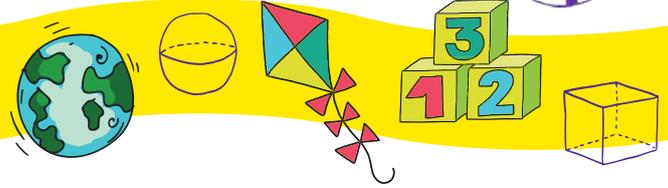


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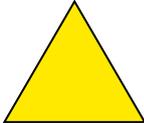
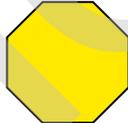
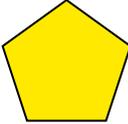
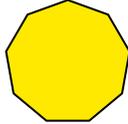
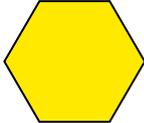
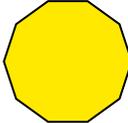




# Polygons



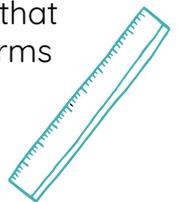
Fill in the names in the table below:

Name	Example	Number of Sides or Angles	Name	Example	Number of Sides or Angles
		3			7
		4			8
		5			9
		6			10



Carefully set up your compasses. To do this, fix the (sharp) pencil in the holder so that the compass point and pencil point touch the table together when the compass arms are together.

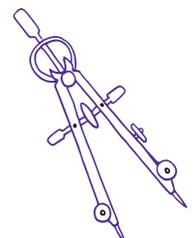
Now open the compasses to 5cm (use your ruler to get this right).



On a blank sheet, carefully draw a straight line 5cm long. Put your compass point on one end and draw one or two arcs. Now repeat this with the other end of your line. Join each end of your line to a point where two arcs cross.

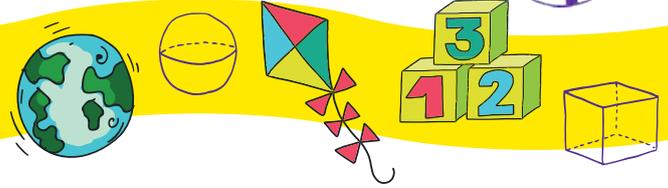
You have drawn a regular (an equilateral) triangle.

See if you can use the same idea to draw a regular polygon with more than three sides.





## Reminder about angles



The angle between two lines is a measure of how much you have to turn one of the lines so it matches the other.

Angles are measured in degrees.

A full turn - going all the way round - is  $360^\circ$

A quarter of a turn is a right angle or  $90^\circ$

An angle that is less than a quarter of a turn is called acute.

An angle that is between  $\frac{1}{4}$  and  $\frac{3}{4}$  a turn is called obtuse.

An angle that is more than  $\frac{3}{4}$  a turn is called reflex.

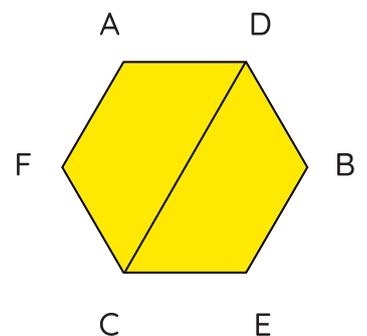
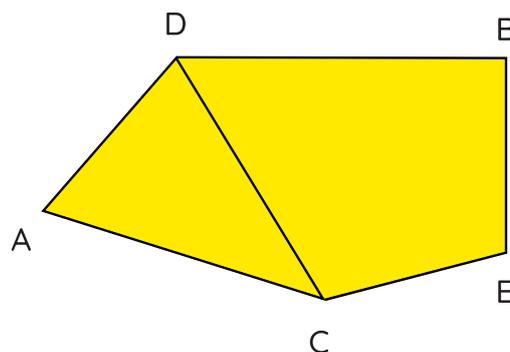
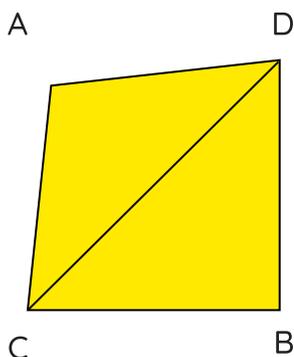
A protractor is used to measure angles. Use one now to measure the angles of the equilateral triangle that you drew. What size are the angles?

What do you get if you add together all three angles?

This total will be the same for every triangle so try to remember it!

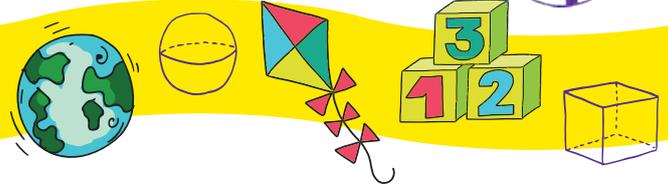
**A diagonal of a polygon** joins two vertices and is not a side.

The line CD is a diagonal in each of these polygons.

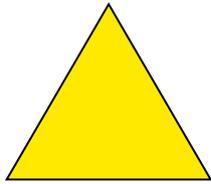




# Triangles and Quadrilaterals

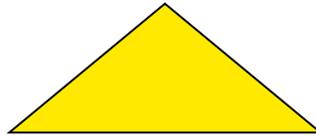


**Triangles** are classified according to the measures of their sides.



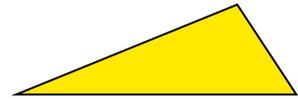
**equilateral**

There are three equal sides



**isosceles**

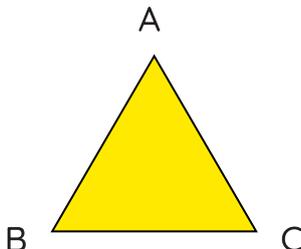
There are at least two equal sides



**scalene**

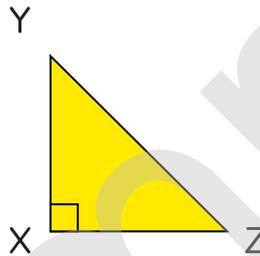
There are no equal sides

Triangles are also classified according to the measures of their angles.



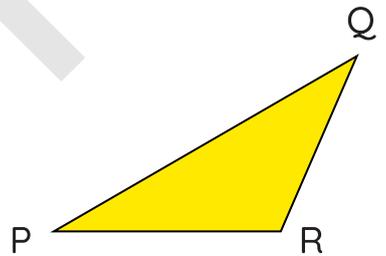
**acute**

There are three acute angles



**right**

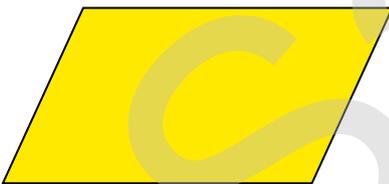
There is one right angle



**obtuse**

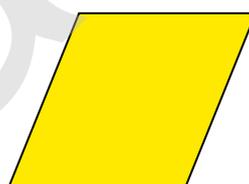
There is one obtuse angle

Some **quadrilaterals** have special names.



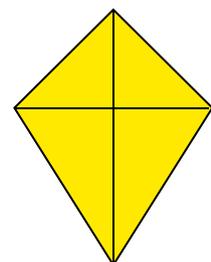
**parallelogram**

A quadrilateral whose opposite sides are parallel and equal



**rhombus**

A parallelogram with four equal sides



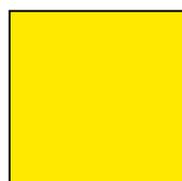
**kite**

A quadrilateral with two pairs of equal sides and one line of symmetry



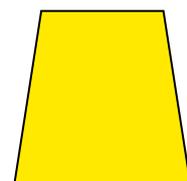
**rectangle**

A parallelogram with four right angles



**square**

A rectangle with four equal sides

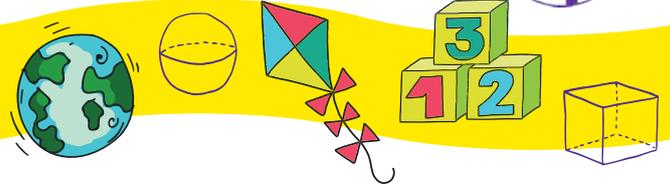


**trapezium**

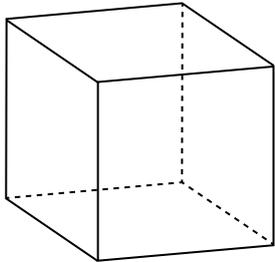
A quadrilateral with one pair of opposite parallel sides



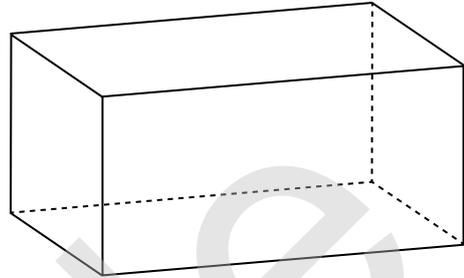
# 3D Shapes



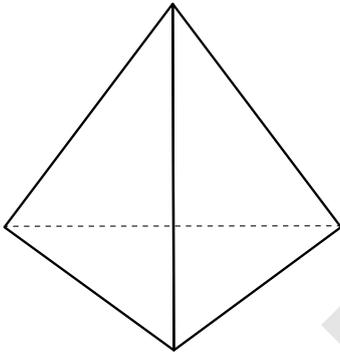
Name as many of these 3D shapes as you can. Use the 3D shape matching game for help if you need it.



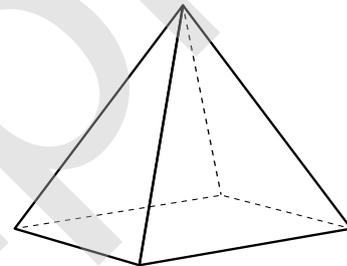
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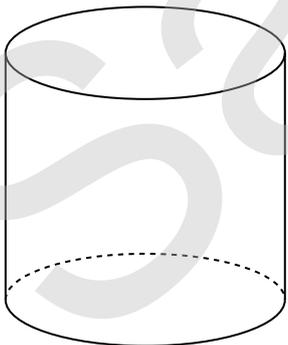
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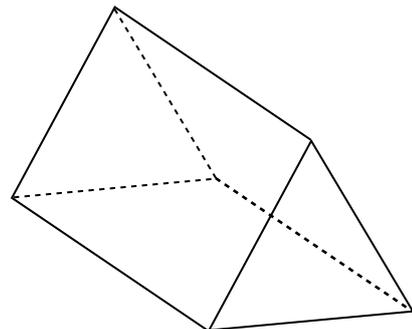
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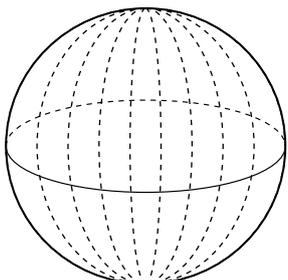
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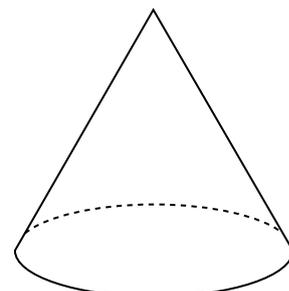
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