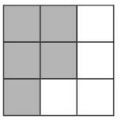
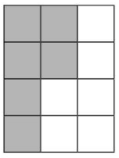
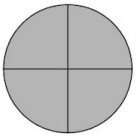
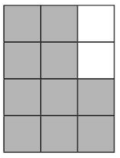
Fractions

1 **What fraction of each shape has been shaded?**

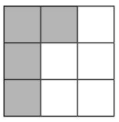
a $\frac{\square}{9}$ 

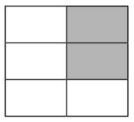
b $\frac{\square}{\square}$ 

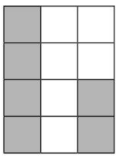
c $\frac{\square}{\square}$ 

d $\frac{\square}{\square}$ 

e $\frac{\square}{\square}$ 

f $\frac{\square}{\square}$ 

g $\frac{\square}{\square}$ 

h $\frac{\square}{\square}$ 

2 **Answer the following questions about the shapes above:**

a What part of **a** is **unshaded**? $\frac{\square}{\square}$

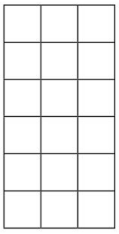
b What fraction of **e** is **unshaded**? $\frac{\square}{\square}$

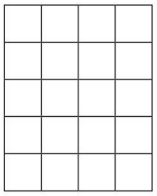
c In **f**, is more of the shape shaded or unshaded? _____

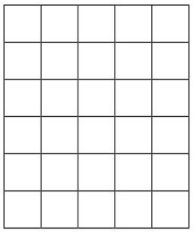
d What fraction of **b** is **unshaded**? $\frac{\square}{\square}$

e Look at shape **h**. What can you say about the amount of shaded and unshaded parts?

3 **Shade the given fraction for each shape:**

a $\frac{8}{18}$ 

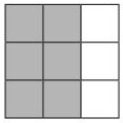
b $\frac{17}{20}$ 

c $\frac{12}{30}$ 

d $\frac{12}{16}$

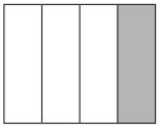
4 **Are these statements true or false?**

a



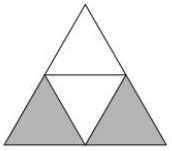
$\frac{6}{9}$ is shaded

b



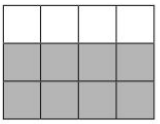
$\frac{1}{4}$ is shaded

c



$\frac{1}{3}$ is shaded

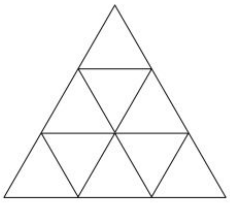
d



$\frac{7}{12}$ is shaded

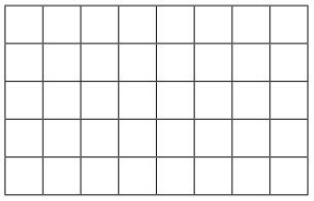
5 **Colour the shapes to show:**

a



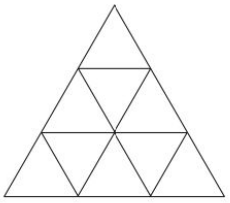
one third

b



one quarter

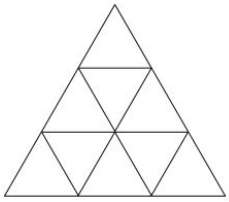
c



two thirds

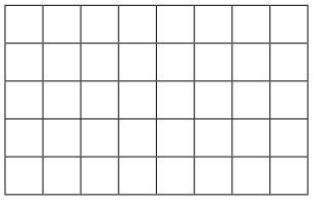
6 **Now find another way to colour the shapes to show the same fraction:**

a



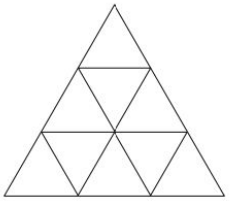
one third

b



one quarter

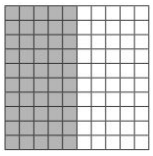
c



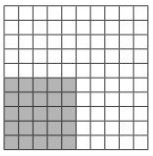
two thirds

7 **What fraction of each hundred square is shaded?**

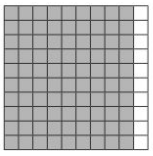
a



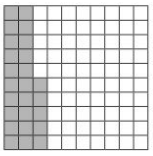
b



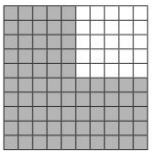
c



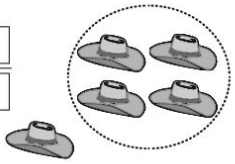
d

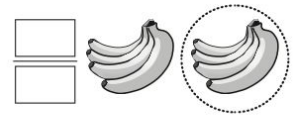


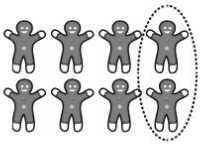
e

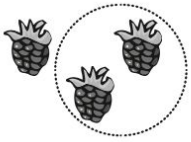


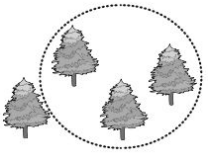
1 **What fraction of each group has been circled?**

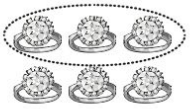
a 

b 

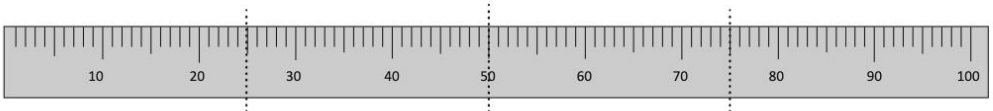
c 

d 

e 

f 

2 **Look at the metre ruler and work out how many centimetres are represented by the fraction:**



a $\frac{1}{4}$ m = ____ cm **b** $\frac{1}{2}$ m = ____ cm **c** $\frac{3}{4}$ m = ____ cm

4 **Find the fractional amounts. You can use blocks or counters to help or solve the problems in your head using division:**

a $\frac{1}{5}$ of 20 = ____	**b** $\frac{1}{4}$ of 12 = ____	**c** $\frac{1}{3}$ of 18 = ____	**d** $\frac{1}{6}$ of 18 = ____
20 ÷ 5 = ____	12 ÷ ____ = ____	18 ÷ ____ = ____	18 ÷ ____ = ____
e $\frac{1}{5}$ of 15 = ____	**f** $\frac{1}{9}$ of 27 = ____	**g** $\frac{1}{2}$ of 14 = ____	**h** $\frac{1}{7}$ of 21 = ____
____ ÷ ____ = ____	____ ÷ ____ = ____	____ ÷ ____ = ____	____ ÷ ____ = ____

1 **Express the following in numerals:**

a four thousand three hundred and sixty two _____

b three hundred and twenty four _____

c eight thousand nine hundred and three _____

d four thousand eight hundred and forty one _____

e seven hundred and three _____

f five thousand four hundred and two _____

2 **Write the following in words:**

a 5 816 _____

b 915 _____

c 8 466 _____

d 254 _____

e 7 615 _____

f 2 598 _____

3 **Match the numerals with the words:**

4 639	six thousand seven hundred and ninety
2 709	one thousand and three
8 341	four thousand six hundred and thirty nine
1 003	two thousand seven hundred and nine
6 790	eight thousand three hundred and forty one

1 **Circle the larger number:**

a 8 434 / 8 340 **b** 5 492 / 5 692 **c** 17 015 / 17 150

d 9 840 / 8 999 **e** 4 815 / 4 518 **f** 25 194 / 25 941

g 768 / 7 068 **h** 87 158 / 87 155

2 **Insert > (greater than) or < (less than) to make each statement true.**

a 6 482 ☐ 6 681 **b** 9 452 ☐ 9 360

c 84 945 ☐ 85 105 **d** 1 999 ☐ 2 009

e 1 469 ☐ 1 649 **f** 75 136 ☐ 73 156

g 94 054 ☐ 91 504 **h** 7 819 ☐ 7 815

3 **Arrange the following numbers in *ascending* order:**

46 827, 468 457, 115 468, 250 015, 98 652, 12 698

_____, _____, _____, _____, _____, _____

4 **Arrange the following numbers in *descending* order:**

36 817, 408 453, 115 468, 252 013, 89 632, 12 898

_____, _____, _____, _____, _____, _____

5 **Look at each set of numbers and list some that come in between. Write them in order.**

a **23 560**

37 682

b **123 691**

223 691

c **110 420**

80 682

6 **Write a number that is:**

a More than 5 678

b Close to 56 018

c A little less than 78 931

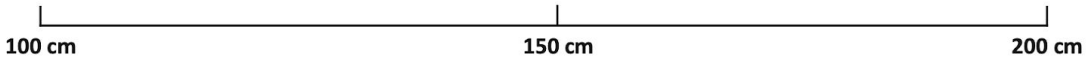
d Almost double 4 000

e Between 34 612 and 38 901

f Less than half of 88 000

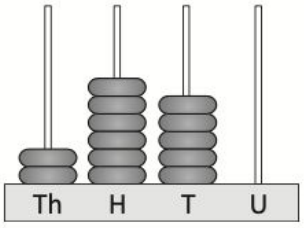
7 **Here are the heights of 5 students. Place them on the number line. Find your height and that of two friends and add these to the number line.**

Sarah	174 cm
Huy	152 cm
Jack	148 cm
Emma	167 cm
Nikita	121 cm



Place value of whole numbers – place value to 4 digits

The place or position of a digit in a number helps us understand its value.



2 650

2 is worth 2 000 or two thousands

6 is worth 600 or six hundreds

5 is worth 50 or five tens

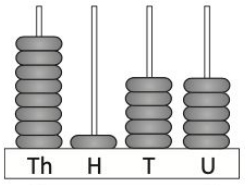
0 is worth zero or no units

1 **Fill in the place value chart for each number. The first one has been done for you.**

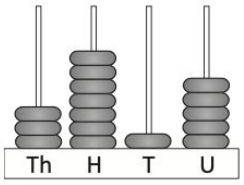
		Thousands	Hundreds	Tens	Units
a	465		4	6	5
b	8 972				
c	45				
d	798				
e	4 507				
f	3 041				

1 **Write the number shown on each abacus:**

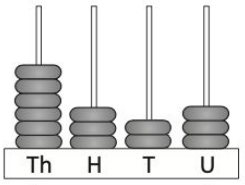
a



b

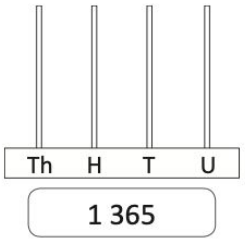


c

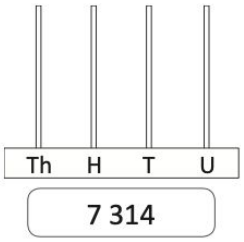


2 **Draw the beads to show the numbers:**

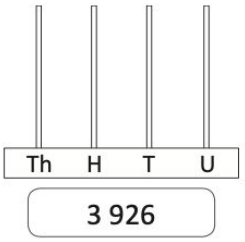
a



b



c



3 **Circle the digit that matches the place value:**

a tens: 2 330

b units: 4 322

c hundreds: 9 218

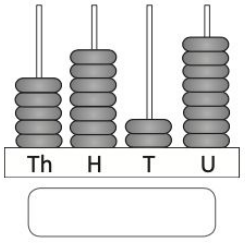
d units: 5 661

e tens: 8 754

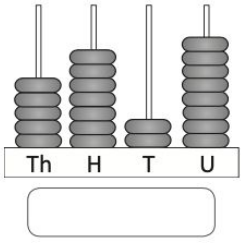
f thousands: 6 845

4 **Add a bead to each abacus anywhere you like and write the new number:**

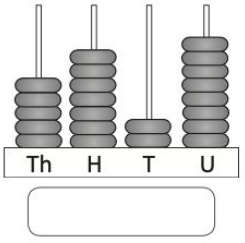
a



b

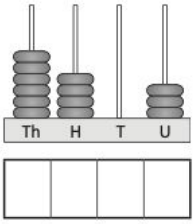


c

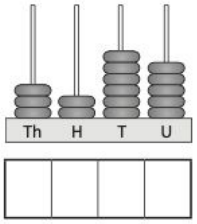


2 **Write the number shown on each abacus.**

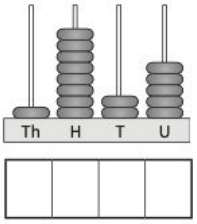
a



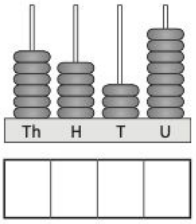
b



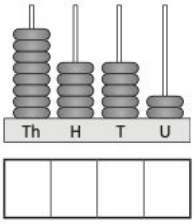
c



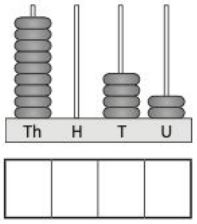
d



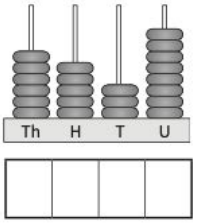
e



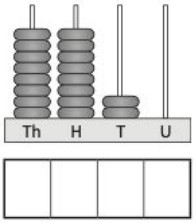
f



g



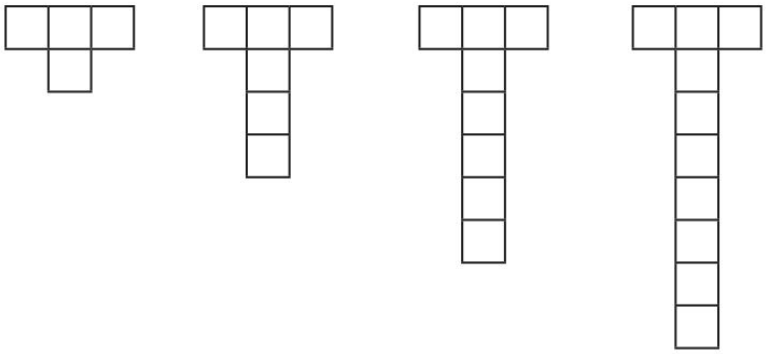
h



a Picture 1 Picture 2 Picture 3 Picture 4 Picture 5

Picture number	1	2	3	4	5
Number of dots	1	3	5	7	
Rule	Picture number × 2 − 1 = Number of dots				

b Picture 1 Picture 2 Picture 3 Picture 4 Picture 5

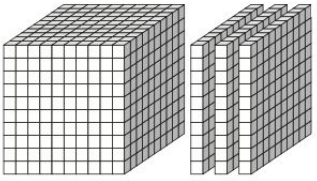


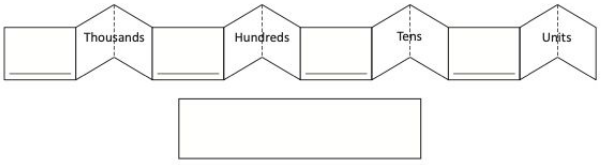
Picture number	1	2	3	4	5
Number of squares	4	6	8	10	
Rule	Picture number × 2 + 2 = Number of squares				

How many squares will Picture 8 have?

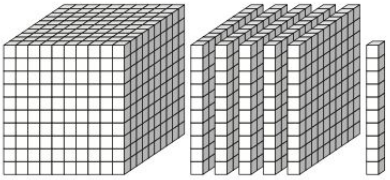
1 **Which number is each set of base 10 blocks representing?**
Write this number in the box and show it as expanded notation:

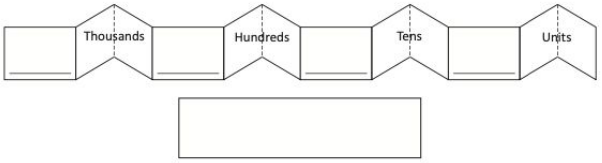
a



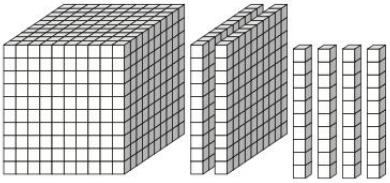


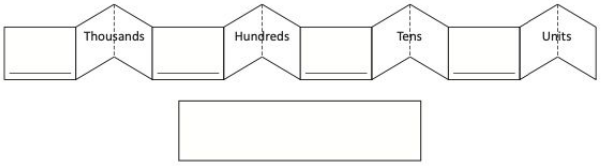
b





c



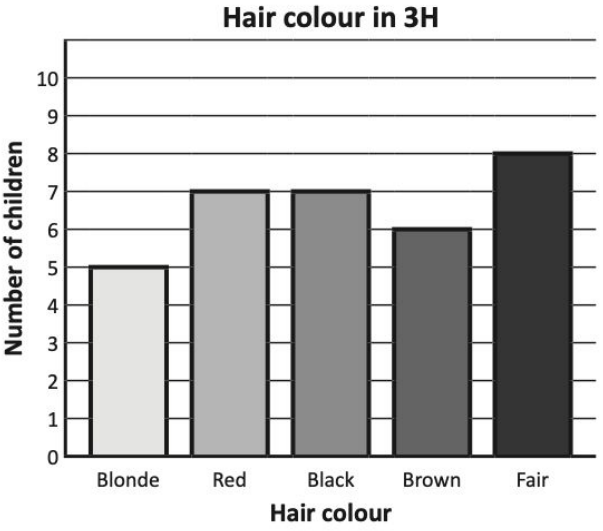


2 **Draw a line to match the numbers in expanded notation to the numerals.**

a	4 thousands 6 hundreds 1 ten 2 units	4 254
b	4 thousands 6 hundreds 8 tens 0 units	4 361
c	4 thousands 4 hundreds 1 ten 1 unit	4 680
d	4 thousands 3 hundreds 6 tens 1 unit	4 612
e	4 thousands 2 hundreds 5 tens 4 units	4 411

Column graphs are a clear way of showing data. There is a vertical line that has numbers, and is called the scale. The horizontal line has the different categories that are being counted. There should always be a heading at the top so it's easy to see what the data is about.

1 **Answer the questions about the data shown on this column graph.**



a How many children have brown hair? ☐

b Which colour hair do the smallest group of children have?

_____

c Which colour hair do most children have?

_____

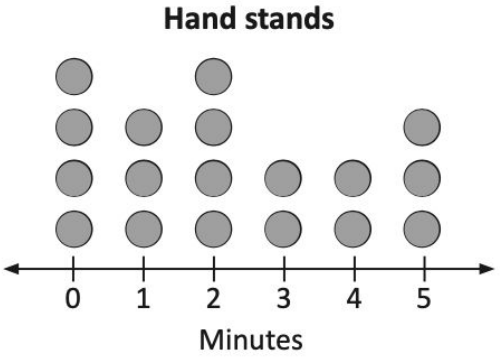
d What do you notice about the number of children who have either red or black hair?

2 **This dot plot shows the length of time a group of gymnasts can hold a hand stand. Answer these questions:**

a How many gymnasts can hold a hand stand for 1–3 minutes? ☐

b How many gymnasts can't do a hand stand yet? ☐

c How many gymnasts can hold a hand stand for more than 4 minutes? ☐



1 **Warm up with these. Find the mean for each set of numbers:**

a 20, 6, 18, 4

b 13, 7, 5, 8, 3, 2, 4

c 45, 46, 47, 50, 57

2 **Sean wanted to buy new soccer boots and priced the same boots in 4 different stores.**

a What is the average or mean price of the boots?

b If Sean buys the cheapest option, how much less than the mean does he spend?

Another statistic we use to analyse data is the median. The median is the middle number when the data is put in order. Look at:

17 12 3 5 25 33 12 14 36 22 23 29 37

We reorder the numbers and count in from either end:

3 5 12 12 14 17 (22) 23 25 29 33 36 37

22 is the median or middle number. There are 6 numbers on either side of it.

1 **Order these sets of numbers and find the median for each:**

a 13, 7, 5, 8, 3, 2, 4

b 22, 6, 18, 4, 7, 23

c 4.5, 8.2, 3.6, 4.1, 2.3, 3.7, 7.3

d 45, 46, 47, 50, 59, 102

Another statistic we use when analysing data is the **mode**. The mode is the number that occurs most frequently in a set. Look at:

17 12 4 5 25 33 12 14 4 36 22 23 29 37 26 4 34

When working with a lot of numbers, it is a good idea to organise the data into a stem and leaf plot. This makes it easy to identify the mode. The stem and leaf plot below has all the tens on the left as the stem, and the units on the right as the leaves.

We organise this as:

tens	units				
3	3	6	7	4	
2	5	2	3	9	6
1	7	2	2	4	
0	**4**	5	**4**	**4**	

When we look at the numbers this way it is easy to see that 4 is the mode. It occurs 3 times.

A set of numbers can have 1 mode such as the one above. It can have no modes if no numbers are repeated or 2 or more modes if more than one value occurs with the same frequency.

1 **Organise these sets of numbers into stem and leaf plots and identify the modes. The stems have been done for you:**

a 29, 17, 17, 18, 19, 11, 13, 19, 20, 17, 17, 13

tens	units
2	
1	
0	

The mode is: ☐

b 24, 18, 27, 13, 16, 25, 32, 26, 31, 18, 17, 23, 16

tens	units
3	
2	
1	
0	

The mode is: ☐

Collecting and analysing data – range

The **range** is the spread of data. To find it, we subtract the lowest value from the highest value.

Look at these sets of test scores from 2 different Maths groups. The tests were out of 20.

Group 1	**Group 2**
20, 19, 15, 11, 18, 4, 3	15, 13, 12, 11, 10
20 − 3 = 17	15 − 10 = 5
Range = 17	Range = 5

Group 1 has a far wider range of abilities. Their teacher will have to plan for kids who get the topic, kids who kind of get it, and kids who need lots of support.

Group 2's range is much smaller. No one has really mastered the concept and no one has really struggled. The teacher will have fewer different needs to meet.

1 **Warm up with these. Find the range for each set of numbers:**

a 22, 14, 17, 13, 2, 33

b 123, 148, 55, 89, 94, 131

c 4.5, 9.2, 10.7, 11.2