



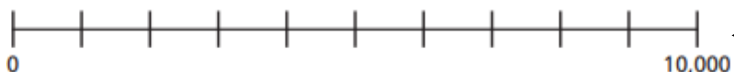
TTh	Th	H	T	O
	1,000 1,000 1,000 1,000		10	1 1

What numbers are being represented?



Circle the numbers that round to 12,000 when rounded to the nearest 1,000

12,475 11,780 12,399 12,111 11,999 11,501



Draw an arrow to show 2554 on the number line.

- a) 387
- b) 5,306
- c) 7,903
- d) 307,612
- e) 531,476
- f) 603,956

What is the value of 3 in each number?

Which decimals round to 2?

6.32 6.23 6.27 6.17 6.12 6.25

Year 5 Maths Curriculum

In year 5, pupils learn to read, write, order and compare numbers/integers to at least 1,000,000 and determine the value of each digit. They will learn to count forwards and backwards to 1,000,000 and round any number to the nearest 10, 100, 1000, 10,000 and 100,000. Pupils will also learn to round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.

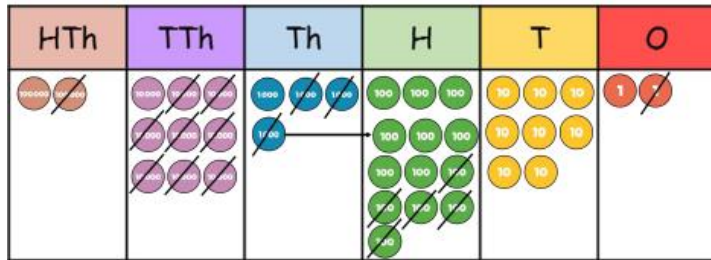
They will use concrete manipulatives, pictorial and abstract maths in their learning in order to develop fluency and precision in number and place value and to calculate across the four operations (addition, subtraction, multiplication and division.)

In year 5, pupils expand their place value knowledge to include one-tenths and one-hundredths. They will learn to combine tenths and hundredths and write the numeral in digits using a decimal point.



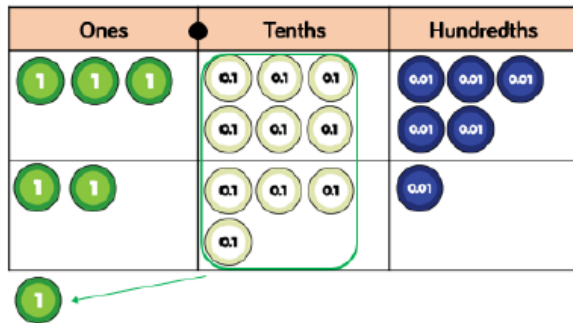
Addition, Subtraction, Multiplication & Division

Place value counters are an effective manipulative for children to use alongside their calculations. Place value counters and place value grids are used to enhance children's understanding of place value so that they can exchange between the columns, particularly when calculating numbers beyond 4-digits or decimal numbers.



	2	9	3	13	8	2
-	1	8	2	5	0	1
	1	1	1	8	8	1

Children are encouraged to estimate their answers using rounding. E.g. 4+2=6. Is my answer realistic?



$$\begin{array}{r}
 3.65 \\
 + 2.41 \\
 \hline
 6.06 \\
 \hline
 1
 \end{array}$$

Addition, Subtraction, Multiplication & Division

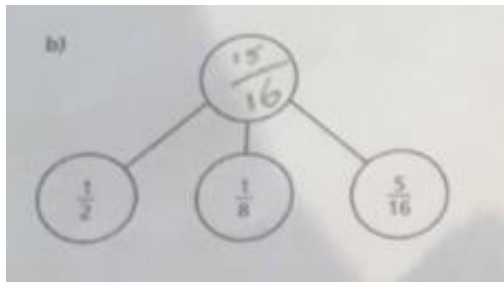
In year 5 pupils will learn to add and subtract whole numbers with more than 4-digits using a formal written method. They will also add and subtract increasingly larger numbers mentally and use rounding to check their answers to calculations and determine, in the context of a problem, levels of accuracy.

Pupils will learn to multiply numbers with up to 4-digits by a one or 2-digit number using a written formal method, including long multiplication for 2-digit numbers. They will multiply and divide numbers mentally drawing upon known facts. They will divide numbers up to 4-digits by a 1-digit number using the formal written method of short division and interpret remainders. They will also multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. They will identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers.

At this stage in their learning, our pupils are equipped with and have acquired the skill of using a variety of mathematical manipulatives in order to carry out calculations and solve problems efficiently. By the time pupils reach year 5, they are able to determine whether they require manipulatives, which manipulatives to use and to use them accordingly as and when needed. They will encounter a variety of multi-step problems in a variety of contexts and will need to decide which operations and methods to use and why.



Year 5 Maths Resources & Representations



The part whole model is used to encourage children to partition numbers into two or more parts or into their place value columns. When the parts are complete and the whole is empty, pupils use aggregation to add the parts together to find the total. When the whole is complete and at least one of the parts are empty pupils use partitioning (a form of subtraction) to find the missing part.

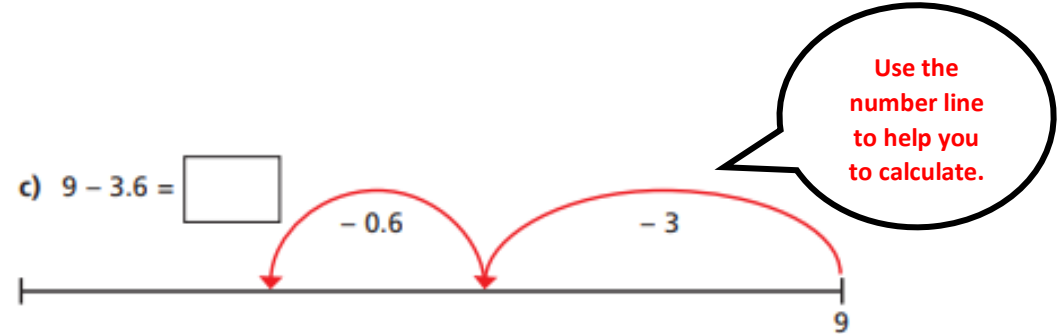
		4		1			
+	2		8		4		
	8	9	9	2	6		

Complete the missing digits.

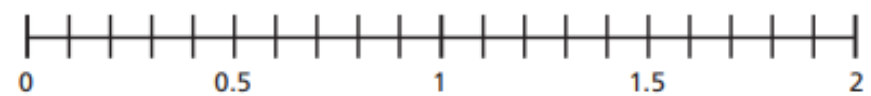
Pupils will use a written formal method to add and subtract decimal numbers.

		0	.	9		6	
+		0	.	9		7	
			.				

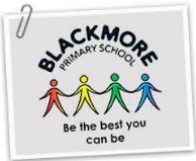
A number line is an effective tool for pupils to count on or count back. By year 5 pupils are familiar with a variety of styles; blank, numbered or partially numbered. It provides pupils with a structure in order to carry out calculations efficiently. Children may often use a number line to check their answers.



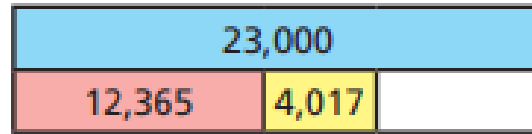
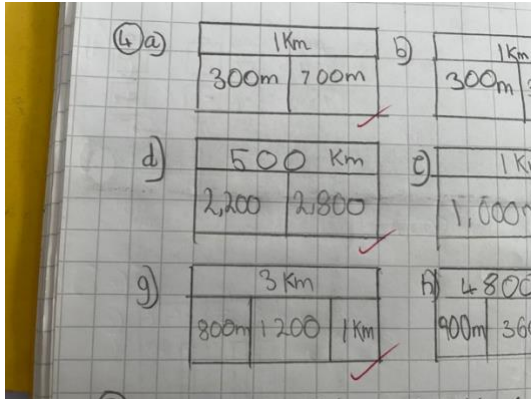
Use the number line to help you to calculate.



Use the number line to help you to calculate
 $0.7 + 0.7 =$



Year 5 Maths Resources & Representations



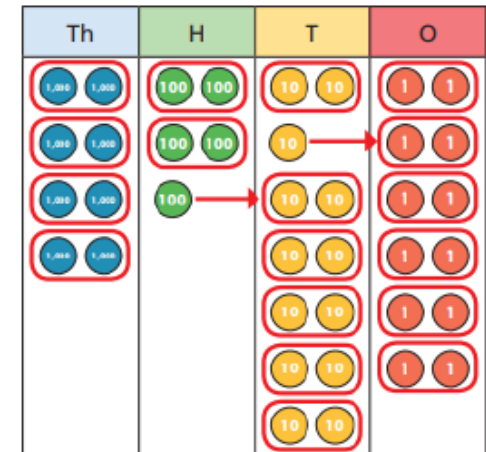
What is the missing value?

The bar model is used to represent calculations or solve problems. It supports a child's understanding of the relationship between addition and subtraction and multiplication and division.

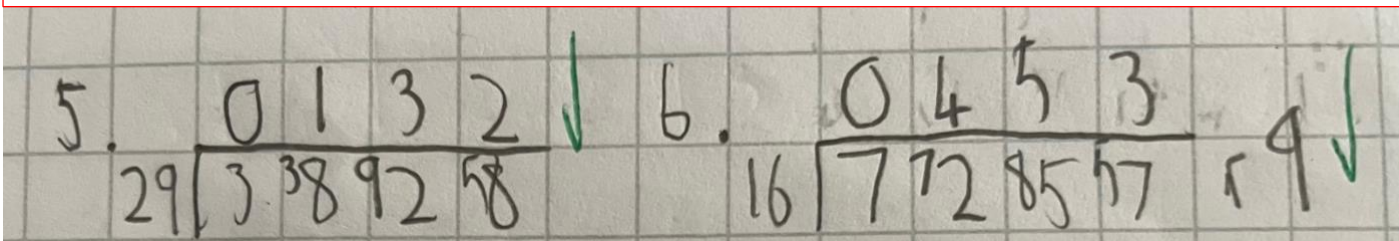
Diving 4-digits by 1-digit.

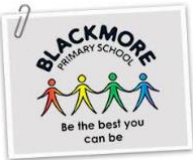
Place value counters can be used to support pupils to divide 4-digit numbers. You can see that multiple exchanges took place. Pupils will be encouraged to move away from using manipulatives when dividing larger numbers with multiple exchanges.

	4	2	6	6
2	8	5	13	12

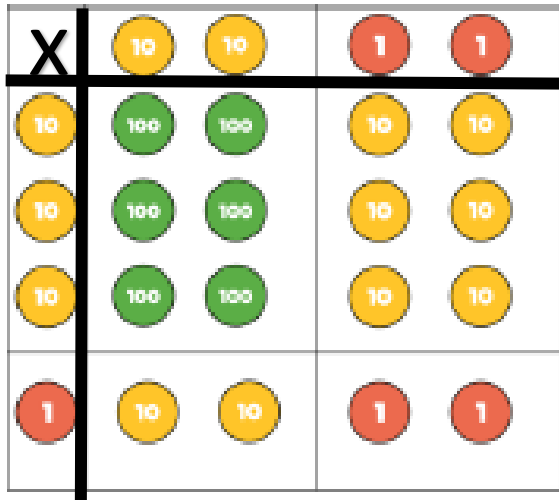


Children then use a formal method of division. The method below is called the bus stop method/short division method.

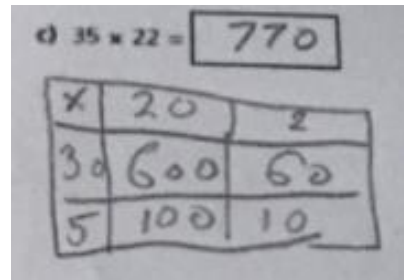




Year 5 Maths Resources & Representations

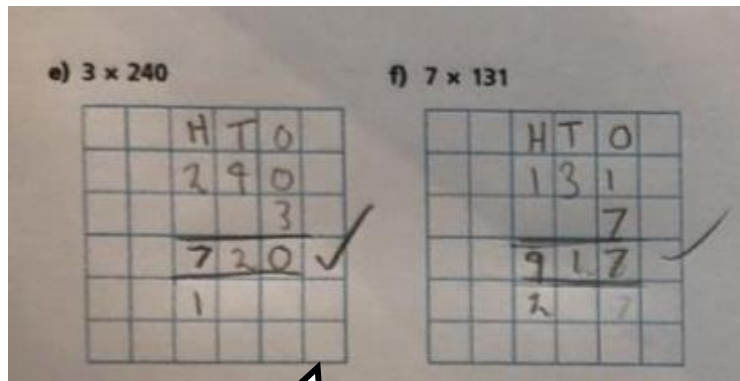


This is called the **area/grid method**. Each number is partitioned to enable children to multiply using smaller numbers.



When multiplying a multi-digit number, the area model (also known as the grid method) can be used. **Place value counters** can be used to support this process. It clearly exposes the structure of place value in the calculation and consequently enhances pupils understanding of the written formal method, long multiplication.

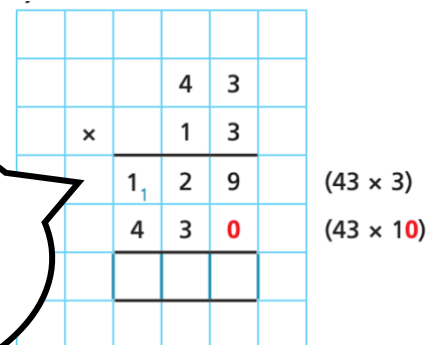
Children will then use their knowledge of times tables to multiply increasingly large numbers using short and long methods.



We call this method the **'short method'**. Children use columns to show this method.

This method is called the **'long method'** of multiplication. Children partition the number being multiplied (e.g. 1 x 22 then 30 x 22). They then add the two answers to get their total.

We call this red 0 a **place holder**. It helps the children understand that the number is getting 10 times bigger.



	H	T	O
		2	2
x		3	1
<hr/>			
		2	2
	6	6	0
<hr/>			
	6	8	2



Year 5 Maths Resources & Representations

Problem Solving & Reasoning

Ron is working out $7,423 \times 0$

$$\begin{array}{r} 7\ 4\ 2\ 3 \\ \times \quad\quad\quad 0 \\ \hline 7\ 4\ 2\ 3 \end{array}$$

The answer is 7,423



Do you agree with Ron? _____

Did Ron have to use a column method? Is there a quicker way?

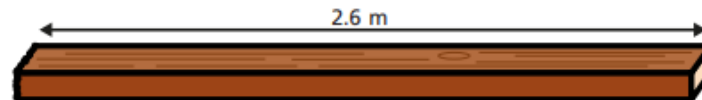
Are Rosie or Ron correct?

$54 \times 1,000$
is the same as
 $54 \times 10 \times 10 \times 10$



A plank of wood measures 2.6 m.

A carpenter cuts a piece of wood from the plank that is 0.52 m long.



- What is the length of the remaining plank?
- The carpenter cuts a second piece of wood from the plank. She now has 0.3 m of the plank remaining. What is the length of the second piece of wood that she cut?

Problem Solving & Reasoning

In year 5 our pupils are encouraged to think deeply about their mathematics. They will encounter a variety of multi-step maths problems throughout year 5. These may involve concrete, pictorial and abstract representations.

Pupils are encouraged to talk about their maths verbally in class discussions. With the support of the class teacher, pupils are always encouraged to use mathematical vocabulary to explain their answers and expand their thinking.

Is that true sometimes, always or never?

Can you prove it?

How do you know that?

What do you already know that can help you?

Acknowledgements:

Some representations have been taken from White Rose Maths, NCETM and Twinkl. These are a sample of questions that the children use in class.