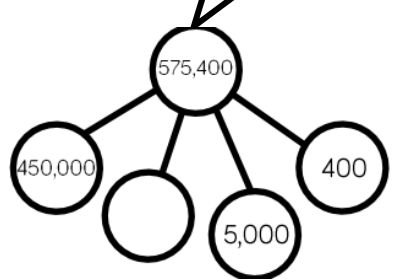




Fill in the missing numbers



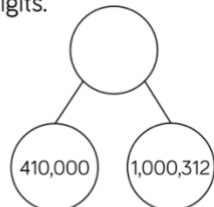
Year 6 Maths Resources & Representations



Match the representations to the numbers in digits.

One million, four hundred and one thousand, three hundred and twelve.

M	HTh	TTh	Th	H	T	O
•		•••	•	•••	•	••



- 1,401,312
- 1,041,312
- 1,410,312



Draw an arrow to show 2554 on the number line.

What is the value of 3 in each number?

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

Which decimals round to 2?

- 6.32
- 6.23
- 6.27
- 6.17
- 6.12
- 6.25

Start Number	Rounded to the nearest 10	Rounded to the nearest 100	Rounded to the nearest 1,000
DCCLXIX			

Year 6 Maths Curriculum

In year 6, pupils learn to read, write, order and compare numbers to at least 10,000,000 and determine the value of each digit. They will learn to round any whole number (including Roman Numerals) to a required degree of accuracy and use negative numbers in context, whilst calculating intervals across zero. Pupils will also solve number and practical problems involving all of the above.

By year 6, pupils are expected to have a solid understanding of mathematical concepts, including fluency and precision in number, place value and the four operations. Using concrete and pictorial representations through KS1 and KS2 really supports this. Year 6 pupils are encouraged to use abstract methods to solve problems, although concrete/pictorial representations are available if needed.

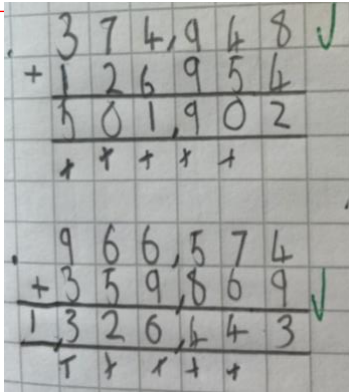
In year 6, pupils expand their place value knowledge to include one-thousandths. They will learn to combine tenths and hundredths and write the numeral in digits using a decimal point.



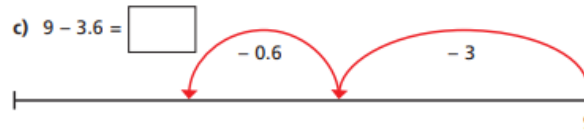
Addition & Subtraction

Formal Addition Method:

Formal Subtraction Method:



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



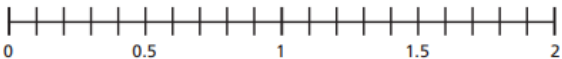
Complete the missing digits.

		4	1			
+	2		8		4	
	8	9	9	2	6	

A number line is an effective tool for pupils to count on or count back. By year 6, 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.

Use the number line to help you to calculate.

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



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

Addition & Subtraction

In year 6, pupils will continue to use formal methods to add and subtract whole numbers and decimal numbers. They will use estimations to check answers to calculations and determine (in context) an appropriate degree of accuracy, as well as performing mental calculations including mixed operations and large numbers.



Year 6 Maths Resources & Representations



Multiplication & Division

Short Multiplication & Grid Method:

	T	H	T	O
	1	3	2	5
x				4

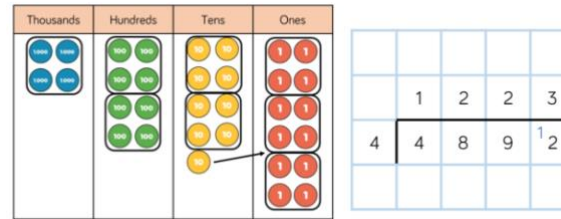
Can you complete this calculation?

Example Question: 23 X 34

X	20	3
30	20 X 30 600	3 X 30 90
4	20 X 4 80	3 X 4 12

$$\begin{array}{r}
 \text{Box 1} \quad 600 \\
 + \text{Box 2} \quad + 90 \\
 \hline
 690 \\
 \\
 \text{Box 3} \quad 80 \\
 + \text{Box 4} \quad + 12 \\
 \hline
 92 \\
 \\
 \text{Boxes (1+2)} \quad 690 \\
 + \text{Boxes (3+4)} \quad + 92 \\
 \hline
 782
 \end{array}$$

Short Division:



Long Multiplication:

		2	3
x		1	4
		9	2
	2	3	0

(23 x 4)

(23 x 10)

		1	3	2
x			1	4
		5	2	8
	1	3	2	0

(132 x 4)

(132 x 10)

Long Division:

Long division

432 ÷ 15 becomes

$$\begin{array}{r}
 28 \text{ r}12 \\
 15 \overline{) 432} \\
 \underline{30} \\
 132 \\
 \underline{120} \\
 12
 \end{array}$$

Answer: 28 remainder 12

432 ÷ 15 becomes

$$\begin{array}{r}
 28 \\
 15 \overline{) 432} \\
 \underline{30} \\
 132 \\
 \underline{120} \\
 12
 \end{array}$$

$$\frac{12}{15} = \frac{4}{5}$$

Answer: 28 $\frac{4}{5}$

432 ÷ 15 becomes

$$\begin{array}{r}
 28.8 \\
 15 \overline{) 432.0} \\
 \underline{30} \\
 132 \\
 \underline{120} \\
 120 \\
 \underline{120} \\
 0
 \end{array}$$

Answer: 28.8

Multiplication & Division

Pupils will multiply multi-digit numbers up to a 4-digit number by a two-digit whole number using a formal method of short and long multiplication. When dividing up to 4-digit numbers by two-digit numbers, children will use a formal written method of both short and long division, as well as interpreting the remainders as whole numbers, fractions or by rounding, as appropriate for the context.

They will identify common factors, common multiples and prime numbers.

In year 6, pupils 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 6 Maths Resources & Representations

Fractions including Decimals & Percentages

Alex is simplifying $\frac{8}{12}$ by dividing the numerator and denominator by their highest common factor.

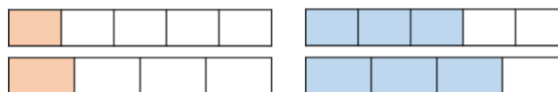
Factors of 8: 1, 2, 4, 8

Factors of 12: 1, 2, 3, 4, 6, 12

4 is the highest common factor.

$$\frac{8}{12} = \frac{2}{3}$$

Compare the fractions.



$$\frac{1}{5} \bigcirc \frac{1}{4}$$

$$\frac{1}{5} \bigcirc \frac{3}{5}$$

$$\frac{1}{4} \bigcirc \frac{3}{4}$$

$$\frac{3}{5} \bigcirc \frac{3}{4}$$

Use Alex's method to simplify these fractions:

$$\frac{6}{9} \quad \frac{6}{18} \quad \frac{10}{18} \quad \frac{10}{15} \quad \frac{15}{50}$$

Find the LCM, convert the fractions so they have the same denominator and add the fractions.

$$\frac{1}{2} + \frac{1}{3} = ?$$

$$\frac{1}{2} \times \frac{3}{3} = \frac{3}{6}$$

$$\frac{1}{3} \times \frac{2}{2} = \frac{2}{6}$$

$$\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

$$1\frac{1}{2} + 2\frac{1}{6} = 1\frac{3}{6} + 2\frac{1}{6} = 3\frac{4}{6} = 3\frac{2}{3}$$



Insert photograph of pupil's maths using written formal method for multiplication.

Insert photograph of pupil's maths solving fractions divided by whole numbers

Convert the mixed number to an improper fraction to multiply.

$$2\frac{3}{5} \times 3 = \frac{13}{5} \times 3 = \frac{39}{5} = 7\frac{4}{5}$$

Fractions including Decimals & Percentages

Pupils will compare and order fractions, including fractions above one. They will learn to convert between mixed number fractions ($1\frac{1}{2}$) and improper fractions ($\frac{5}{2}$). They will use common factors to simplify fractions and use common multiples to express fractions in the same denominator.

Pupils will add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. They will also multiply simple pairs of proper fractions, writing the answer in its simplest form ($\frac{4}{4} \times \frac{1}{4} = \frac{4}{16} = \frac{1}{4}$). They will also multiply fractions by whole numbers ($\frac{1}{2} \times 5 = \frac{5}{2} = 2\frac{1}{2}$). They will also divide proper fractions by whole numbers.

The pupils will identify fraction, decimal and percentage equivalents ($\frac{2}{10}$, 0.2, 20%) in different contexts.

They will continue to use their place value knowledge of decimals to multiply and divide numbers by 10, 100 and 1000, giving answers up to 3 decimal places. The pupils will multiply one-digit numbers with up to 2 decimal places by whole numbers using a formal multiplication method (1.32×4). They will solve problems which require answers to be rounded.



Problem Solving & Reasoning

At the start of June, there were 1,793 toy cars in the shop.

During June,

- 8,728 more toy cars were delivered
- 9,473 toy cars were sold.

How many toy cars were left in the shop at the end of June?

How do we solve a question with multi-steps?

- 9 Jack chose a number.
He multiplied the number by 7
Then he added 85
His answer was 953

What number did Jack choose?

Show your method

Can you prove he is wrong?

Alex calculated $1,432 \times 4$

Here is her answer.

	Th	H	T	O
	1	4	3	2
×				4
	4	16	12	8

$1,432 \times 4 = 416,128$

u explain what Alex has done

This is an example of a SATS question (2019).

Problem Solving & Reasoning

In year 6, our pupils are encouraged to think deeply about their mathematics. They will encounter a variety of multi-step maths problems throughout year 6. 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?

What do you already know that can help you?

How do you know that?

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.