CALCULATION POLICY - DIVISION

	Year 3	Year 4	Year 5	Year 6
*Mental Calculations and Methods **	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	Recall multiplication and division facts for multiplication tables up to 12 × 12 Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers Recognise and use factor pairs and commutativity in mental calculations	Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers Establish whether a number up to 100 is prime and recall prime numbers up to 19 Multiply and divide numbers mentally drawing upon known facts Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 Recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)	Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context Perform mental calculations, including with mixed operations and large numbers Identify common factors, common multiples and prime numbers Use their knowledge of the order of operations to carry out calculations involving the four operations Solve problems involving addition, subtraction, multiplication and division

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		Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign Solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy.
Fractions Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators	Recognise and show, using diagrams, families of common equivalent fractions Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number	Compare and order fractions whose denominators are all multiples of the same number Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination Compare and order fractions, including fractions > 1 Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8]

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Recognise and show, using diagrams, equivalent fractions with small denominators Add and subtract fractions with the same denominator within one whole (for example, 5/7 +1/7 = 6/7) Compare and order unit fractions, and fractions with the same denominators Solve problems that involve all of the above.	Add and subtract fractions with the same denominator Recognise and write decimal equivalents of any number of tenths or hundredths Recognise and write decimal equivalents to ¼, ½, ¾ Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths Round decimals with one decimal place to the nearest whole number Compare numbers with the same number of decimal places up to two decimal places Solve simple measure and money problems involving fractions and decimals to two decimal places.	number [for example, 2/5 + 4/5 = 6/5 = **1** 1/5] Add and subtract fractions with the same denominator and denominators that are multiples of the same number Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams Read and write decimal numbers as fractions [for example, 0.71 = 71/100] Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents Round decimals with two decimal places to the nearest whole number and to one decimal place Read, write, order and compare numbers with up to three decimal places	Divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6] Associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8] Identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places Multiply one-digit numbers with up to two decimal places by whole numbers Use written division methods in cases where the answer has up to two decimal places Solve problems which require answers to be rounded to specified degrees of accuracy Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

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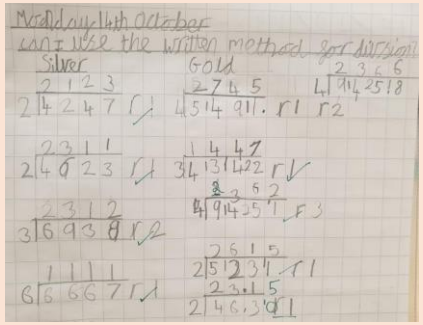
*Written Methods **

		Solve problems involving number up to three decimal places Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal Solve problems, which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25.	
Children use their times tables knowledge to list and identify how many times the divisor goes into the dividend. Underneath the tables, recognise how many groups of the divisor they have, show it as a multiple then count on or subtract to calculate any remainders.	Children use their times tables knowledge to calculate mentally (see below): 	Children put the dividend in a "bus stop" place the divisor outside. List the divisor tables neatly on the left hand side (use addition workings to support higher tables if needed). e.g. 38 +38 76 +38 114	Follow the division guides as outlined previously. When expressing the answer as a decimal follow below procedure:

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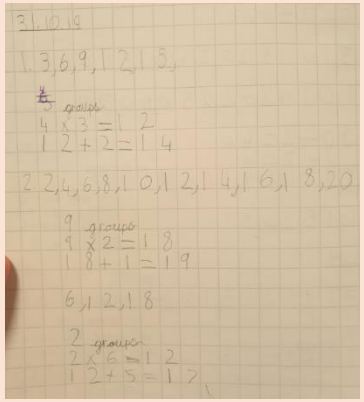
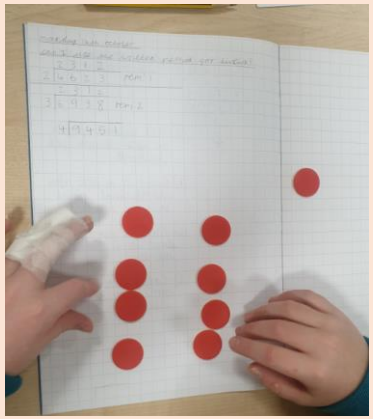
Developing Conceptual Understanding

See Yr 3 example below:

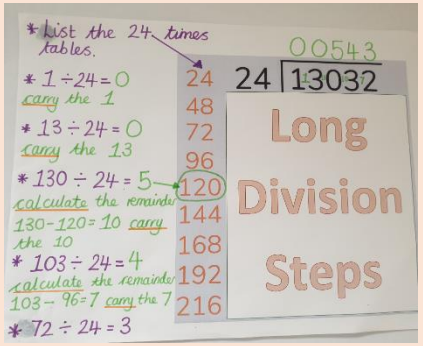


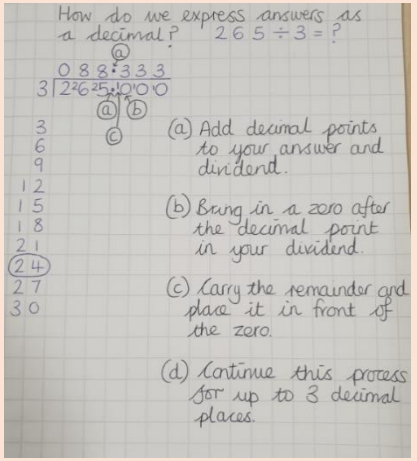
If needed, children to use manipulatives to support workings e.g. counters/cubes, place value counters, times table grids and so on (see below):



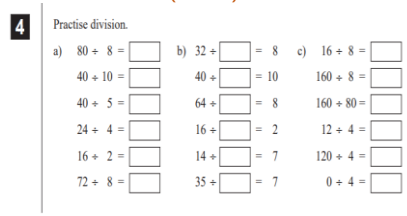
Circle the tables clearly as shown above to avoid errors.

Calculate how many times the divisor goes into the dividend. Remember to calculate and carry remainders (see example below)





Practice division: (3A:12)

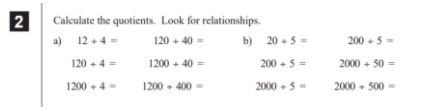


4 Practise division.

a)	80 ÷ 8 = ☐	b)	32 ÷ ☐ = 8	c)	16 ÷ 8 = ☐
	40 ÷ 10 = ☐		40 ÷ ☐ = 10		160 ÷ 8 = ☐
	40 ÷ 5 = ☐		64 ÷ ☐ = 8		160 ÷ 80 = ☐
	24 ÷ 4 = ☐		16 ÷ ☐ = 2		12 ÷ 4 = ☐
	16 ÷ 2 = ☐		14 ÷ ☐ = 7		120 ÷ 4 = ☐
	72 ÷ 8 = ☐		35 ÷ ☐ = 7		0 ÷ 4 = ☐

(3A:13)

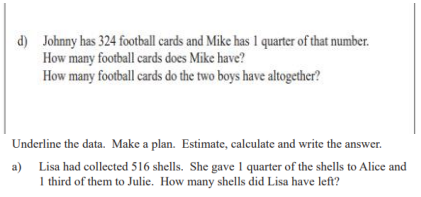
(4A:11) Encouraging making links with division facts



2 Calculate the quotients. Look for relationships.

a)	12 ÷ 4 =	120 ÷ 40 =	b)	20 ÷ 5 =	200 ÷ 5 =
	120 ÷ 4 =	1200 ÷ 40 =		200 ÷ 5 =	2000 ÷ 50 =
	1200 ÷ 4 =	1200 ÷ 400 =		2000 ÷ 5 =	2000 ÷ 500 =

(4A:13) Fraction problems involving division

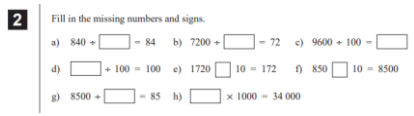


d) Johnny has 324 football cards and Mike has 1 quarter of that number. How many football cards does Mike have? How many football cards do the two boys have altogether?

Underline the data. Make a plan. Estimate, calculate and write the answer.

a) Lisa had collected 516 shells. She gave 1 quarter of the shells to Alice and 1 third of them to Julie. How many shells did Lisa have left?

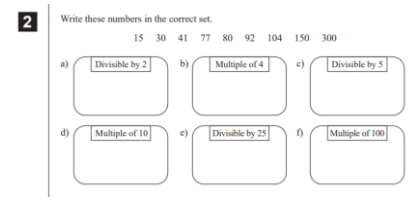
(5A:3)



2 Fill in the missing numbers and signs.

a)	840 ÷ ☐ = 84	b)	7200 ÷ ☐ = 72	c)	9600 ÷ 100 = ☐
d)	☐ + 100 = 100	e)	1720 ☐ 10 = 172	f)	850 ☐ 10 = 8500
g)	8500 ÷ ☐ = 85	h)	☐ × 1000 = 34 000		

(5A:16)

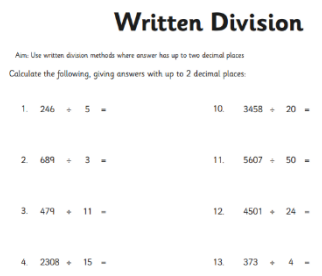


2 Write these numbers in the correct set.

15 30 41 77 80 92 104 150 300

a) Divisible by 2 b) Multiple of 4 c) Divisible by 5

d) Multiple of 10 e) Divisible by 25 f) Multiple of 100



Written Division

Aim: Use written division methods where answer has up to two decimal places

Calculate the following, giving answers with up to 2 decimal places:

1. 246 ÷ 5 =
2. 689 ÷ 3 =
3. 479 ÷ 11 =
4. 2308 ÷ 15 =
10. 3458 ÷ 20 =
11. 5607 ÷ 50 =
12. 4501 ÷ 24 =
13. 373 ÷ 4 =

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1 Write a division about each picture. Check it with a multiplication.

a) △△△△△△△

..... Check: .....

b) ⬡⬡⬡⬡⬡⬡⬡⬡

..... Check: .....

c)

..... Check: .....

Show division using grouping: (3A: 13)

Write a division to show how 54 sweets can be shared equally among :

a) 3 children .....

b) 6 children .....

c) 9 children .....

(3A:15) Division word problems

1 Pull out the data. Make a plan. Do the calculation and check it.

a) Each taxi can take 6 people. How many taxis will be needed for 30 people?

Plan:

Calculation: *Check:*

Answer: .....

b) 45 sweets are divided equally among 7 children. How many sweets will each child get?

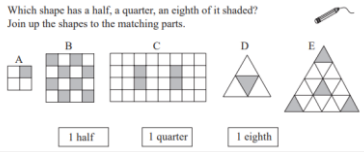
Plan:

Calculation: *Check:*

Answer: .....

(3A: 15 & 16) Fractions

3 Which shape has a half, a quarter, an eighth of it shaded? Join up the shapes to the matching parts.



5 1 quarter of a line is 2 and a half cm long.

Draw the whole line.

(4A:14) Encouraging use of the 'bus stop method' to divide. After, use the inverse to check.

2 Estimate the quotient first, then do the division. Check with multiplication.

a) E:..... b) E:..... c) E:.....

H	T	U
4	8	4

Check:

H	T	U
		× 4

H	T	U
5	6	7

Check:

H	T	U
		× 5

H	T	U
8	9	7

Check:

H	T	U
		× 8

(4A: 16) Ch move on to divisions where remainders are required.

1 Calculate the quotient and the remainder. Check with multiplication.

a)

H	T	U
6	6	4

Check:

H	T	U
		× 6
+		

b)

H	T	U
7	8	7

Check:

H	T	U
		× 7
+		

c)

H	T	U
4	9	4

Check:

H	T	U
		× 4
+		

Manipulatives and additional support.

(5A: 18) Use the 'bus stop method' to divide. After, use the inverse to check.

1 Do the calculations (in your exercise book if you need more space) and write the results.

a) 36 ÷ 6 = b) 38 ÷ 19 = c) 480 ÷ 40 = d) 490 ÷ 7 =

e) 51 ÷ 7 = f) 38 ÷ 6 = g) 420 ÷ 40 = h) 490 ÷ 80 =

2 Do the calculations and check the results.

a) 389 b) 489 c) 589 d) 689

89 = 89 = 89 = 89 =

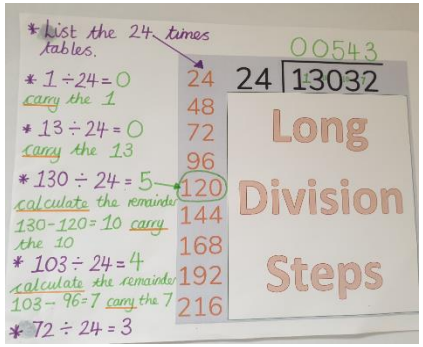
3 Do the calculations and check the results.

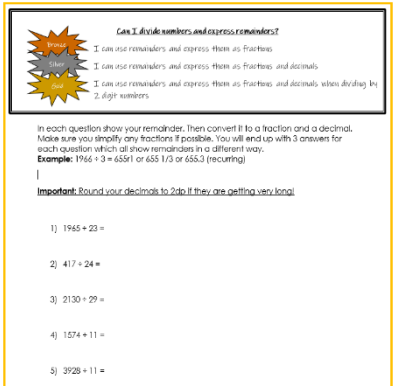
a) 796 b) 896 c) 2159 d) 3491 e) 9491

Check:

Manipulatives and additional support.

Use progress pad guidance to carry out division successfully.





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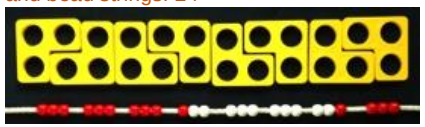
Manipulatives and additional support. Represent multiplication facts to support understanding of division using Numicon and bead strings: 24 			

MAYFLOWER COMMUNITY ACADEMY DIVISION SUPPORT VIDEOS CAN BE FOUND AT:

YEAR FOUR: https://www.youtube.com/watch?v=McMSOasjIDA

YEAR FIVE: https://www.youtube.com/watch?v=xmAoD2IUtZk

YEAR SIX: https://www.youtube.com/watch?v=UeugmnWPFzo&t=63s