ST AUGUSTINE'S RC PRIMARY SCHOOL

Maths Workshop

Mastery Approach

Multiplication and Division

DEVELOPING A GROWTH MINDSET

INSTEAD OF.....	TRY THINKING....
I'm not good at this	What am I missing?
I give up	I'll use a different strategy
It's good enough	Is this really my best work?
I can't make this any better	I can always improve
This is too hard	This may take some time
I made a mistake	Mistakes help me to learn
I just can't do this	I am going to train my brain
I'll never be that smart	I will learn how to do this
Plan A didn't work	There's always Plan B
My friend can do it	I will learn from them

AIMS OF TODAY

- To get an insight into how Maths is taught at St Augustine's, including Maths Mastery.

- To explore the key knowledge, skills and understanding children need around number and how Maths is crucial to be successful in today and tomorrow's world.

- To begin a journey of understanding around calculation, starting with addition.

- To take away some ideas to support your children at home.

THE MASTERY APPROACH –
WHAT IS MASTERY?

The essential idea behind mastery is that **all children** need a *deep* understanding of the mathematics they are learning…

- Mastery is all about representing maths so that it makes sense to the children, so the models, images and language that connect the maths are carefully planned.

- Most children access the same content at the same pace.

- All children are given the chance to access the learning with varying support when needed.

- Scaffolded learning is a feature.

- Breadth, depth and challenge are added to the learning.

MASTERY –
THERE IS NO 'EASY' OPTION IN LIFE

Structuring Learning

Active / Concrete

Building visual images

Abstract

13 - 8

12 + 19

13 − 8 = 5
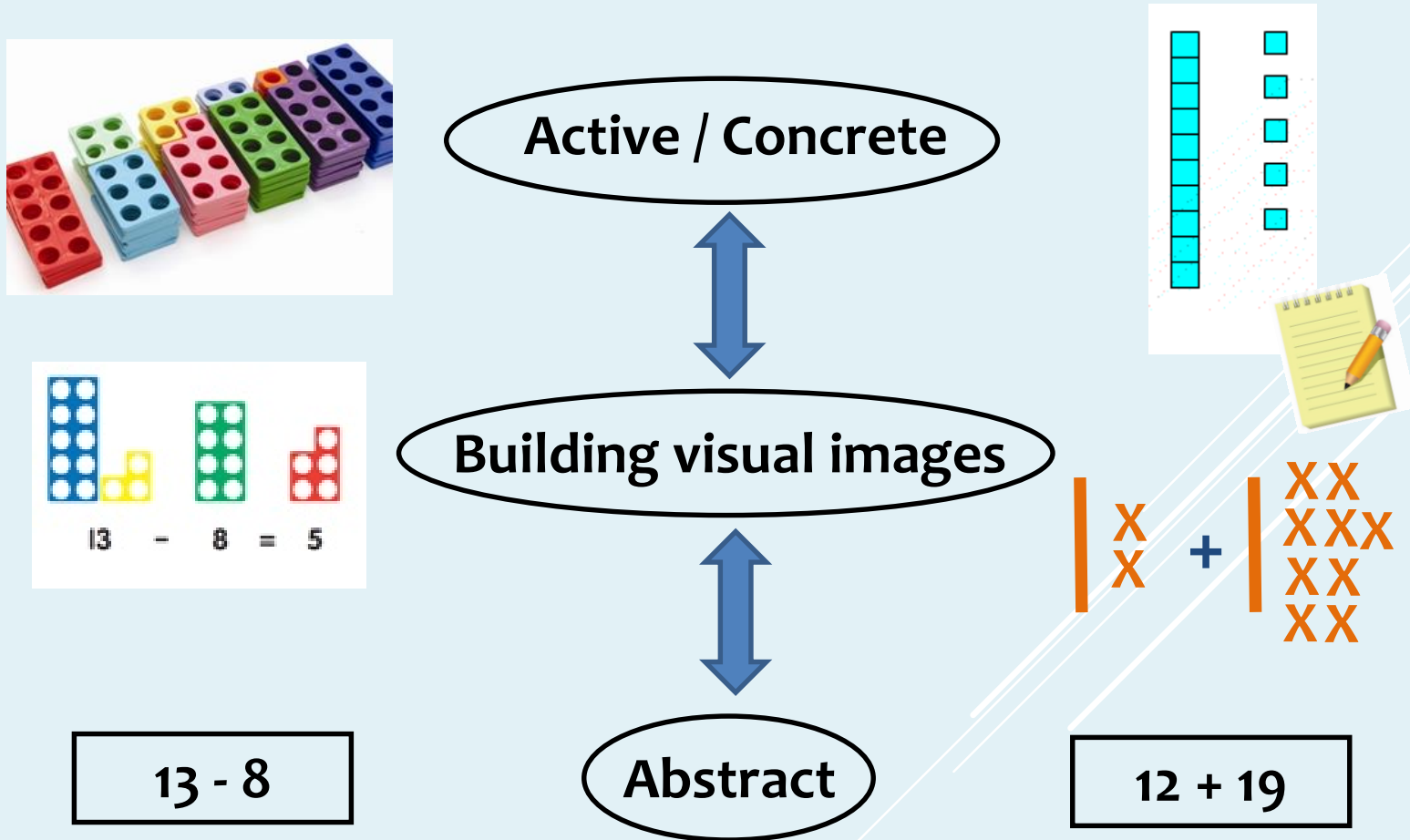
► **Just a few of the concrete tools we use to support children that you can use too…**
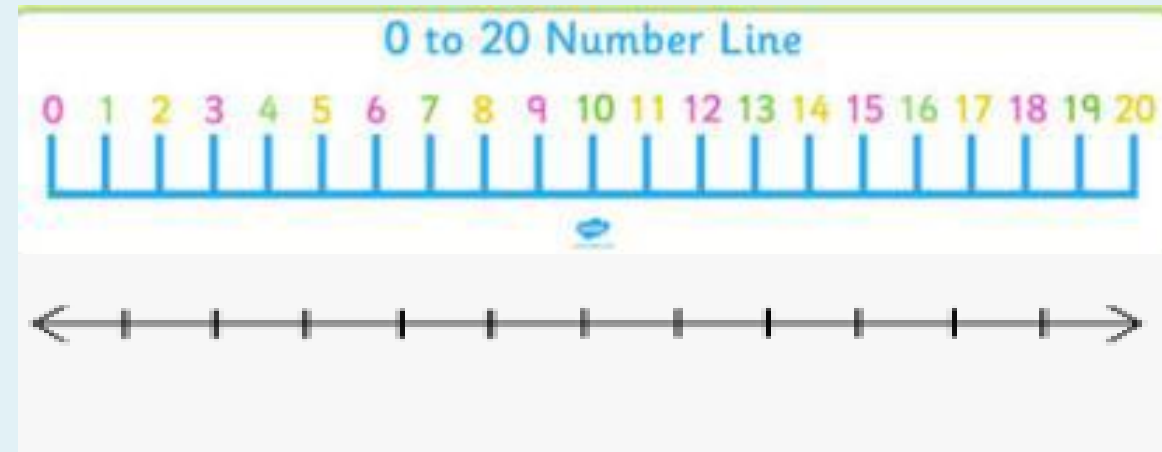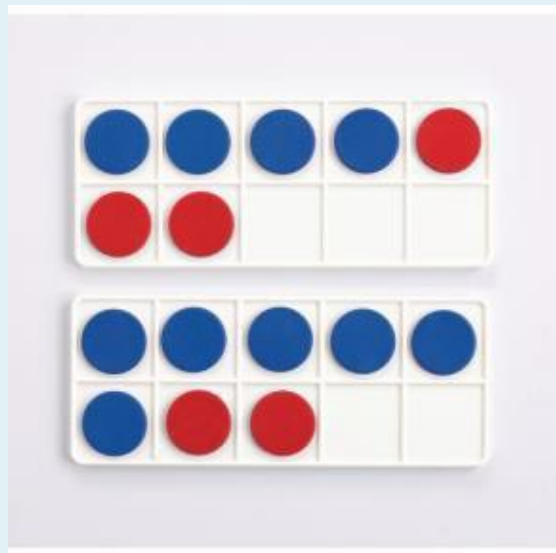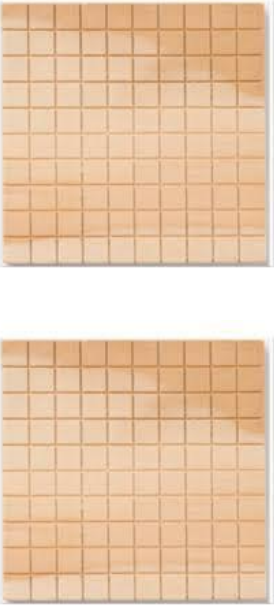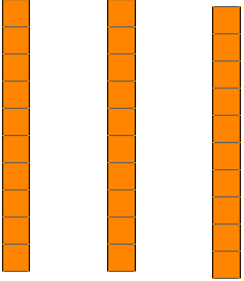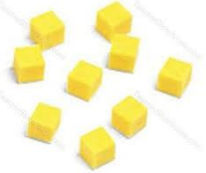
PLACE VALUE

▶ **Place value is at the heart of the number system. All digits have a value and a secure understanding of this will enable children to use and understand different calculation methods.**
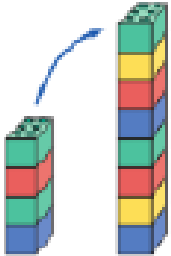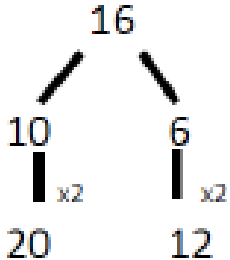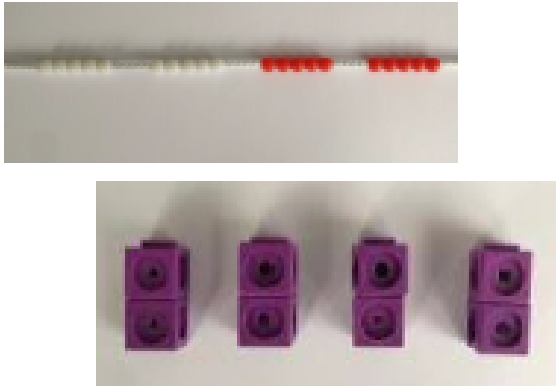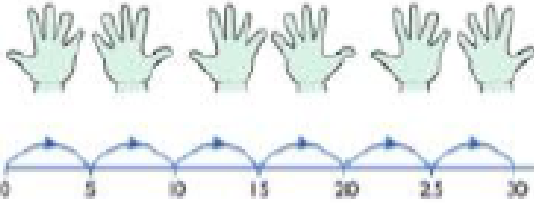
thousands	hundreds	tens	ones
1	2	3	9

Multiplication

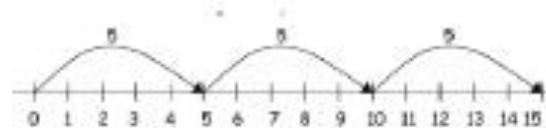| Objective and Strategies	Concrete	Pictorial	Abstract
Doubling	Use practical activities to show how to double a number. double 4 is 8 4 × 2 = 8	Draw pictures to show how to double a number. Double 4 is 8	16 10 6 x2 x2 20 12 Partition a number and then double each part before recombining it back together.
Counting in multiples	Count in multiples supported by concrete objects in equal groups.	Use a number line or pictures to continue support in counting in multiples.	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25 , 30

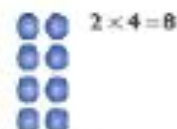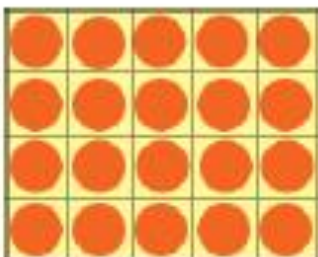| Repeated addition	Use different objects to add equal groups. $3 + 3 + 3$	There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there? 2 add 2 add 2 equals 6 $5 + 5 + 5 = 15$	Write addition sentences to describe objects and pictures. $2 + 2 + 2 + 2 + 2 = 10$
Arrays- showing commutative multiplication	Create arrays using counters/ cubes to show multiplication sentences.	Draw arrays in different rotations to find commutative multiplication sentences. $4 \times 2 = 8$ $2 \times 4 = 8$ $2 \times 4 = 8$ $4 \times 2 = 8$ Link arrays to area of rectangles.	Use an array to write multiplication sentences and reinforce repeated addition. $5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$ $5 \times 3 = 15$ $3 \times 5 = 15$

Grid Method

Show the link with arrays to first introduce the grid method.
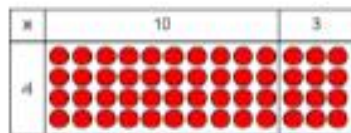
4 rows of 10
4 rows of 3

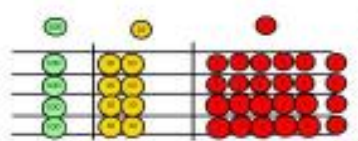Move on to using Base 10 to move towards a more compact method.

4 rows of 13

Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows.

Calculations
4 x 126

Fill each row with 126.


Calculations
4 x 126

Add up each column, starting with the ones making any exchanges needed.

Then you have your answer.

Children can represent the work they have done with place value counters in a way that they understand.

They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.
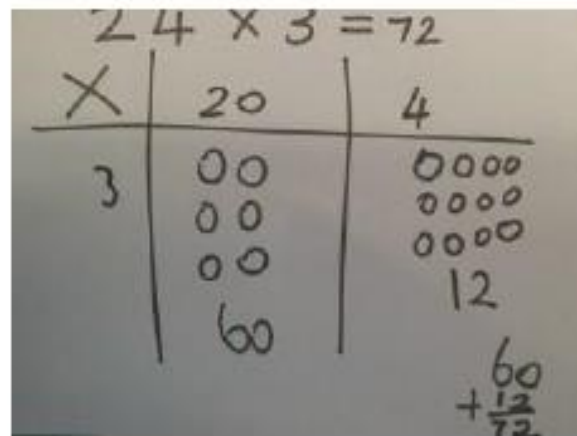
Start with multiplying by one digit numbers and showing the clear addition alongside the grid.

×	30	5
7	210	35

210 + 35 = 245

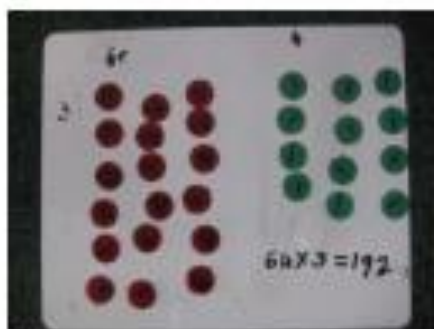Moving forward, multiply by a 2 digit number showing the different rows within the grid method.

	10	8
10	100	80
3	30	24

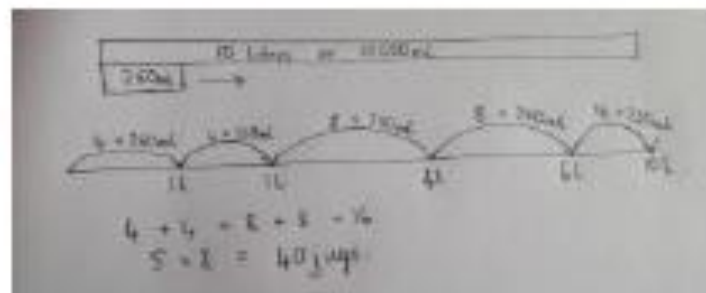| X	1000	300	40	2
10	10000	3000	400	20
8	8000	2400	320	16

Column multiplication	Children can continue to be supported by place value counters at the stage of multiplication.	Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods.	Start with long multiplication, reminding the children about lining up their numbers clearly in columns.
		O	If it helps, children can write out what they are solving next to their answer.
	$6 \times 3 = 192$		32 × 24 8 (4 × 2) 120 (4 × 30) 40 (20 × 2) 600 (20 × 30) 768
	It is important at this stage that they always multiply the ones first and note down their answer followed by the tens which they note below.		This moves to the more compact method.
			Th H T O 3 6 8 × 6 4 8 (8 × 6) 3 6 0 (60 × 6) +1 8 0 0 (300 × 6) 2 2 0 8
			Th H T O 3 6 8 × 6 2 2 0 8
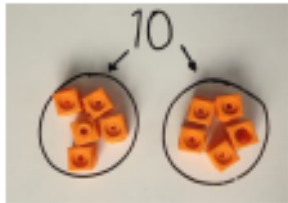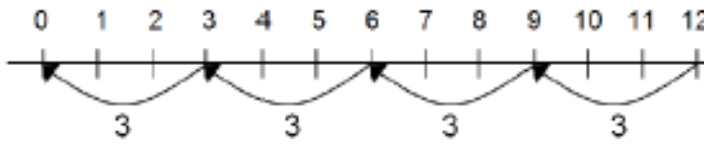
Division

Objective and Strategies	Concrete	Pictorial	Abstract
Sharing objects into groups	I have 10 cubes, can you share them equally in 2 groups?	Children use pictures or shapes to share quantities. $8 \div 2 = 4$	Share 9 buns between three people. $9 \div 3 = 3$
Division as grouping	Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding. $96 \div 3 = 32$	Use a number line to show jumps in groups. The number of jumps equals the number of groups. Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group. $20 \div 5 = ?$ $5 \times ? = 20$	$28 \div 7 = 4$ Divide 28 into 7 groups. How many are in each group?

Long Multiplication

Step 1

```
TTh Th H T  O
        6 9 3
   x      2 4
   ─────────────
      2 7 7 2   (693 x 4)
```

Carried digits are crossed out to avoid confusion as the method continues.

Step 2

```
TTh Th H T  O
        6 9 3
   x      2 4
   ─────────────
      2 7 7 2   (693 x 4)
  + | 3 8 6 0   (693 x 20)
```

The next step is multiplying by the multiple of 10. This is equivalent to the top row of the grid method.
Therefore, if the answer has 2 digits, this is simply put in the correct place.
Whereas if the answer has 3 digits, the TU digits are put into the answer and the H digit is carried into this column.
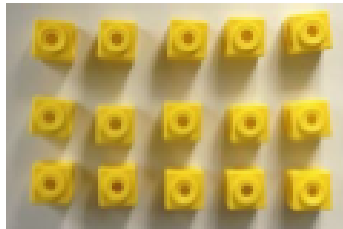
The final step is to add the two answers together.

Step 3

```
TTh Th H T  O
        6 9 3
   x      2 4
   ─────────────
      2 7 7 2   (693 x 4)
  + | 3 8 6 0   (693 x 20)
   ─────────────
    1 6 6 3 2
```
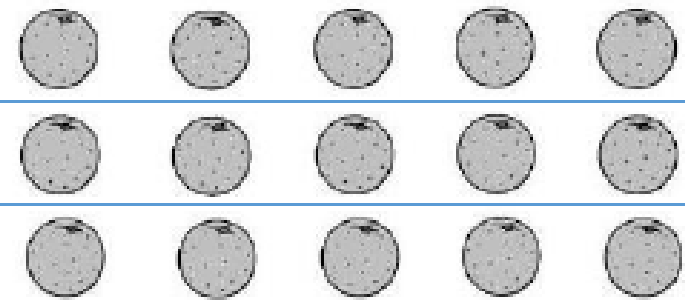
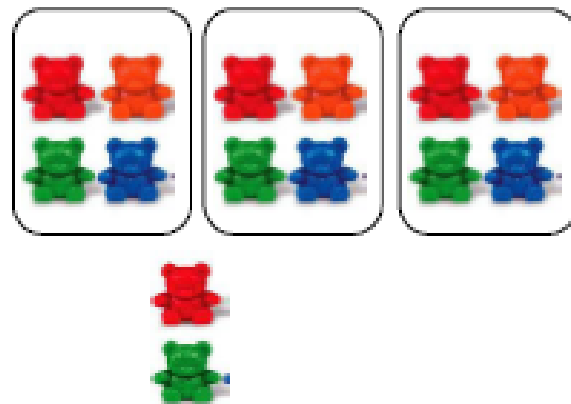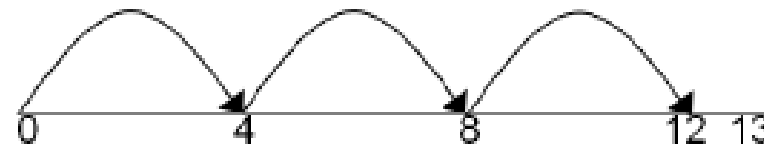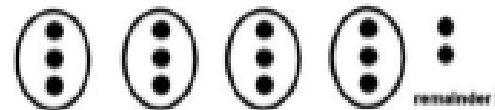|			
Division within arrays	Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 Draw an array and use lines to split the array into groups to make multiplication and division sentences.	Find the inverse of multiplication and division sentences by creating four linking number sentences. 7 x 4 = 28 4 x 7 = 28 28 ÷ 7 = 4 28 ÷ 4 = 7
Division with a remainder	14 ÷ 3 = Divide objects between groups and see how much is left over 	Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder. Draw dots and group them to divide an amount and clearly show a remainder. 	Complete written divisions and show the remainder using r. 29 ÷ 8 = 3 REMAINDER 5 ↑ ↑ ↑ ↑ dividend divisor quotient remainder

Short division

	Tens	Units
	3	2

3
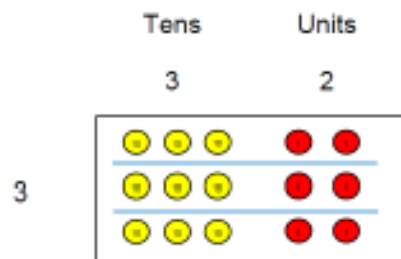
Use place value counters to divide using the bus stop method alongside

Calculations
42 ÷ 3
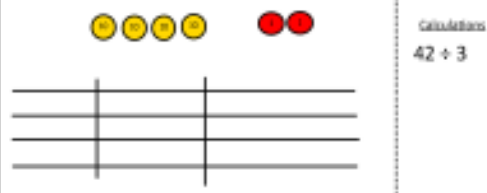
42 ÷ 3 =
Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.
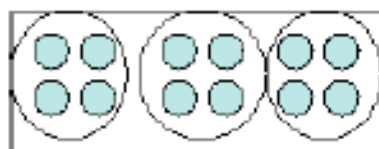
We exchange this ten for ten ones and then share the ones equally among the groups.

We look how much in 1 group so the answer is 14.

Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.

Encourage them to move towards counting in multiples to divide more efficiently.

Begin with divisions that divide equally with no remainder.

```
    2  1  8
  ┌─────────
  │       3
4 │ 8  7  2
```

Move onto divisions with a remainder.

```
    8  6   r  2
  ┌──────────
  │      3
5 │ 4  3  2
```

Finally move into decimal places to divide the total accurately.

```
       1  4  .  6
  ┌──────────────
  │        16    21
3 5│ 5  1  1  .  0
```
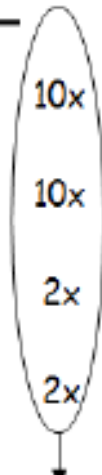
|	
Long division	Long division is generally used when the divisor is greater than 10 or if a child cannot do the calculation mentally via the short division method. This is the 'chunking' method of division in which children use key facts of the multiplication tables of the divisor. $72 \div 3$ $$\begin{array}{r} 24 \\ 3\overline{)72} \\ -30 \quad 10x \\ \overline{42} \\ -30 \quad 10x \\ \overline{12} \\ -6 \quad 2x \\ \overline{6} \\ -6 \quad 2x \\ \overline{0} \end{array}$$ Answer : 24 | 1x	3
2x	6
5x	15
10x	30 | Children should write key facts in a menu box. This will help them in identifying the largest group they can subtract in one chunk.

Children should become more efficient when using the chunking method by not having any subtraction steps that repeat a previous step. For example, when performing 196 ÷ 6 an initial subtraction of 60 (10 x 6) and two further subtractions of 60 (10 x 6 each) should be changed to a single subtraction of 180 (30 x 6).

196 ÷ 6

$$
\begin{array}{r}
32 \text{ r } 4 \\
6\overline{)196} \\
-\ 180 \quad \text{(30x)} \\
\hline
16 \\
-\ 12 \quad \text{(2x)} \\
\hline
4
\end{array}
$$
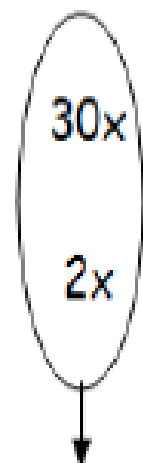
1x	6
2x	12
4x	24
5x	30
10x	60
20x	120

The key facts in the menu box should be extended to include 4x and 20x.

Answer: 32 remainder 4   or   32 r 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number: Place Value			Number: Addition and Subtraction					Measurement: Money		Number: Multiplication and Division	
Spring	Number: Multiplication and Division		Statistics		Geometry: Properties of Shape			Number: Fractions			Measurement: Length and Height	Consolidation
Summer	Geometry: Position and Direction			Problem solving and efficient methods		Measurement: Time		Measurement: Mass, Capacity and Temperature			Investigations	

YEAR 2

MATHS LESSONS

DO
(FLUENCY)

THINK/EXPLAIN & SOLVE
(REASONING AND PROBLEM SOLVING)

Multiplication
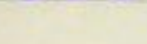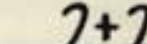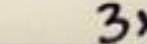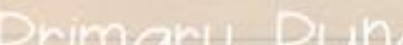
Arrays are a pictorial representation to help children understand multiplication.
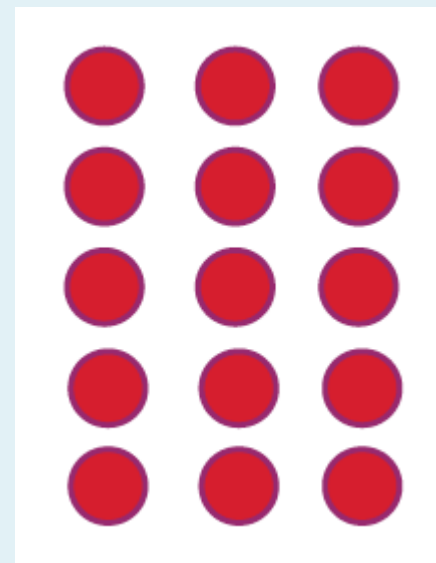
The Grid Method

Multiplying by a 1 digit number

$5 \times 17 = 85$

X	10	7
5	50	35

= 85

Any 2 digit number x 1 digit number

$7 \times 38 = 266$

X	30	8
7	210	56

= 266

Two-digit by two-digit numbers

$$35 \times 14 + 490$$

X	10	4	
30	300	120	= 420
5	50	20	= 70

A 3 digit number x 1 digit number

$$7 \times 136 = 952$$

X	100	30	6	
7	700	210	42	= 952

Expanded short multiplication

The next step is to represent the method of recording in a column format, but showing the working. Draw attention to the links with the grid method.

```
  H T O
    3 8
X     7
  ─────
    56      (8 x 7)
   210      (30 x 7)
  ─────
   266
  ─────
```

Compact short multiplication

The recording is reduced further, with carry digits recorded below the line. If, after practice, children cannot use the compact method without making errors, they should return to the expanded format.

```
      HTO
       38
  X     7
       5
      266
```

Expanded long multiplication

$$
\begin{array}{r}
\text{ThHTO} \\
56 \\
\underline{X \quad 27} \\
42 \quad (6 \times 7) \\
350 \quad (50 \times 7) \\
120 \quad (6 \times 20) \\
\underline{1000} \quad (50 \times 20) \\
\underline{1512} \\
1
\end{array}
$$

Compact long multiplication

ThHTO
  56
X 27
  ¹ ⁴
  392   (56 x 7)
1120   (56 x 20)
1512
 1

Compact long multiplication

ThHTO
 286
X 23
 1 2 1 1
  858   (286 x 3)
+ 5720 (286 x 20)
 6578
  1

Year 2
Children are introduced to the multiplication symbol for the first time. They should link the stem sentences, repeated addition and multiplication together.

2,5,10
MULTIPLES
YEAR 1 AND 2

Booklet

Complete the sentences to describe the equal groups.

___ + ___ + ___ = 18

___ × ___ = 18

There are ___ equal groups with ___ in each group.
There are three ___.

Complete the table.

Three 2s	Draw It	Addition	Multiplication
There are 3 equal groups with 2 in each group.			

Booklet

YEAR 2 REASONING

3 + 3 + 3 = 3 × 3

Is Mo correct? Explain why.

Draw an image to help you.

Use <, > or = to make the statements correct.

3 × 5 ◯ 5 + 5 + 5 + 5

2 × 2 ◯ 2 + 2

4 + 4 + 4 ◯ 2 × 2

Complete:

____ X ____ = ____

____ lots of 3 = ____

____ multiplied by ____ = 12

Complete the table.

Picture	Multiplication	Sentence
	$4 \times 10 = 40$	4 lots of 10 is equal to 40
	$35 = 7 \times 5$	
		6 lots of 3 is equal to 18

YEAR 2 FLUENCY

Children explore arrays to see the commutativity between multiplication facts e.g. 5 ×2 =2 ×5
The use of the array could be used to help children calculate multiplication statements.

____ × ____

____ × ____

YEAR 2 FLUENCY

Complete the number sentences to describe the arrays.

2 × 3   and   ____ × ____
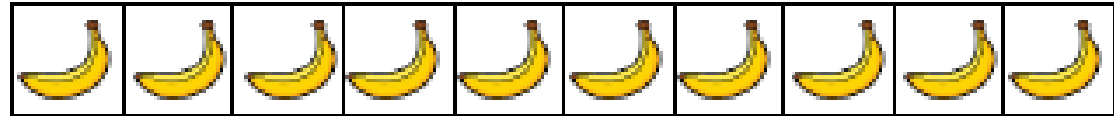
____ × ____   and   ____ × ____

Draw an array to show:

3 × 5 = 5 × 3
2 lots of 10 = 10 lots of 2

105

Part of the array is hidden.
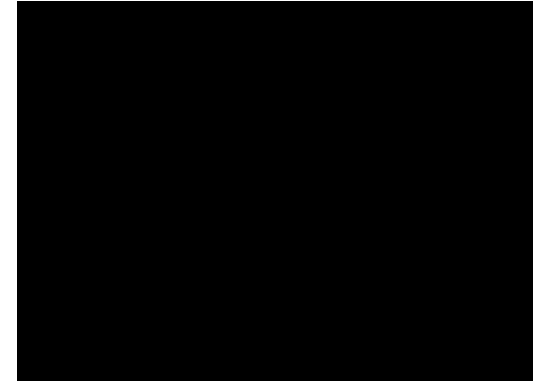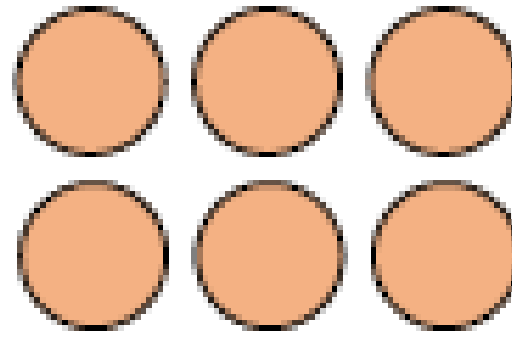
The total is less than 16

What could the array be?

Booklet

YEAR 2 REASONING

Children should be comfortable with the concept of multiplication so they can apply this to the times tables that they need to be secure with.

Count in 2s to calculate how many eyes there are.

There are _____ eyes in total.

_____ × _____ = _____

Complete the number track.

2	4		8		12

14	16	18			24

	38	40	42	44	

YEAR 2 FLUENCY

How many wheels are there on five bicycles?

If there are 14 wheels, how many bicycles are there?

Fill in the blanks.

$$3 \times \_\_\_ = 6$$

$$\_\_\_ \times 2 = 20$$

$$7 \times 2 = \_\_\_$$

Eva says,
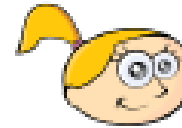
Every number in the 2 times table is even.

Is she correct? Explain your answer.

YEAR 2 REASONING

Complete the following calculations using place value counters:
- 34 × 2
- 23 × 3

YEAR 3 FLUENCY

Martin completes another calculation:

$$43 \times 2$$

Can you spot and explain his mistake?

T	O
4	3
×	2
8 0	6

YEAR 3 REASONING

There are 6 children.
Each child has 3 sweets.
How many sweets altogether?

Use concrete or pictorial representations
to show this problem.

Write another repeated addition and
multiplication problem and ask a friend to
represent it.

2,5,10
MULTIPLES
YEAR 1 AND 2
3,4,8
YEAR 3

YEAR 3 REASONING

End of Year 4
Recall and use multiplication and division facts for multiplication tables up to
12 ×12

Start with method multiply and divide by 10, 100 (Place value)

Then 1 and 0
Then 6, 9, 7
Then 11 and 12

2,5,10 - year 1 and 2
3,4,8 - year 3
6,7,9,11,12 year 4

MULTIPLES

1 There are 21 chocolate bars in a vending machine. How many chocolate bars will there be in 3 vending machines? Use this method to solve: 21 × 4 and 33 × 3

T	O

YEAR 4 FLUENCY

Booklet

1. Calculate 12 × 4
Use place value counters and the formal method.

$$\begin{array}{rr} & 1 \ 2 \\ \times & 4 \\ \hline \end{array}$$

2. Calculate:

$$\begin{array}{rr} & 4 \ 3 \\ \times & 3 \\ \hline \end{array} \qquad \begin{array}{rr} & 3 \ 6 \\ \times & 4 \\ \hline \end{array} \qquad \begin{array}{rr} & 7 \ 4 \\ \times & 5 \\ \hline \end{array} \qquad \begin{array}{rr} & 3 \ 9 \\ \times & \square \\ \hline 1 \ \square \ 6 \end{array}$$

YEAR 4 FLUENCY

Booklet

Always, sometimes, never

- When multiplying a two-digit number by a one-digit number, the answer has 3 digits.

- When multiplying a two-digit number by 8 the answer is odd.

- When multiplying a two-digit number by 7 you need to exchange.

Prove it!

YEAR 4 REASONING

Prime numbers
Square numbers
Cube numbers
Multiply and divide by 10, 100, 1000

Using their knowledge of factors, children find the common factors of two numbers.

They use arrays to compare the factors of a number and use a Venn diagram to show their results.

YEAR 5 FLUENCY

Use arrays to find the common factors of 12 and 15
Can we arrange the counters in one row?

Yes- so they have a common factor of one.
Can we arrange the counters in two equal rows?

2 is a factor of 12 but not of 15 so 2 is not a common factor.
Continue to work through the factors systematically until you find all the common factors.

Fill in the Venn diagram to show the factors of 20 and 24
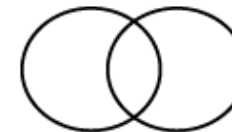
Where are the common factors of 20 and 24?
Can you use a Venn diagram to show the common factors of 9 and 15?

True or False?

- 1 is a factor of every number.

- 1 is a multiple of every number.

- 0 is a factor of every number.

- 0 is a multiple of every number.

YEAR 5 REASONING

Booklet

YEAR 5 FLUENCY

Can you work out the missing numbers using the clues?

- The 4 digits being multiplied by 6 are consecutive numbers.

- The first 2 digits of the answer are the same.

- The 4th and 5th digits in the answer add to make the 3rd.

YEAR 5 REASONING

Booklet

Complete the following to calculate 23×14:

$$
\begin{array}{r}
23 \\
\times\, 14 \\
\hline
92 \\
230 \\
\end{array}
$$

(23×4)

(23×10)

Use the method to calculate:

34×26 58×15 72×35

YEAR 5 FLUENCY

YEAR 5 FLUENCY

YEAR 5 FLUENCY

YEAR 5 REASONING

Booklet

YEAR 6 FLUENCY

◼ Calculate.

	4	2	6	7
×			3	4

	3	0	4	6
×			7	3

$$5{,}734 \times 26$$

◼ Lauren made cookies for a bake sale.
She made 345 cookies.
The recipe stated that she should have 17 chocolate chips in each cookie.

How many chocolate chips did she use altogether?

◼ Work out the missing number.

$$6 \times 35 = \underline{\quad} \times 5$$

Booklet

True or False?

- $5{,}463 \times 18 = 18 \times 5{,}463$

- I can find the answer to $1{,}100 \times 28$ by doing $1{,}100 \times 30$ and subtracting 2 lots of $1{,}100$

- $70 \times 10 = 700 \times 100$

YEAR 6 REASONING

Division

$12 \div 4 =$

4 apples are packed in a basket. How many baskets can you fill with 12 apples?
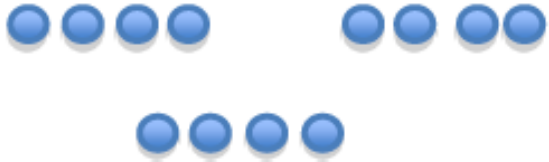
Dots or tally marks can either be shared out one at a time or split up into groups.

184÷7=

I need 184 chairs for a concert. I arrange them in rows of 7. How many rows do I need?

$$\begin{array}{ll}
1\,8\,4 & \\
-\ 1\,4\,0 & \text{(20 x 7)} \\
\underline{} & \\
4\,4 & \\
-\ 4\,2 & \text{(6 x 7)} \\
\underline{} & \\
2 & \\
\end{array}$$

= 26 r2

This method is known as chunking. In this example, you are taking away chunks of 7. First subtract 140 (20 groups of 7) and you are left with 44. Then subtract 42 (6 groups of 7), to leave 2. Altogether, that is 26 sevens with a remainder of 2.

The compact method for division

This method should only be taught when children a secure understanding of chunking and division as a whole.

$$
\begin{array}{r}
0\ 2\ 6\ r\ 2 \\
7\ \overline{)\ 1\ 8\ 4}
\end{array}
$$

Dividing 3 digit numbers by 2 digit numbers

$$
\begin{array}{r}
21\,r1 \\
14\,\overline{\big)\,295} \\
280 \quad (20 \times 14) \\
\hline
015 \\
14 \quad (1 \times 14) \\
\hline
1
\end{array}
$$

Year 2 Children divide by sharing to make equal groups using one to one correspondence. They need to do this in practical contexts then pictorially.
Children will be introduced to the ÷ symbol. They will begin to see the link between division and multiplication.

YEAR 2 FLUENCY

1. Practically share the 12 cubes into the two boxes.

There are ___ cubes altogether.
There are ___ boxes.
There are ___ cubes in each box.

Can you share the 12 cubes into 3 boxes?

2. Share 15 beanbags between the 3 hoops.
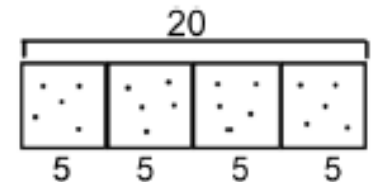
$$15 \div 3 = \boxed{}$$

Share 12 beanbags between 3 hoops in the same way.

$$12 \div 3 = \boxed{}$$

3. Billy draws this bar model to divide 20 between 4 equal groups.
He writes $20 \div 4 = 5$

20

| 5 | 5 | 5 | 5 |

What other number sentences could Billy create using his model?

Fred says,

I can work out $40 \div 2$ easily because I know that 40 is the same as 4 tens.

This is what he does:

$$40 \div 2 = 20$$

Is it possible to work out $60 \div 3$ in the same way?
Prove it

Jane has 20 sweets and shares them between 5 friends.

Tom has 20 sweets and shares them between 10 friends.

Whose friends will receive the most sweets?

How do you know?

YEAR 2 REASONING

Children divide by grouping objects into a given amount.

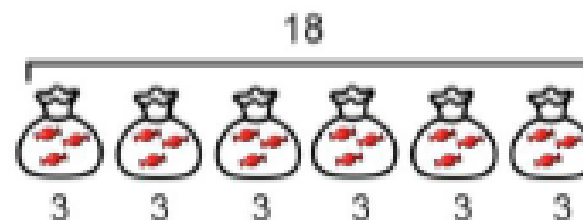They then count on to find the total number of groups.

They need to do this in practical contexts then pictorially.

They need to recognise the link between division, multiplication and repeated addition.

YEAR 2 FLUENCY

2 Mrs Green has 18 sweets.
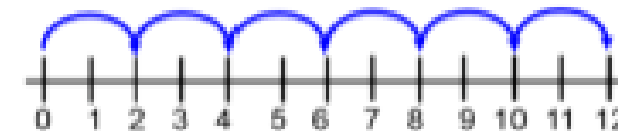She puts 3 sweets in each bag.
How many bags can she fill?

18

3   3   3   3   3   3

$18 \div \boxed{} = 3$

$\boxed{} \times 3 = 18$

3 Tim uses a number line to work out how many equal groups of 2 he can make from 12

0 1 2 3 4 5 6 7 8 9 10 11 12

Use a number line to work out how many equal groups of 5 you can make from 30

Children should be secure with grouping and sharing. They will use this knowledge to help them divide by 2.
They will be secure with representing division as an abstract number sentence using the division and equals symbol.
Children should be able to count in 2s and know their 2× table.

They use their knowledge of the five times table to help them divide by 5

Group the socks into pairs.

$\square \div \square = \square$ $\square \times \square = \square$

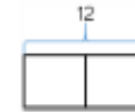Sam and Tom have 12 sweets between them. They share them equally. How many sweets does each child get?
There are ___ sweets altogether.
There are ___ groups.
There are ___ in each group.

Sweets

Complete the bar model to show this calculation.

12

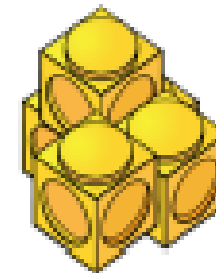$\square \div \square = \square$ $\square \times \square = \square$

Take 20 cubes.
How many towers of 5 can you make?
You can make ___ towers of 5
___ towers of 5 is the same as 20
20 is the same as ___ towers of 5

Booklet

Sam has less than 50 sweets to share into his party bags.

If he puts 5 sweets into each bag and has 3 left over at the end, how many sweets did he have at the start?

Children will need to be able to multiply by 10 and recognise multiples of 10. They will need to use both grouping and sharing to divide by 10 Children start to see that grouping and counting in 10s is more efficient than sharing into 10 equal groups.

YEAR 2 FLUENCY

1 Apples can be sold in packs of 10
How many packs can be made below?

$$\square \div \square = \square$$

When 30 apples are sold in packs of 10, ___ packs of apples can be made.
Can you show this in a bar model?

2 I have 70 p in my pocket in 10 p coins. How many coins do I have? Draw a picture to prove your answer.

3 Fill in the missing numbers.

- $70 \div 10 = \square$
- $6 \text{ tens} \div 1 \text{ ten} = \square$
- $5 = \square \div 10$
- There are $\square$ tens in 40

Mrs Owen has 80 sweets.

She shares them between 10 tables.

Which calculation describes the word problem?

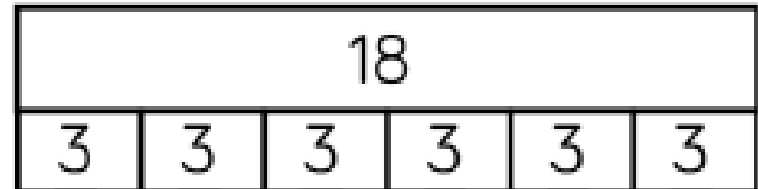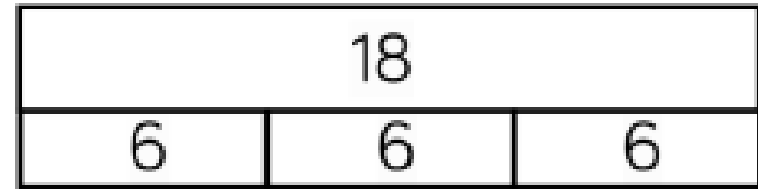- $80 \div 10$
- $80 - 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10$
- $80 - 10$

YEAR 2 REASONING

Booklet

Jack has 18 seeds.

He plants 3 seeds in each pot.

Which bar model matches the problem?

18		
6	6	6

18					
3	3	3	3	3	3

Explain your choice.

YEAR 3 REASONING

YEAR 4 FLUNECY

1 Here is a method to solve 4,892 divided by 4 using place value counters and short division.

$$\frac{1223}{4\overline{\smash{)}4892}}$$

Use this method to solve the following questions.

$6{,}610 \div 5 \qquad 2{,}472 \div 3 \qquad 9{,}360 \div 4$

YEAR 5 FLUENCY

1 Here is a method to solve 4,894 divided by 4 using place value counters and short division.
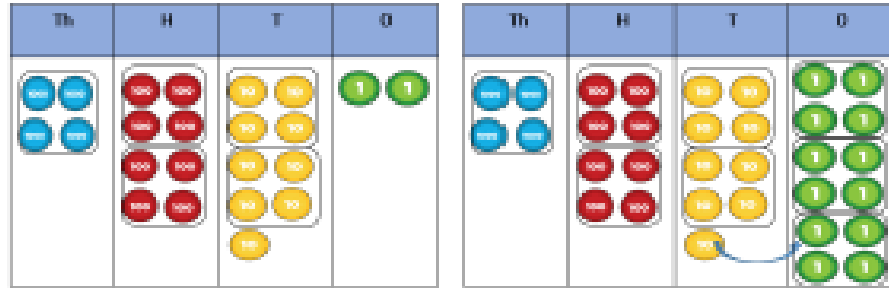
$$\begin{array}{r} 1223 \\ 4\overline{)4894}\ r2 \end{array}$$

Use this method to solve the following questions.

$6,613 \div 5$ $2,471 \div 3$ $9,363 \div 4$
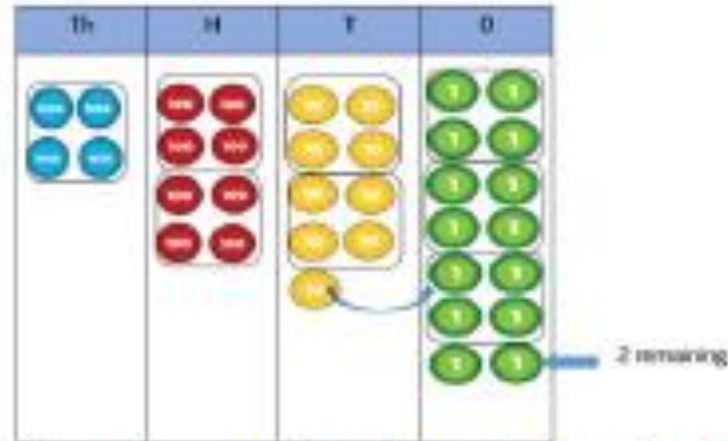
YEAR 5 FLUENCY

Booklet

Calculate using short division.

5	7	2	5

3	1	9	3	8

12	6	0	3	6

$3{,}612 \div 14$

YEAR 6 FLUENCY

Find the missing digits.
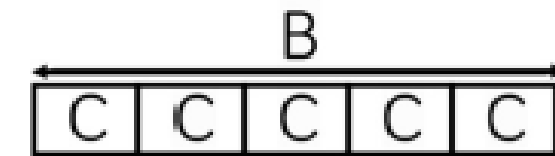
$$0\ 4\ 1\ \square\ r3$$
$$4\overline{)1\ \square\ 59}$$

Here are two calculation cards.

A = 396 ÷ 11

B = 832 ÷ 13

Find the difference between A and B.

Work out the value of C.
(The bar models are not drawn to scale)

4,950

| A | A | A |

A

| B | B | B |

B

| C | C | C | C | C |

Booklet

YEAR 6 REASONING

184 ÷ 7 =

```
          2  6  r 2
      ┌──────────
   7  │  1  8  4
         1  4  0        (20 x 7)
         0  4  4
            4  2        (6 x 7)
            ───
               2
            ───
```
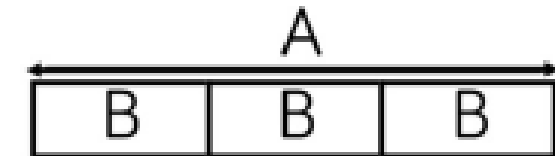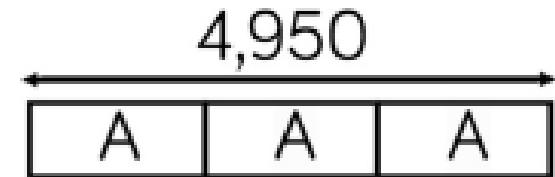
CHUNKING

Dividing 3 digit numbers by 2 digit numbers.

```
              2 1 r 1
          _____
    14  |  2 9 5
            2 8 0          (20 x 14)
            0 1 5
              1 4          (1 x 14)
              ___
                1
```

Simon used this method to calculate 1,426 divided by 13

		1	0	9	r	9
13	1	4	2	6		
−	1	3	0	0			(x 100)
		1	2	6		
−		1	1	7			(x9)
				9		

Use this method to calculate:

2,637 ÷ 16   4,321 ÷ 22   4,203 ÷ 18

Odd One Out

Which is the odd one out?
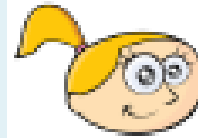Explain your answer.

$$512 \div 16$$

$$672 \div 21$$

$$792 \div 24$$

Booklet

420 children and 32 adults need transport for a school trip.
A coach holds 55 people.

Dora: We need 7 coaches.

Eva: We need 8 coaches.

Alex: We need 9 coaches.

Who is correct? Explain.

YEAR 6 REASONING

HELPING AT HOME

▶ **Cooking or baking – measuring and weighing**

▶ **Look at numbers in the environment e.g. telephone keys, number plates, door numbers, book pages, sleeps until Christmas!**

▶ **Money - shopping**

▶ **Comparing heights**

▶ **Birthdays, Months of the year, Days of the week**

▶ **Homework**