

Year 2

Small Steps Guidance and Examples

Block 1: Multiplication & Division

White  **RoseMaths**

Year 2 – Yearly Overview

	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: <u>Multiplication and Division</u>		
Spring	Number: <u>Multiplication and Division</u>		Statistics		Geometry: Properties of Shape			Number: Fractions			Measurement: length and height	Consolidation
Summer	Position and direction			Problem solving and efficient methods		Measurement: Time		Measurement: Mass, Capacity and Temperature		Investigations		

Overview

Small Steps

Make equal groups - sharing

Make equal groups - grouping

Divide by 2

Odd & even numbers

Divide by 5

Divide by 10

NC Objectives

Recall and use multiplication and division facts for the 2, 5 and 10 times tables, including recognising odd and even numbers.

Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs.

Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods and multiplication and division facts, including problems in contexts.

Show that the multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.

Make Equal Groups - Sharing

Notes and Guidance

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 \div symbol. They will begin to see the link between division and multiplication.

Mathematical Talk

- How many do you have to begin with?
- How many equal groups are you sharing between?
- How many are in each group?
- How do you know that you have shared the objects equally?

___ has been shared equally in to ___ equal groups.
 ___ groups of ___ make ___

Varied Fluency

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

There are ___ cubes altogether.

There are ___ boxes.

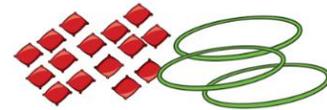
There are ___ cubes in each box.



Can you share the 12 cubes into 3 boxes?

- 2 Share 15 beanbags between the 3 hoops.

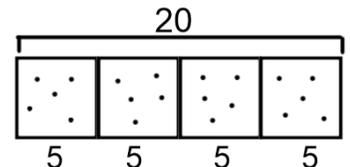
$$15 \div 3 = \square$$



Share 12 beanbags between 3 hoops in the same way.

$$12 \div 3 = \square$$

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



What other number sentences could Billy create using his model?

Make Equal Groups - Sharing

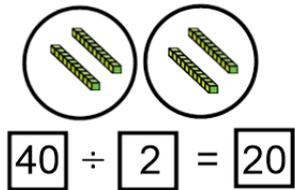
Reasoning and Problem Solving

Fred says,



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

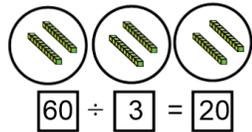
This is what he does:



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

Prove it

Possible answer:



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?

Jane's friends get more because Tom is sharing with more people so they will get fewer sweets each. Jane's friends will get 4 sweets each whereas Tom's friends will only get 2 sweets each.

Make Equal Groups - Grouping

Notes and Guidance

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.

Mathematical Talk

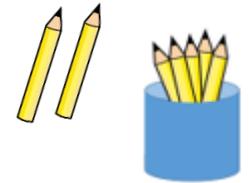
How many do you have to begin with?
 How many are in each group?
 How many groups do you have?

How long should your number line be?
 What will you count up in?

There are ____ groups of ____ which make ____

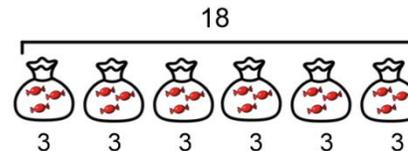
Varied Fluency

- 1 Pencils come in packs of 20
 We need to put 5 in each pot
 How many pots will we need?



There are ____ pencils altogether.
 There are ____ pencils in each pot.
 There are ____ pots.

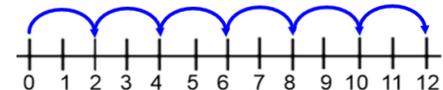
- 2 Mrs Green has 18 sweets.
 She puts 3 sweets in each bag.
 How many bags can she fill?



$$18 \div \square = 3$$

$$\square \times 3 = 18$$

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



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

Make Equal Groups - Grouping

Reasoning and Problem Solving

You have 30 counters.

How many equal groups can you make?

Represent your groups as a number sentence.

10 groups of 3

3 groups of 10

6 groups of 5

5 groups of 6

2 groups of 15

15 groups of 2

Tom has 5 equal groups.

The amount he started with is greater than 10 but less than 35



What could he have started with?

How many will be in each group?

$$30 \div 5 = 6$$

$$25 \div 5 = 5$$

$$20 \div 5 = 4$$

$$15 \div 5 = 3$$

Divide by 2

Notes and Guidance

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 2x table.

Mathematical Talk

What do you notice when you group these objects into twos?

Is there a link between dividing by 2 and halving?

What is different about sharing into two groups and grouping in twos?

Can we write a multiplication sentences as well as a division sentence? What do you notice?

Varied Fluency

- 1 Complete the stem sentences.

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

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



I have ___ cubes altogether.
There are ___ in each group.
There are ___ groups.

- 2 Group the socks into pairs.

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

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



- 3 Sam and Tom have 12 sweets between them. They share them equally. How many sweets does each child get?

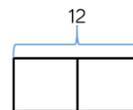
There are ___ sweets altogether.

There are ___ groups.

There are ___ in each group.



Complete the bar model to show this calculation.



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

Divide by 2

Reasoning and Problem Solving

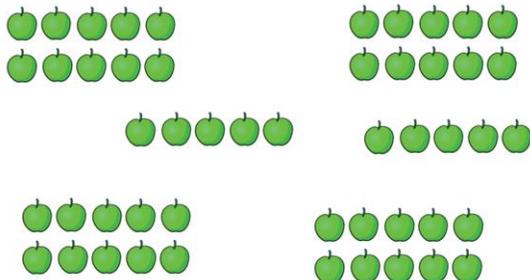
I have 24 p and divide it between 2 friends. How much will they get each?

I have 24 p in 2 pence pieces. How many 2 pence pieces do I have?

What is the same and what's different?

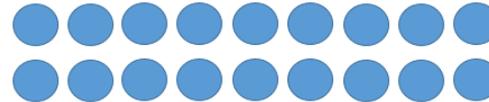
The calculation is the same in both. In the first question we are sharing whereas in the second question we are grouping.

Matilda and Charlie share these apples equally. How many apples do they each get?



There are 50 apples in total so Matilda and Charlie will get 25 apples each.

Share 18 counters in two equal groups.



Take another 18 counters and put them in groups of 2

What's the same?

What's different?

Possible answer: When we share we get 9 counters in each group, and when we group we get 9 groups of 2

Odd & Even Numbers

Notes and Guidance

Building on from Year 1, children should be able to recognise odd and even numbers.

They will use concrete manipulatives to understand odd and even numbers and the structure of these.

Mathematical Talk

Can you sort these objects (number pieces, ten frames, cubes, pictures etc) into odd and even?

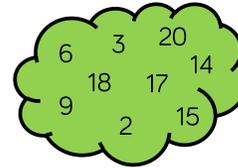
What makes these odd/even?

Which of these numbers can you share equally between 2?

How do you find out if X is an odd or even number?

Varied Fluency

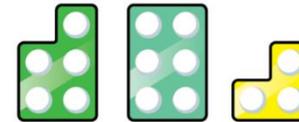
- 1 Which of the numbers below can be shared equally between 2?
Are the numbers odd or even? Show this in the table.



Odd	Even

___ numbers can be shared between 2 equally.
___ numbers cannot be shared between 2 equally.

- 2 Which pieces are odd? Explain why. Find or draw another piece.



- 3 Spot the mistakes.

Odd		Even	
7	nine	10	2
6	3	12	13
6	1	eight	

Odd & Even Numbers

Reasoning and Problem Solving

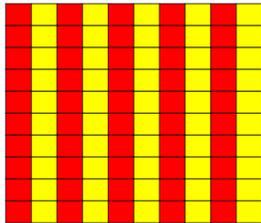
True or false?

12 is an odd number.

Prove it.

Children can use concrete or pictorial methods to show 12 is divisible by 2 and therefore it's false.

Bob is counting on the 100 square. Instead of saying the numbers he counts “red, yellow, red, yellow”



What could the red numbers be? Why?

What could the yellow numbers be? Why?

The red numbers are odd numbers and the yellow numbers are even.

Week 1 to 2 – Number: Multiplication & Division

I have added two one-digit numbers. My answer divides by 2 equally.



Jermaine

What could Jermaine's number be? Explain your answer.

Is this the only possible answer?

Any two even one digit numbers or any two odd one digit numbers will give an even total. E.g. $1 + 3 = 4$

Divide by 5

Notes and Guidance

During this step, children focus on efficient strategies and whether they should use grouping or sharing.

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

They will continue to see the '=' sign at both ends of the calculation.

Mathematical Talk

How can we show the problem using objects/images?

How does knowing your 5 times table help when dividing by 5?

Circle all the multiples of 5 on a 100 square. What do you notice about the numbers? Can you explain the pattern? How does this help you to divide these numbers?

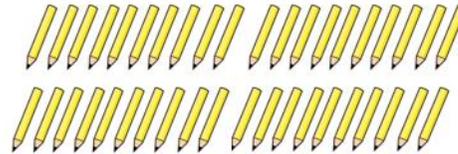
When would we count in 5s?

Varied Fluency

- 1 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



- 2 40 pencils are shared between 5 children.



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

How many pencils does each child get?

- 3 Group the 1 p coins into 5s.
How many 5 p coins do we need to make 20 p?



Draw coins and complete the missing information.

- ___ lots of 5 p = 20 one pence coins
- ___ lots of 5 p = 20 p
- 20 p = ___ × 5 p
- 20 p ÷ 5 p = ___

Divide by 5

Reasoning and Problem Solving

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

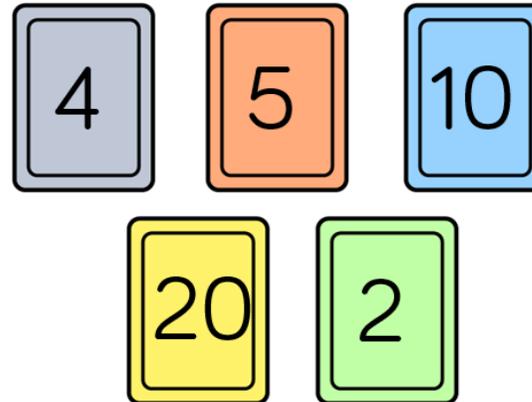


If he puts 5 sweets into each bag and has 3 left over at the end, how many sweets did he have at the start?

Sam could have 48, 43, 38, 33, 28, 23, 18, 13 or 8 sweets.

Use the number cards to make multiplication and division sentences.

How many can you make?



$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

$$20 \div 4 = 5$$

$$20 \div 5 = 4$$

$$5 \times 2 = 10$$

$$2 \times 5 = 10$$

$$10 \div 2 = 5$$

$$10 \div 5 = 2$$

Divide by 10

Notes and Guidance

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.

Mathematical Talk

What can we use to represent the apples?

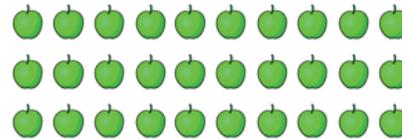
How does knowing your 10 times table help you to divide by 10?

Circle all multiples of 10 on a hundreds square. What do you notice? Can you explain the pattern?

How many groups of 10 are there in ___ tens?

Varied Fluency

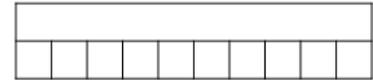
- 1 Apples can be sold in packs of 10
How many packs can be made below?



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

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

Divide by 10

Reasoning and Problem Solving

Mrs Owen has 80 sweets.

She shares them between 10 tables.

Which calculation describes the word problem?

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

The first one describes the calculation. The second shows 80 subtract 80 and the third shows 80 subtract 10

Cakes are sold in boxes of 10

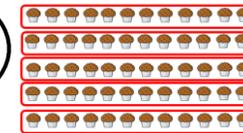
Joe and Orla are trying to pack the following amount of cakes into boxes.



Joe says,



There are 5 groups of 10



Orla says,



There are 6 groups of 10



Who is correct? Explain how you know.

Orla is correct because there are 60 cakes and 60 divided by 10 is 6

Joe has incorrectly grouped the cakes, he might have counted the rows wrong. He hasn't put them in 10s