



Maths

Multiplication and Division

Need a coherently planned sequence of lessons to complement this resource?

Lesson Breakdown

Below is our suggestion for the most coherent and progressive sequence to teach this area of Plant Maths steps on the White Rose Maths scheme of learning although we have not aimed to mirror the exact order in which the topics are presented in the scheme.

Multiples and Factors (1): Multiples

Use this comprehensive lesson pack to help teach children how to identify their knowledge of the multiplication tables to determine their knowledge of multiples and factors as well as prime numbers. The differentiated activity sheets allow children to work on two-digit numbers to three-digit numbers. Children's learning can also be deepened by using the 'Thinking Time' activity sheets with a range of fluency, reasoning and problem-solving activities. By the end of the lesson, children should be confident in being able to identify the multiples of a number.

NC Statement: Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

Lesson Aim: To identify multiples of numbers.

Multiples and Factors (2): Factors

This comprehensive, teacher-made lesson pack is designed specifically to teach children how to identify factors of numbers systematically. This lesson will build on the children's prior knowledge of multiplication and division by using arrays or factor rainbows. Through the use of colour and concrete objects, children will be able to identify all the factors of a number. The differentiated activity sheets allow children to work on two-digit numbers to three-digit numbers. Children's learning can also be deepened by using the 'Thinking Time' activity sheets with a range of fluency, reasoning and problem-solving activities. By the end of the lesson, children should be confident in being able to identify the factors of a number.

NC Statement: Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.

Lesson Aim: To identify all of the factors of a number.

Introduction

In Year 3 Multiplication and Division, children build upon and extend their use of the formal written methods, multiplying four-digit numbers by two-digit numbers and dividing numbers up to four-digits by one-digit numbers. They express remainders as whole numbers, fractions and decimals and choose from these in order to answer questions appropriately when solving problems. The children use their multiplication tables facts to help them to solve large calculations and understand the terms factor, multiple and prime, square and cube numbers. Children use the equals sign to indicate equivalence and multiply and divide by 10, 100 and 1000 with increasing confidence, including calculations which involve decimals.

Resources

You will need standard classroom maths resources for this unit.

Multiplication and Division

Maths | Year 3 | Steps to Progression Overview

The aim of this overview is to support teachers using Plant Maths to show the most coherent and progressive sequence to teach each area of maths. We also want to fully support teachers who use the White Rose Maths scheme of learning to make full use of the resources available within Plant Maths. Wherever possible, lesson packs have been matched to each of the small steps on the White Rose Maths scheme of learning.

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		Statistics		Number: Multiplication and Division		Perimeter and Area		
Spring	Number: Multiplication and Division			Number: Fractions				Number: Decimals and Percentages		Consolidation		
Summer	Number: Decimals			Geometry: Properties of Shapes			Measurement: Converting Units		Measurement: Volume		Consolidation	

Divide with Remainders

	1	2	4	r3
5	6	¹ 2	² 3	

Aim

- To divide 4-digit numbers by 1-digit numbers with remainders.

Success Criteria

- I can use the formal method correctly.
- I can work methodically, always beginning with the largest number.
- I can exchange numbers correctly when necessary.
- I can write my remainder correctly in my answer.

Can you complete the mixed-up times table grid?

×	4	6	7	3
9	36	54	63	27
8	32	48	56	24
3	12	18	21	9
5	20	30	35	15

In the grid, there are two square numbers - write which numbers they are and a definition of what a square number is!

Which of the following numbers are in the 7 times table?

76 **84** 22 **49**
 15 **28** 39

Which of the following numbers is NOT in the 9 times table?

89 9 18 36
 81 **34** 54

What are Remainders?

Sometimes, when we are dividing numbers, the dividend can be exactly divisible by the divisor and will provide a quick answer.

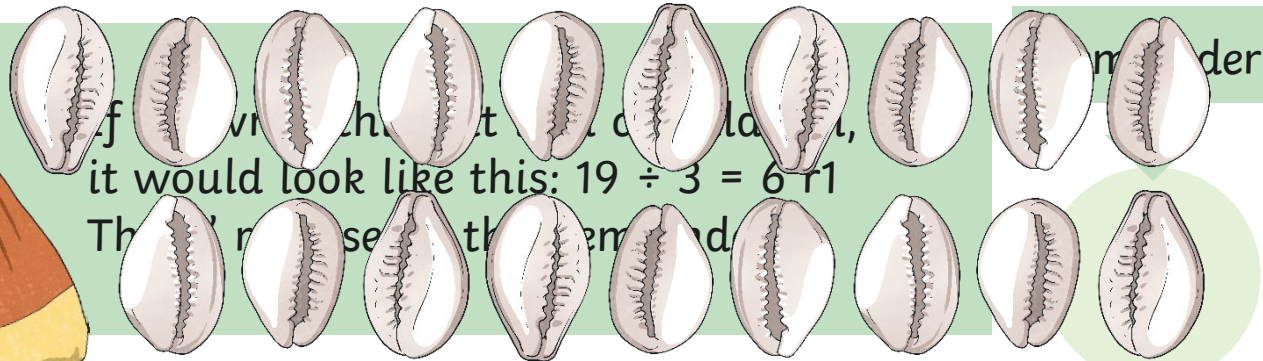
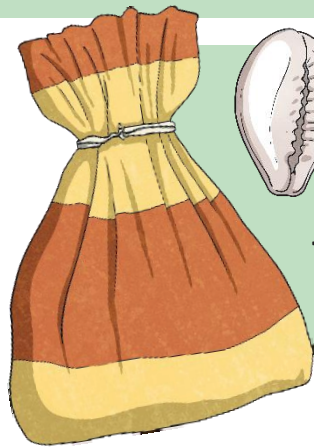
For example:

	1	2	4	9
6	7	¹ 4	² 9	⁵ 4

However, sometimes, it's not so straightforward.
Some numbers are not exactly divisible by their divisor.
Let's investigate what happens when we are presented with this problem.

What are Remainders?

Let's share the shells out equally between the three friends.
There are 19 shells in total. They want to share them between themselves.

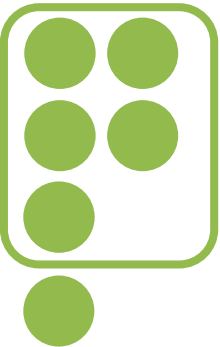
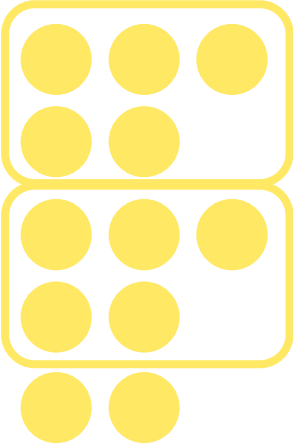
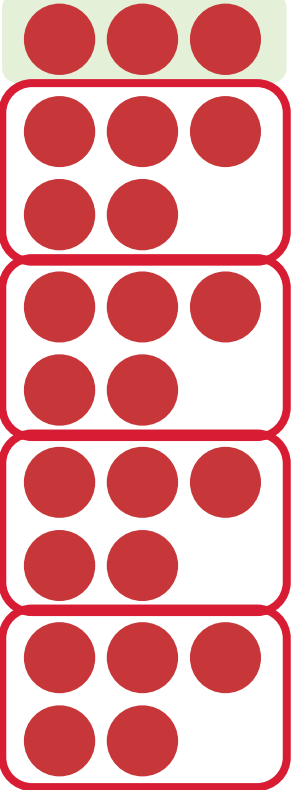


We can check that this works by doing the calculation: $6 \times 3 = 18 + 1 = 19$

Dividing 3-Digit Numbers with Remainders

$$623 \div 5 = 124 \text{ r}3$$

Our final answer is
 $623 \div 5 = 124 \text{ r}3$

100s	10s	1s
		

	1	2	4	r3
5	6	¹ 2	² 3	

We need to write r after our answer to represent the word 'remainder' and then 3 after it.

Dividing with Remainders

Ivy has been completing some division calculations. Do you agree with her answers? Explain your reasoning.

4	9	2	÷	7	=	7	0	r2	
5	2	8	÷	4	=	1	3	1	r4
7	4	3	÷	8	=	9	2	r7	



		7	0	r2
7	4	9	2	


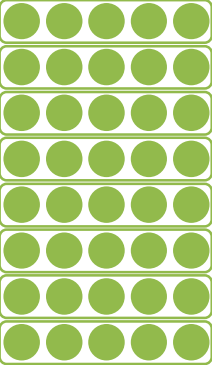
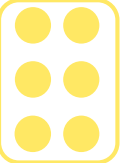

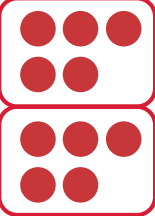
	1	3	2	
4	5	¹ 2	8	

		9	2	r7
8	7	4	² 3	



A remainder cannot be greater than or equal to the divisor. Another group can be made.

$$4061 \div 5 = 812 \text{ r}1$$

1000s	100s	10s	1s
			 

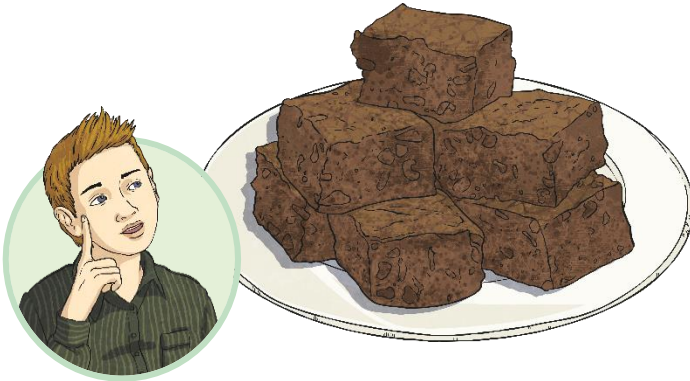
Our final answer is
 $4061 \div 5 = 812 \text{ r}1$

		8	1	2 r1
5	4	0	6	¹ 1

So we can write 2 above the line in the ones column and r1 after to represent the remaining one counter.

What do remainders mean?

Felix is making brownies for a school fair. He makes 1645 brownies and begins to place them in boxes. He can put 8 brownies in one box. How many boxes will Felix need altogether?



		2	0	5	r5
8	1	6	4	⁴ 5	

To find the answer to this question, we need to first complete the

These remaining 5 brownies would still need a box!

This means that the answer to this question is **206 boxes**.

many boxes Felix will need. 1645 divided by 8 will make 205 full boxes with 5 brownies left over.

Multiply 4 digits by 1 digit

Dividing with Remainders

To divide 4-digit numbers by 1-digit numbers with remainders.

1) Solve the division problems.

a)

3	1	8	6	4

b)

4	4	8	8	7

c)

5	1	6	5	7

d)

3	2	7	1	4

e)

4	8	9	2	7

f)

6	4	3	2	8

1) How much chocolate sauce is left over if...

a) 1286 ml is shared between 4 children?

--

b) 3546 ml is shared between 5 children?

--

c) 6577 ml is shared between 3 children?

--

d) 8947 ml is shared between 4 children?

--

Dividing with Remainders

To divide 4-digit numbers by 1-digit numbers with remainders.

Solve the division problems.

b) $2587 \div 4$

d) $3673 \div 6$

f) $6605 \div 7$

How much chocolate sauce is left over if...

a) 1286 ml is shared between 4 children?

--

b) 7820 ml is shared between 9 children?

--

c) 6577 ml is shared between 6 children?

--

d) 8632 ml is shared between 7 guests?

--

Dividing with Remainders

To divide 4-digit numbers by 1-digit numbers with remainders.

How much chocolate sauce is left over if...

a) 1286 ml is shared between 4 children?

--

b) 3792 ml is shared between 9 children?

--

c) 6577 ml is shared between 8 children?

--

d) 6832 ml is shared between 7 children?

--

e) 8947 ml is shared between 8 children?

--

f) 5242 ml is shared between 7 children?

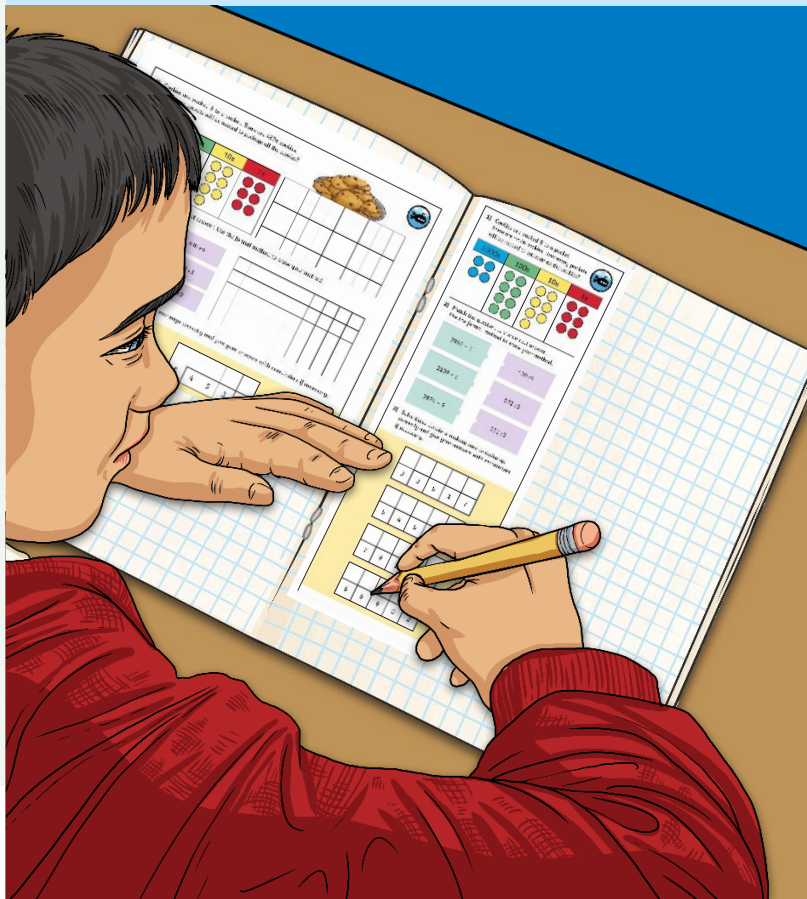
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He did some calculations, but he isn't sure if he's got the answers right. Can you help him? What mistakes have been made?

7															
0 r2															
?															
7 r2															
'9															

Diving into Mastery

Dive in by completing your own activity!



1) Use your...

a)

5

2) Daniel has...
Has he co...

2) Izzy has...

3) Elise is th...

3) True or fa...

1) Cookies are packed 8 to a packet. There are 4876 cookies.
How many packets will be needed to package all the cookies?

1000s	100s	10s	1s

2) Match the question to the correct answer. Use the formal method to show your method.

$2863 \div 5$	$430 \div 4$	<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>																		
$2109 \div 6$	$572 \div 3$																			
$3874 \div 9$	$351 \div 3$																			

3) Solve these divisions making sure to exchange correctly and give your answers with remainders if necessary.

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7	9	1	1	6																	
6	6	9	0	2																	

Jamie and Will are discussing remainders.
Who is correct? Justify your answer.



Jamie

Remainders can only ever be numbers smaller than the divisor.



Will

Remainders can be any number.

Jamie is correct. Remainders cannot be larger than the divisor. If they are, it means another group can be made!

Aim



- To divide 4-digit numbers by 1-digit numbers with remainders.

Success Criteria

- I can use the formal method correctly.
- I can work methodically, always beginning with the largest number.
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