



Year 3 White Rose Maths (WRM) Spring Scheme of Learning, 2018 Alignment with Mathletics

Year 3 – 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				Number – Multiplication and Division			Consolidation	
Spring	Number - Multiplication and Division			Measurement: Money	Statistics		Measurement: length and perimeter			Number - Fractions	Consolidation	
Summer	Number – fractions			Measurement: Time			Geometry – Properties of Shapes	Measurement: Mass and Capacity			Consolidation	

This alignment document has been based on the White Rose Maths (WRM) scheme of learning available on the TES website. It contains the alignment information for the Spring Scheme of Learning.



Year 3 White Rose Maths (WRM) Spring Scheme of Learning, 2018

Mathletics

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Purpose:

The aim of this document is to support Mathletics teachers, who use the WRM schemes of learning, to make full use of the resources available within Mathletics. Whenever possible, activities, pages from the eBooks or learning experiences on Rainforest Maths have been matched to each of the small steps on the corresponding WRM scheme of learning.

In Mathletics, many eBooks are available in the student interface, however all eBooks are available to teachers through the teacher console. These topic-based eBooks contain practice and fluency exercises, along with application questions and games. Only a small selection of the relevant pages is contained in this document.

Links to Rainforest Maths, which can be found in the 'Play' area in the Mathletics student interface, have also been included. This resource has engaging visuals which work well on interactive whiteboards and gives pupils further opportunities to practise their learning online.

Course selection:

A specific Mathletics course has been created in alignment with this WRM scheme of learning. You may wish to set this course for your class/groups.

England Yr 03 WRM Autumn and Spring Aligned



Data-Driven
Teaching and
Learning



Differentiation



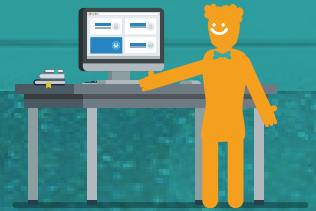
Feedback and
Reflection



Student Growth



Blended
Learning

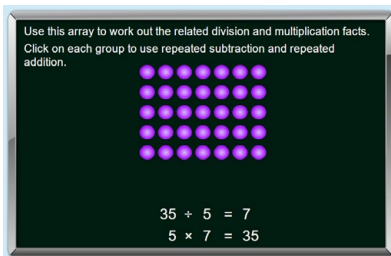


Examples of alignment to Mathletics

Block 1 (Weeks 1-3) Number: Multiplication and Division

National Curriculum Objectives	WRM Small Steps
<ul style="list-style-type: none"> 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 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 objectives. 	<ul style="list-style-type: none"> Comparing Statements Related Calculations Multiply 2-digits by 1-digit (1) Multiply 2-digits by 1-digit (2) Divide 2-digits by 1-digit (1) Divide 2-digits by 1-digit (2) Divide 2-digits by 1-digit (3) Scaling How Many Ways?

Small step: Comparing Statements

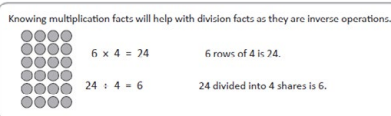


Topic: **Multiply and Divide**

Activity: **Related Facts 2**

Pupils are encouraged to use repeated addition and subtraction of counters to explore related division and multiplication facts.

Division – linking multiplication and division facts



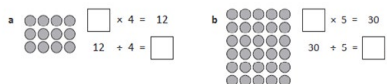
eBook, D series: **Multiplication and Division, page 32**

Using the visual of an array, pupils compare related multiplication and division facts.

In exercise 2 they complete the array and then write a related multiplication and division fact.

Pupils can be challenged to turn the array around and state an additional related multiplication and division fact.

1 Describe each of these arrays using one multiplication and one division fact:



Division – linking multiplication and division facts

3 Play this memory game with a partner. The aim of this game is to find pairs of matching multiplication and division facts. Each player needs a copy of this page and to cut out their cards. Players join their cards together, shuffle and lay them face down. Take turns in turning over a pair of cards. If they match the player keeps the pair, if they don't match, they must be placed back in the same position. The winner is the player with the most pairs.



16 ÷ 4	4 × 4
20 ÷ 4	4 × 5

eBook, D series: **Multiplication and Division, page 33**

In this paired game, pupils use a set of cards with multiplication and division facts printed on them. Pupils must turn over related facts.

The game can be extended with pupils having to add a further set of cards, drawing arrays to match the pairs.



Division – linking multiplication and division facts

3 Write a fact family for each set of numbers in the triangle. The first one has been done for you.

a

5	×	7	=	35
7	×	5	=	35

35	÷	5	=	7
35	÷	7	=	5

b

□	×	□	=	□
□	×	□	=	□

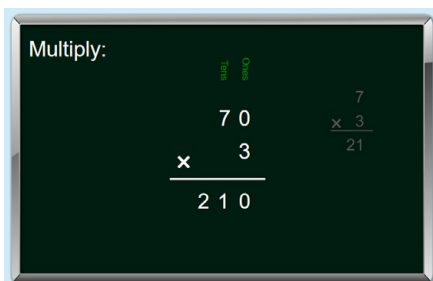
□	÷	□	=	□
□	÷	□	=	□

eBook, E series: Multiplication and Division, pages 33–34

On page 33 pupils explore the relationship between multiplication and division using arrays as visuals.

On page 34 the related numbers are shown on a triangle and pupils list the related facts.

Small step: Multiply 2-digits by 1-digit (1)



Topic: Multiply and Divide

Activity: Multiply: 2-Digit by 1-Digit

This activity does not involve the need to exchange a 10. Pupils multiply the ones and tens separately to multiply a 2-digit and 1-digit number using the written method.

Small step: Multiply 2-digits by 1-digit (2)

3 Doubling 2-digit numbers is easy if you split the digits and double each part. Complete this doubling table. The first one has been done for you.

a Double 36 = $30 \times 2 + 6 \times 2$ = $60 + 12$ = 72	b Double 23
c Double 19	d Double 41

eBook, D series: Multiplication and Division, page 22

Pupils practise doubling 2-digit numbers by splitting the number into tens and ones first.

Mental multiplication strategies – split strategy

The split strategy is when we multiply numbers in 2 pairs and then add the parts. Let's use the split strategy for 26×4 .

- Split 26 into 20 and 6.
- Multiply each part.
- Add the answers together.

$$26 \times 4 \rightarrow 20 \times 4 + 6 \times 4$$

$$80 + 24 = 104$$

So, $26 \times 4 = 104$

eBook, E series: Multiplication and Division, page 23

Pupils multiply 2-digit numbers by 1 digit using the split strategy.

Written methods – short multiplication

	H	T	O
		5	4
×		3	
	1	6	2
	□	□	

Start with the ones. $4 \times 3 = 12$ ones.
Rename this as 1 ten and 2 ones. Put the 2 in the ones column and regroup the 1 to the tens column.
 3×5 plus the regrouped 1 is 16 tens.
Rename this as 1 hundred and 6 tens.

1 Practise these problems:

a	H	T	O
		4	2
×			9
	□	□	

b	H	T	O
		3	8
×			7
	□	□	

c	H	T	O
		2	5
×			4
	□	□	

eBook, E series: Multiplication and Division, page 42

Pupils are shown how to use a formal written method to multiply 2-digit numbers by 1 digit. Small boxes indicate where pupils can place numbers that they carry or regroup.



Multiplication ... extended. score 0

EXAMPLE: Extended form.

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

multiply the ones
multiply the tens
add them together

1	4
x	7
	0

multiply the ones
multiply the tens
add them together

check next

extended form contracted form

Enter the answers in the boxes, click check.

Rainforest Maths – Level D— Multiplication ... extended

Pupils can build on their understanding of split strategy by using the extended written method to show their working out when multiplying 2-digit numbers by a 1-digit number.

Small step: Divide 2-digits by 1-digit (1)

Mental division strategies – halving strategy

When you halve numbers you are dividing them by 2. In this function machine, numbers go IN, have the rule applied and come OUT again.

IN	RULE:	OUT
8	Halve	4
12		6
4		2

1 Complete the halving function machines. Halve the number going IN the machine and write the answer in the OUT column:

eBook, E series: Multiplication and Division, pages 36–37

Pupils explore division by 2 as halving. On page 37, division by 4 is explored by halving and then halving again.

Small step: Divide 2-digits by 1-digit (2)

Find the quotient.

$$8 \overline{) 64}$$

Process

- Divide.
- Multiply.
- Subtract.
- Bring down.

Topic: Multiply and Divide

Activity: Divide: 1-Digit Divisor 1

Pupils practise dividing a 2-digit number by a 1-digit number using the written method for division. All dividends are multiples of the divisor.

Division ... no remainders. score 0

$5 \overline{) 20}$ means 20 divided by 5.

choose

4	36
)	

EXAMPLE:

4
)
5
)
20
0

check next

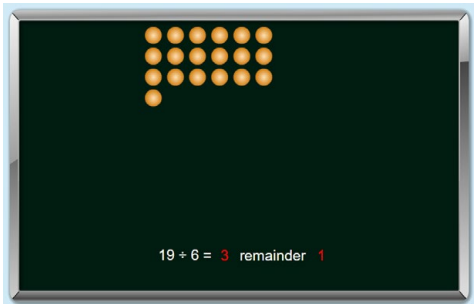
Enter the answer, click check.

Rainforest Maths – Level D – Division ... no remainders

Pupils complete divisions of 2-digit numbers by 1-digit numbers using a formal written method.

Choosing the first option still enables pupils to see the relationship between division and multiplication and models division as sharing.

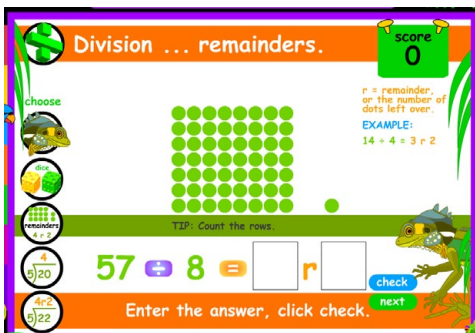
Small step: Divide 2-digits by 1-digit (3)



Topic: **Multiply and Divide**

Activity: *Remainders by Arrays*

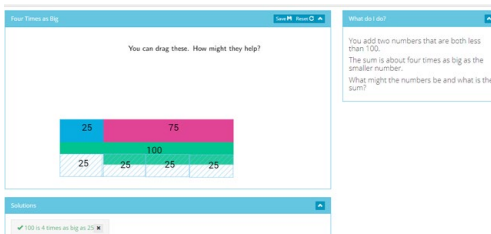
Pupils solve a simple division problem with remainders by counting the number of full groups of counters and the number of extra counters left over.



Rainforest Maths – Level D – Division ... remainders

Pupils complete divisions of 2-digit numbers by 1-digit numbers using an array to count the number of full rows and the number of extra counters left over.

Small step: Scaling

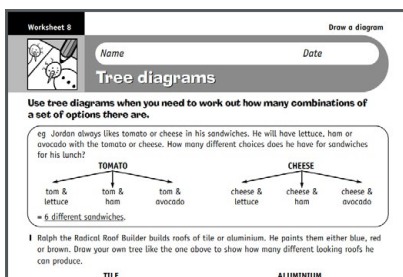


Rich Learning Task – Year 2, Four Times as Big

This task is designed for teachers to use with their class on the interactive whiteboard. Pupils are asked to find 2 numbers which total 100.

The concept of scaling can be introduced and modelled to pupils, eg 100 is about 4 times the value of the smallest number (4:1).

Small step: How Many Ways?



eBook, D series: Problem Solving D & E, pages 11, 37–38

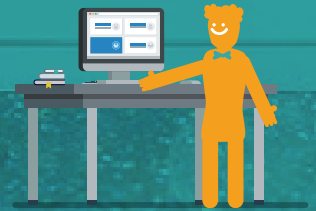
Pupils identify the different combinations possible for given scenarios using lists or tree diagrams. These problems encourage pupils to use known multiplication facts.

Split that Fact

Choose a multiplication fact within the range of 10 x 10.
How many different ways can you find to split the fact into two smaller arrays?
Record them on the grid paper below.

eBook, E series: Split that Fact (rich task)

Pupils add together different combinations of arrays to total a particular multiplication fact. Although the interactive restricts the pupils to using the same factor, the written activity can be extended to use various factors.



Examples of alignment to Mathletics
Block 2 (Week 4) Measurement: Money

National Curriculum Objectives	WRM Small Steps
<p>▶ Add and subtract amounts of money to give change, using both “£” and p in practical contexts.</p>	<ul style="list-style-type: none"> ▶ Pounds & Pence ▶ Converting Pounds & Pence ▶ Adding Money ▶ Subtracting Money ▶ Giving Change

Small step: Pounds & Pence

Money – amounts to £2

You will need: a partner plastic coins

What to do:
We can make amounts in many different ways. Work with your partner to find 2 ways to make these amounts. Record them.

75p

eBook, C series: Time and Money, pages 26–29

In these pages, pupils use different combinations of pounds and pence to make a given amount of money.

Money – writing and ordering amounts

How do we write amounts with pounds and pence?

We keep the pound sign – £2.50p – We remove the p sign.
We put a decimal point between the pounds and pence.

If the amount has no pence we can write it as:
£2 or £2.00

If the amount has no pounds we can write it as:
50p or £0.50

1 Write the amounts on the price tags.

a one pound b 80 pence

eBook, C series: Time and Money, pages 18–19

On page 18, pupils explore the range of coins and notes which we use.

On page 19, pupils work on recording the amount of money they have, using the pound symbol (£), p for pence and the decimal point between pounds and pence.

Money – coin combinations

Show how you pay for these party supplies using exact amounts. Place the same number of ticks in the column of the coin you would use. The first one has been done for you.

a		✓	✓✓				
b							
c							

eBook, D series: Addition and Subtraction, page 46

Pupils use a combination of coins to pay for a variety of items. They use £1 and £2 coins in their combinations.

Coin Count

You pay for something.
You use twice as many 10 pence pieces as 5 pence pieces.
You use half as many 20 pence pieces as 10 pence pieces.
How much could it have cost?
How many answers can you come up with?

Rich Learning Task, E series: Coin Count

This Rich Learning task has a printable sheet for teachers and one for pupils. There is an interactive and a video to enable teachers to present the problem to the class. Pupils can also use coins to work on the problem practically, while others can draw or use a pattern to help them find different answers.



Small step: Adding Money

How much money is shown?

£2 £2 20p

£10 £50

£2 + £2 + 20p + £10 + £50 = £64.20

Add the amounts.

Back

Topic: **Money**

Activity: **Money – Adding (GBP)**

Pupils add the pounds and pence and select the correct total from 4 multiple choice options.

Money – adding coins

Another useful skill to have is recognising coins that add to make easy amounts. Look at these coins:

20p + 5p + 20p + 50p + 5p = £1

We could add them like this but there are easier ways.
We could rearrange the coins like this. Now we have:

40p 10p

50p + 50p = £1

eBook, C series: **Time and Money, pages 23–30**

Pupils learn to recognise coins which can be easily added together to help them add groups of coins effectively. On page 30, pupils have progressed to adding amounts up to £5.

Claim the totals

apply

Getting ready → This is a game for two players. You will need a copy of this page and page 48; and three same colour counters each.

copy

What to do → Use the game board below. Then cut out the coin cards on page 48 and shuffle well. Take turns turning over four cards at a time. Add the coins and look for the total on the grid. If the total is on the grid, then place a counter on it. The first player to place a counter on three amounts next to each other in any direction, wins.

£5.50	£3.70	£6.10	£1.80
-------	-------	-------	-------

eBook, D series: **Addition and Subtraction, page 50**

In this paired activity, pupils use a bingo-style card with a range of amounts on it. They select 4 cards with coins illustrated on them and work out the total of the coins. If the total matches 1 of the squares, they cover it with a counter.

Small step: Giving Change

How much change?

£5 - £2 = £3

State the answer.

Back

Topic: **Money**

Activity: **How much Change? (GBP)**

Pupils find change from whole number amounts shown in pounds only.

Name: _____

Getting Change

Number



You have bought a gift for your sister. You paid £10 and received 3 coins and a note in change.
How much could the gift have cost?
How many possibilities can you find?

Rich Learning Task eBook, D series: **Problem Solving and Reasoning, page 4**


Pupils find change from £10, but are challenged to find numerous possibilities.

**Money – change**

One way of working out change is to imagine adding coins until you get to the amount you paid. It's a way of counting on.

We buy an  for 80p and pay with a . How much change should we receive?

We can make 80p like this . If we add  we have .

So  is our change.

eBook, C series: Time and Money, pages 31–33

Pupils practise giving change by counting on from the cost of the item to the amount they have given. Exercises cover giving change in pence, pounds and then pounds and pence.



Examples of alignment to Mathletics Block 3 (Weeks 5–6) Statistics

National Curriculum Objectives	WRM Small Steps
<ul style="list-style-type: none"> ▶ Interpret and present data using bar charts, pictograms and tables. ▶ Solve one-step and two-step questions [for example, 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables. 	<ul style="list-style-type: none"> ▶ Pictograms ▶ Bar Charts ▶ Tables

Small step: Pictograms

Give Donna 45 ducks.
 $10 + 10 + 10 + 10 + 5 = 45$
 Donna: [9 ducks] = 45
 John: [5 ducks]
 George: [1 duck]
 Key: [1 duck] = 10 ducks, [1 duck] = 5 ducks

Topic: **Statistics**

Activity: *Making Pictograms: With Scale*

In this activity, pupils use a scale of 1, 5 or 10 to complete a pictogram. They are given the total for a particular person and are required to fill the pictogram with the correct number of objects to reach that total.

Statistics – pictograms

3 Josie runs a juice bar and has just received a fruit delivery. Help Josie create a pictogram of what she has for her records.



Heading:	
Bananas	
Apples	
Oranges	
Pineapples	

In this pictogram a scale is used. Each picture represents 2 of each fruit.

eBook, D series: **Statistics, pages 8–9**

On page 8 pupils interpret pictograms where 1 picture represents 1 minibeast and then explore the same information in a pictogram using a different scale.

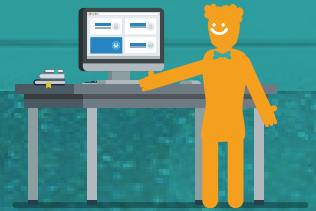
On page 9 pupils create a pictogram to represent the collection of fruit shown. They use a scale of 1:2.

Pupils then complete a pictogram where only some of the data has been entered and they must work out the scale used.

Data ... picture graphs. score 0
 In some picture graphs (pictograms) the picture represents more than one. These graphs usually have a key which shows the number to count.
 How many?
 KEY
 cassowaries [1 picture] = 10
 lorikeets [1 picture] = 10
 cockatoos [1 picture] = 10
 brush turkeys [1 picture] = 10
 Read the key and enter the numbers in the boxes.
 EXAMPLE: [3 cassowaries] [3 brush turkeys]

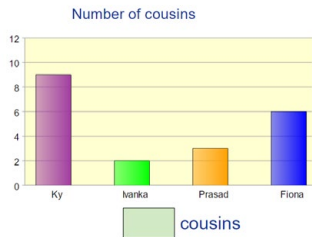
Rainforest Maths – Level E – Data

Pupils use the picture graph (pictogram) to find out how many of each bird has been seen. Each picture in the pictogram represents 10 birds.



Small step: Bar Charts

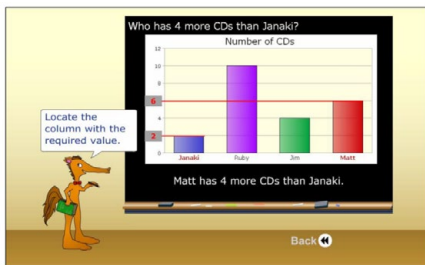
How many cousins does Prasad have?



Topic: **Statistics**

Activity: **Bar Chart**

In this activity pupils interpret bar graphs with a scale of 1 and 2 to solve 1-step and 2-step problems.



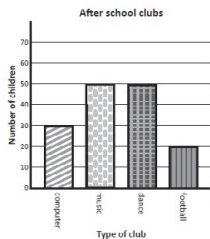
Topic: **Statistics**

Activity: **Reading from a Bar Chart**

Pupils continue to interpret bar graphs with a scale of 1 and 2 to solve 1-step and 2-step comparative problems.

5 This bar chart shows how many children do each club in a school.

- a How many children are there in the school in total?
- b How many fewer children do football club than dance club?
- c More children do music club than do computer and football club combined. True or false?



eBook, D series: **Statistics, pages 4–7**

Pupils create bar charts from tally charts, using both a 1:1 scale and a 1:5 scale. They interpret bar charts to answer a range of questions.

On page 7 pupils use bar charts with a 1:2 scale and then a 1:10 scale.

Data ... bar or column graphs. score 1

JANUARY

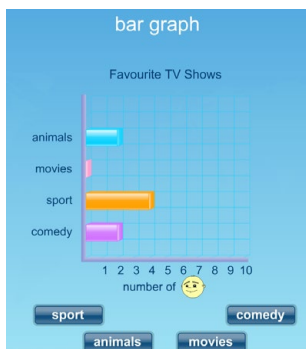
Tropics Bird Hospital
Birds treated - monthly

Common Name	January	February	March	April	May
essowaries	7	3	4	2	5
sunbirds	2	3	3	2	2
turklets	9	6	7	9	10
brush turkeys	5	7	6	5	4
kingfishers	1	4	3	2	1
cockatoos	8	3	4	6	7

Use the data in the table to make a graph:
1. Enter the numbers in the boxes for JANUARY.
2. Click 'make graph', then click 'check'.

Rainforest Maths – Level E – Data

Pupils input the data and click 'make graph' to create a block graph. The graph can be used on an interactive class display, and pupils understanding can be developed with questioning based on the information shown on the graph or table.



Concept Search – bar graph

In this interactive demonstration teachers or pupils can click on the individual categories to watch the bars increasing.



Small step: Tables

How many children selected green as their favourite colour?

Colour	Boy	Girl
Red	3	4
Blue	2	5
Purple	5	4
Yellow	3	3
Green	2	2
Orange	4	5

Perform the calculation.

Answer
 $= 2 + 2$
 $= 4$

Back

Topic: **Statistics**

Activity: *Interpreting Tables*

Pupils are required to first read and interpret data in a table before performing calculations to solve 1-step and 2-step problems.

Statistics – asking questions and collecting data

- 4 Did you know that most peoples' eyes are either blue, brown or green? In this table, 48 collected data on the different coloured eyes in their class.

How many pairs of each eye colour are in 48?		
Blue		6
Brown		15
Green		4

What are some other questions that you can answer with this data? Think of two:

1. _____

2. _____

eBook, E series: Statistics, page 2

Pupils read data presented in a table and write statements related to the data. They are then asked to collect data for their own table and compare the 2 sets of data in the tables.



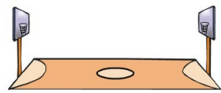
Examples of alignment to Mathletics

Block 4 (Weeks 7–9) Measurement: Length and Perimeter

National Curriculum Objectives	WRM Small Steps
<ul style="list-style-type: none"> ▶ Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). ▶ Measure the perimeter of simple 2D shapes. 	<ul style="list-style-type: none"> ▶ Measuring Length ▶ Equivalent Lengths – m & cm ▶ Equivalent Lengths – mm & cm ▶ Comparing Lengths ▶ Add Lengths ▶ Subtract Lengths ▶ Measure Perimeter ▶ Calculate Perimeter

Small step: Measure Length

Which is the best unit to measure its length?



mm cm m

Topic: Length and Perimeter

Activity: *Which Unit of Measurement?*

Pupils choose the most suitable unit to measure a given object. This activity also includes choosing between millilitres (ml) and litres (l) as well as grams (g) and kilograms (kg).

What to do next:

From a starting line throw a ball or Frisbee. Predict how far away you think it is. Measure the distance with the trundle wheel.



Throw the ball or Frisbee 3 more times. Do your estimates get closer with practice?

a. estimate m measure m

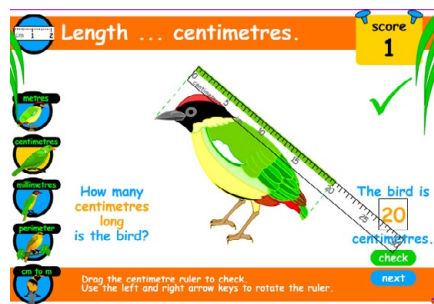
b. estimate m measure m

c. estimate m measure m

d. estimate m measure m

eBook, C series: Measurement, pages 3–11

Pupils explore measurement using rulers, metre sticks and trundle wheels. They develop an understanding of how to measure lengths, choosing the appropriate equipment and units of measurement (centimetres and metres).



Rainforest Maths – Level D – Length

Pupils can measure in metres, centimetres and millimetres using a ruler which they can drag across the screen to place next to the item they are measuring.



Small step: Equivalent Lengths – m & cm

Units of length – metres and centimetres

Often we will use both metres and centimetres when measuring length. This length of ribbon is 146 cm. This is 1 metre and 46 centimetres.



1 Write these lengths in centimetres:

- a 1 m 38 cm cm b 1 m 67 cm cm c 2 m 82 cm cm
d 5 m 45 cm cm e 4 m 59 cm cm f 2 m 90 cm cm

2 Write these lengths as metres and centimetres:

- a 217 cm m cm b 391 cm m cm
c 462 cm m cm d 113 cm m cm

eBook, D series: Measurement, pages 1–3

On page 1 the activity reinforces students understanding of measuring in metres, while page 2 focuses on centimetres.

The activity on page 3 builds on the understanding that a metre is equivalent to 100 centimetres. Exercises involve converting measurements in metres and centimetres to just centimetres. It also asks pupils to convert centimetres to a combination of metres and centimetres.

Small step: Equivalent Lengths – mm & cm

Units of length – millimetres

When we need a unit of length that is smaller than a centimetre, we use millimetres. There are 10 millimetres in 1 centimetre. 10 mm = 1 cm



1 Estimate and measure these objects in millimetres:

Object	Estimate	Millimetres
a Width of your thumb		
b Length of your hand		
c Width of a pencil		

2 How many millimetres in:

- a 4 cm = mm b 9 cm = mm c 2 cm = mm

eBook, D series: Measurement, pages 4–5

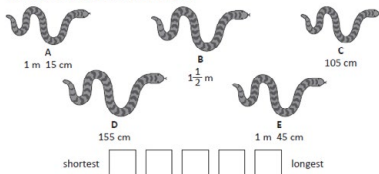
Pupils develop an understanding that when measuring small items, they use millimetres and centimetres. They are shown that 10 mm is equivalent to 1 cm.

Activities involve converting millimetres to centimetres and vice versa. Pupils then measure small drawings and give the measurement in millimetres and centimetres.

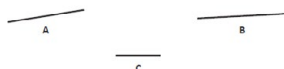
Small step: Compare Lengths Small step: Add Lengths

Units of length – comparing

1 These snakes are not drawn to scale. Compare their lengths and order them in the boxes below from shortest to longest.



2 Use a ruler to measure the lines below and order them from longest to shortest in the boxes:



eBook, D series: Measurement, page 7

Pupils use their understanding of how to convert lengths expressed using centimetres and metres to order sets of lengths.

d Steve drew a huge pentagon with sides 2 m long.

What is the perimeter of the shape, in metres and centimetres?

e There boys are arguing about who can jump the furthest. Mark's best distance is $2\frac{3}{4}$ m, Chris's best is 2,505 mm and Kumar's is 255 cm.

Who has jumped the furthest?

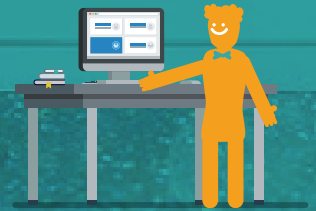
Who jump is the shortest?

f Three jelly snakes are laid end-to-end. The first is 13 cm long, the second 145 mm long and the third is $12\frac{1}{2}$ cm long.
What is the total length of all three?

eBook, D series: Measurement, page 8

This page offers opportunities for students to practise converting between metres, centimetres and millimetres and add lengths.

Pupils decide which operation they need to use to solve the problems. Questions 1c and 1f involve addition.



Ten fingers equal one arm investigate



Some people say that the length of one of your arms is the same as the total length of all ten of your fingers. Is that true or false? How could you investigate it?
Work with a partner. Discuss how you can find out the answer? What equipment will you need? What method will you follow? How will you record your results? What errors might you make if you are not careful?

eBook, D series: Measurement, page 9

In this investigation, pupils work with a partner to investigate the idea that the length of our 10 fingers is equivalent to the length of our arm.

Pupils must decide on their method and then present their findings.

Small step: Subtract Lengths

- There boys are arguing about who can jump the furthest. Mark's best distance is $2\frac{1}{2}$ m, Chris's best is 2,505 mm and Kumar's is 255 cm.
Who has jumped the furthest?
- Who jump is the shortest?
- Three jelly snakes are laid end-to-end. The first is 13 cm long, the second 145 mm long and the third is $12\frac{1}{2}$ cm long.
What is the total length of all three?

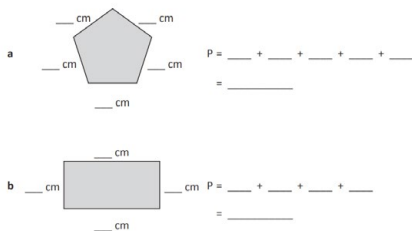
eBook, D series: Measurement, page 8

This page offers opportunities for students to practise converting between metres, centimetres and millimetres in order to solve word problems.

Pupils decide which operation they need to use to solve the problems. Questions 1a and 1e involve subtraction.

Small step: Measure Perimeter

2 Measure these shapes and find the perimeter.



eBook, D series: Measurement, page 6

Pupils measure the side lengths of a pentagon and a rectangle and use these lengths to calculate the perimeter.

Name: _____

Two Triangles

Measurement

One triangle is a LOT taller than another, but they have the same perimeter.
What is that perimeter and what do the triangles look like?
Did the size of the perimeter affect what you created? Explain.

eBook, Rich Learning Tasks, D series: Measurement, page 10

In this open-ended task, pupils are asked to create 2 triangles with the same perimeter, but where 1 is a lot taller than the other.

The task is open ended, so pupils can create additional pairs of triangles, or they can be challenged to create further triangles or shapes with the same perimeter.

Length ... perimeter.

Perimeter is the distance around the outside of a shape.

score 2

centimetre grid

Example:
 $6 + 4 + 6 + 4 = 20$
Perimeter = 20cm

The perimeter of the stamp is centimetres.

check next

Rainforest Maths — Level D — Length

Pupils find the perimeter of a range of rectangular stamps. Pupils can count the squares around the stamp to find the perimeter.



Small step: Calculate Perimeter

Add the lengths of all sides.

$$P = 7 + 7 + 7 + 7 = 28$$

Perimeter = 28 cm

Back

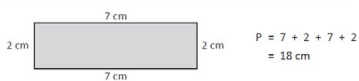
Topic: **Length and Perimeter**

Activity: **Perimeter**

Pupils calculate the perimeter of squares and rectangles using the given side lengths.

Units of length – perimeter

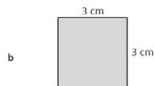
The perimeter is the total length around the outside of an enclosed space. To find the perimeter of this shape, we add the lengths of all the sides.



1 Find the perimeters of these shapes.



$$P = _ + _ + _ + _ = _$$



$$P = _ + _ + _ + _ = _$$

eBook, D series: **Measurement, page 6**

In this activity, the concept of perimeter is explained. Question 1 asks pupils to find the perimeter of a rectangle and a square.

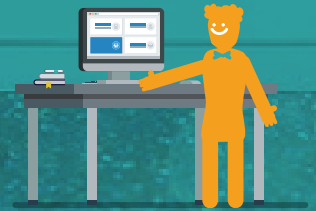
They are encouraged to use their understanding of the shape's properties to calculate the perimeter when only some of the sides are labelled with their lengths.

The length of the boundary of a 2D shape

$$8\text{cm} + 6\text{cm} + 10\text{cm} = 24\text{cm}$$

Concept Search: **Perimeter**

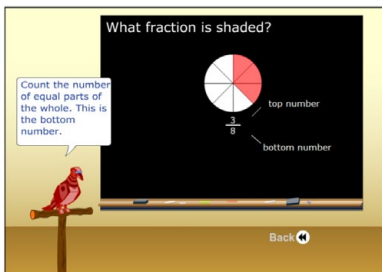
In this explanation, pupils can see animations of a rectangle and a triangle being drawn and then the perimeter is calculated using the side lengths.



Examples of alignment to Mathletics
Block 5 (Weeks 10–11) Number: Fractions

National Curriculum Objectives	WRM Small Steps
<ul style="list-style-type: none"> ▶ 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 and use fractions as numbers: unit fractions and non-unit fractions with small denominators. ▶ Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators. ▶ Solve problems that involve all the above. 	<ul style="list-style-type: none"> ▶ Unit and Non-unit Fractions ▶ Making the Whole ▶ Tenths ▶ Count in Tenths ▶ Tenths as Decimals ▶ Fractions on a Number Line ▶ Fraction of an Amount (1) ▶ Fractions of an Amount (2) ▶ Fractions of an Amount (3)

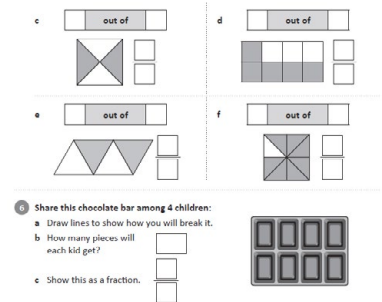
Small step: Unit and Non-unit Fractions



Topic: **Fractions**

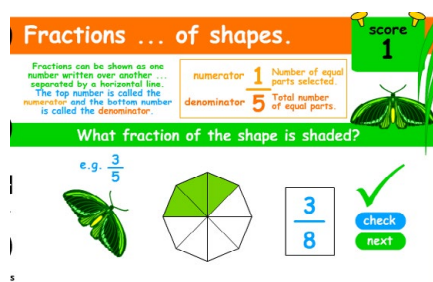
Activity: *Model Fractions*

Pupils are required to record the fraction that represents the shaded parts of an evenly divided circle.



eBook, D series: **Fractions, pages 3–5**

This activity provides a range of exercises for pupils to explore the concept of unit and non-unit fractions. On page 3 pupils shade in the fraction and identify it, while on page 4 the fractions are shown shaded and pupils need to identify the fraction. Page 5 provides the opportunity to practise identifying non-unit fractions of collections.



Rainforest Maths – Level D – Fractions

Pupils are introduced to the terms ‘numerator’ and ‘denominator’ and pupils record unit and non-unit fractions to represent the shaded parts of evenly divided shapes.



Small step: Making the Whole

Share 1 cookie fairly among 4 friends.
What fraction will they each receive?
Pick the cookie cutter you want to use:

Share the cut cookies fairly.

Each friend has $\frac{1}{4}$ of a cookie.

Look at what part of the whole cookie each friend has.

Topic: **Fractions**

Activity: *Partition into Equal Parts*

This activity emphasises that fractions are always a part of a whole and that the larger the denominator the more pieces there are that make up the whole. Pupils get to first use a 'cookie cutter' to divide the whole cookie into fractions.

If the purple rod is equal to one whole, what fraction does the light green rod represent?

Topic: **Fractions**

Activity: *Part-Whole Rods 1*

In this activity, pupils can drag the white block to work out the number of fractional parts that make up the purple whole. Then they count the number of parts the corresponding coloured rod represents and record the fraction.

Fractions ... equivalence

halves	$\frac{1}{2}$	$\frac{1}{2}$							
thirds	$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$						
quarters	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$					
fifths	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$				
sixths	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$			
eighths	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$		
tenths	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	
twelfths	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$

Topic: **Rainforest Maths – Level D – Fractions**

The fractions on the fraction wall can be dragged to support pupils' understanding of how fractions can be added together to make a whole.

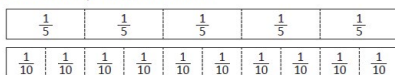
Small step: Tenths

Types of fractions – fifths and tenths

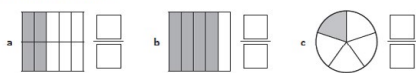
When you divide an object or a quantity into 5 equal parts, each part is $\frac{1}{5}$.

If you divide an object or quantity into 10 equal parts, then each part is $\frac{1}{10}$.

These fraction strips show fifths and tenths.

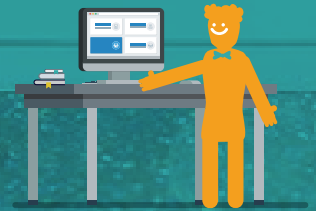


1 Label these fractions:



eBook, D series: **Fractions, page 13**

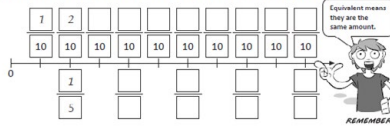
Pupils are introduced to the concept of fifths and tenths. Exercises first involve pupils naming the fraction shaded and then shading them to match the written fraction.



Small step: Count in Tenths

Types of fractions – fifths and tenths

4 Complete this equivalent fraction number line. The first two have been done for you.



5 Place these fractions on the number line: $\frac{2}{5}, \frac{1}{2}, \frac{3}{10}, \frac{7}{10}, \frac{1}{5}$



eBook, D series: Fractions, page 14

Pupils count in tenths along a number line and compare tenths with fifths. They are then asked to use their understanding of equivalence to place a half, tenths and fifths on the number line.

Small step: Tenths as Decimals

Fractions and decimals – writing tenths as decimals

Fractions can be written as decimals.
This row of cubes shows 10 tenths:

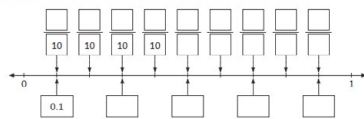
$\frac{6}{10}$ can be shown like this:

$\frac{6}{10}$ as a decimal is 0.6

Ones	Tenths
0	6

The decimal point separates the whole number from the decimal.
We would write 1 or $\frac{10}{10}$ as 1.0

1 Complete this number line showing equivalent tenths and decimals:



eBook, E series: Fractions, pages 18 and 19

Pupils are introduced to the concept of writing tenths as decimals. Pupils mark tenths along the number line and then add the equivalent decimals.

Small step: Fractions on a Number Line

Which fraction is the arrow pointing at?

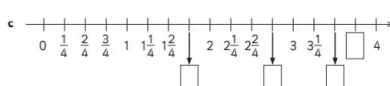
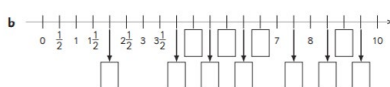
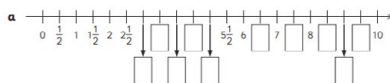
Topic: Fractions

Activity: *Identifying Fractions on a Number Line*

Pupils select the correct fraction to represent a point on a number line. The number line is between 0 and 1. The segments on the number line are unmarked which requires pupils to count along the number line to identify the correct fraction. This activity does not practise counting in fractions beyond 1 whole.

Fractions – counting on a number line

1 Count on the number line and fill in the missing numbers.



eBook, C series: Fractions, page 2

Pupils fill in the missing numbers on number lines by counting in halves, thirds or quarters. The number lines extend beyond 1.



Small step: Fractions of an Amount (1)

Find $\frac{1}{3}$ of the number 18.

Split into 3 parts.

Back Next

Topic: **Fractions**

Activity: **Unit Fractions**

Pupils find a unit fraction of an amount. The support area provides a visual representation of evenly splitting the whole amount into the number of parts indicated by the denominator.

Find the lengths of each strip:

Strip A is $\frac{1}{2}$ of strip B

Strip C is $\frac{1}{3}$ of strip B

Strip A: [red bar]

Strip B: [blue bar]

Strip C: [green bar]

$\frac{1}{3}$ of 12 = 4

Lengthen each strip according to the directions.

Topic: **Fractions**

Activity: **Fraction Length Models 2**

This activity requires pupils to use reasoning to find unit fractions of simple measurements. Some questions require pupils to find the whole from the fraction. Pupils are able to drag the strips to help them solve the problems.

Fractions – fractions of a collection

Finding a fraction of different amounts is like division. Look at this tray of 4 ice creams. We can see that $\frac{1}{2}$ of this group is 2. This is the same as dividing 4 by 2.

$4 \div 2 = 2$

$\frac{1}{2}$ of 4 = 2

1 Look at these fraction pictures. They have been divided into groups to help you. Complete the boxes to show how division and fractions are related. The first one has been done for you.

a $\frac{1}{4}$ of 12 = 3

b $\frac{1}{4}$ of 4 = 1

c $\frac{1}{8}$ of 8 = 1

eBook, D series: **Fractions, pages 6 and 7**

On these pages, pupils are encouraged to use division to find simple unit fractions of amounts. Visual representations assist pupils in completing these tasks.

Working with fractions – fractions of a collection

Finding a fraction of different amounts is like division. Look at this array of dots. Finding one quarter is the same as dividing 12 by 4.

$12 \div 4 = 3$

$\frac{1}{4}$ of 12 = 3

1 Circle the fraction given for each group and complete the statements:

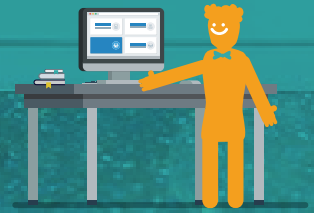
a $\frac{1}{2}$ of 4 pentagons $\square \div \square = \square$
 $\frac{1}{2}$ of $\square = \square$

b $\frac{1}{4}$ of 8 stars $\square \div \square = \square$
 $\frac{1}{4}$ of $\square = \square$

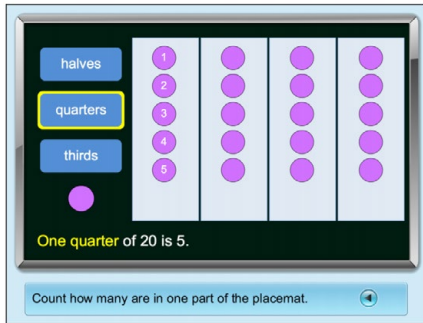
c $\frac{1}{4}$ of 12 triangles $\square \div \square = \square$
 $\frac{1}{4}$ of $\square = \square$

eBook, E series: **Fractions, pages 6–8**

Pupils are encouraged to use division and visual representations to find simple unit fractions of amounts. Questions on page 8 require pupils to find more than 1 unit fraction of the same whole.



Small step: Fractions of an Amount (2)



Topic: Fractions

Activity: *Fractions of a Collection 1*

Pupils find a unit and non-unit fraction of an amount. The interactive allows pupils to partition a rectangle into the correct fractional parts and share counters into the sections.

Small step: Fractions of an Amount (3)

Working with fractions – fraction word problems

- Jess spent half of her pocket money on a magazine. If she gets £10 pocket money, how much was the magazine?

- If one quarter of a packet of jelly beans is 8 jelly beans, how many jelly beans are there in the whole packet?

- Marley and Matt shared a pizza that had been cut into 8 pieces. Marley ate $\frac{1}{4}$ of the pizza and Matt ate $\frac{1}{2}$. How many pieces were left?



eBook, E series: Fractions, page 9

On this page pupils are required to read the fraction word problems and use their knowledge of finding fractions of amounts to solve them.



Year 3 White Rose Maths (WRM) Spring Scheme of Learning, 2018

Mathletics

Live Mathletics

What's in level 3?

Addition from 1 - 50 $3 + 9 = ?$ <input type="text"/> <input type="button" value="Check"/>	Subtraction from 1 - 50 $6 - 3 = ?$ <input type="text"/> <input type="button" value="Check"/>
2s, 3s, 4s, 5s and 10s times tables $2 \times 9 = ?$ <input type="text"/> <input type="button" value="Check"/>	Doubles and halves up to 50 $15 + 15 = ?$ <input type="text"/> <input type="button" value="Check"/>
Addition from 1 - 20 with a missing addend $8 + ? = 20$ <input type="text"/> <input type="button" value="Check"/>	

Live Mathletics engages pupils in 60-second real-time games, testing speed and accuracy of maths facts.

To support progress in Year 3, challenge pupils to use **Level 3** of Live Mathletics.

Teachers can set minimum levels on Live Mathletics by clicking the 'switch to old Mathletics' button, selecting **Results** and selecting **Minimum levels** on the left-hand side of the page. Students can still access higher levels once you set a minimum level, so encourage students to challenge themselves and move on to the next level when they are ready.

(**Note:** Live Mathletics levels are a sliding scale, with no relationship to classes or old National Curriculum levels. As a resource which is also used in secondary schools, the levels from 6 upwards are intended for older students.)

When assigning activities with calculations that do not have spaces for recording any working out, consider getting pupils to record their thinking strategies in their Maths books or on a whiteboard, before answering the question in Mathletics. Pupils can then self-mark their work after each question. If they have made a mistake, they can correct their work using the support feature in the activities. Instant feedback and learning!



powered by



For more information about Mathletics,
contact our friendly team.



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