



# Year 4 White Rose Maths (WRM) Spring Scheme of Learning, 2018 Alignment with Mathletics

## Year 4 – 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 - Length and Perimeter	Number- Multiplication and Division			Consolidation
Spring	Number- Multiplication and Division		Measurement - Area	Fractions				Decimals		Consolidation		
Summer	Decimals	Measurement- Money		Time	Statistics	Geometry- Properties of Shape		Geometry- Position and Direction	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.





## Content

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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 04 WRM Autumn and Spring Aligned



Data-Driven  
Teaching and  
Learning



Differentiation



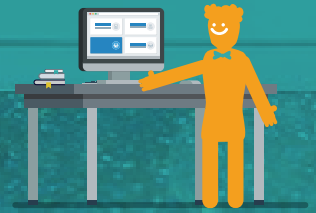
Feedback and  
Reflection



Student Growth



Blended  
Learning

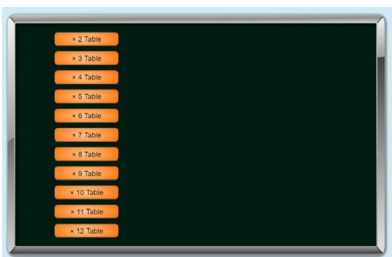


## Examples of alignment to Mathletics

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

National Curriculum Objectives	WRM Small Steps
<ul style="list-style-type: none"> <li>▶ Recall and use multiplication and division facts for multiplication tables up to <math>12 \times 12</math>.</li> <li>▶ Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers.</li> <li>▶ Recognise and use factor pairs and commutativity in mental calculations.</li> <li>▶ Multiply two digit and three digit numbers by a one digit number using formal written layout.</li> <li>▶ Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</li> </ul>	<ul style="list-style-type: none"> <li>▶ 11 and 12 Times-table</li> <li>▶ Multiply 3 Numbers</li> <li>▶ Factor Pairs</li> <li>▶ Efficient Multiplication</li> <li>▶ Written Methods</li> <li>▶ Multiply 2-digits by 1-digit</li> <li>▶ Multiply 3-digits by 1-digit</li> <li>▶ Divide 2-digits by 1-digit (1)</li> <li>▶ Divide 2-digits by 1-digit (2)</li> <li>▶ Divide 3-digits by 1-digit</li> <li>▶ Correspondence Problems</li> </ul>

#### Small step: 11 and 12 Times-table



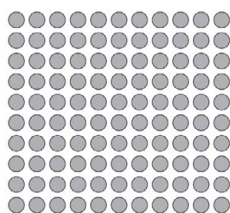
Topic: **Multiply and Divide**  
Activity: *Multiplication Facts*

Pupils practise all multiplication facts up to  $12 \times 12$ .

#### Multiplication facts – 11 times table

Practise your 11 times table. Can you see the pattern?

1 Use this array to complete the 11 times table:



- $1 \times 11 = \square$
- $2 \times 11 = \square$
- $3 \times 11 = \square$
- $4 \times 11 = \square$
- $5 \times 11 = \square$
- $6 \times 11 = \square$
- $7 \times 11 = \square$
- $8 \times 11 = \square$
- $9 \times 11 = \square$
- $10 \times 11 = \square$

eBook, E series: **Multiplication and Division, page 13**

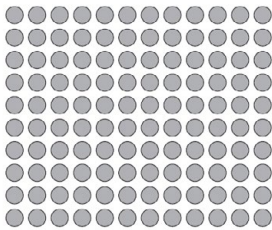
Pupils practise the 11 times-table, supported by an array. The page also includes questions out of order and word problems to consolidate understanding.



### Multiplication facts – 12 times table

Practise your 12 times table.

1 Use this array to complete the 12 times table:



- 1 × 12 =
- 2 × 12 =
- 3 × 12 =
- 4 × 12 =
- 5 × 12 =
- 6 × 12 =
- 7 × 12 =
- 8 × 12 =
- 9 × 12 =
- 10 × 12 =
- 11 × 12 =

**eBook, E series: Multiplication and Division, page 14**

Pupils practise the 12 times-table, supported by an array. It also includes questions out of order and word problems to consolidate understanding.

### Small step: Multiply 3 Numbers

Multiply.

$$4 \times 3 \times 5 =$$

Hint:  
Move the numbers  
to find easy  
multiplications.

**Topic: Multiply and Divide**

**Activity: Multiply 3 Single-Digit Numbers**

Pupils are encouraged to swap numbers around to make the multiplication problem easier.

### Mental multiplication strategies – multiplying 3 numbers

There is a law in maths called the **Commutative Law**. This states that for certain types of calculation, the order of the numbers doesn't matter. The answer will be the same. It is true for addition.

$$3 + 4 = 7 \quad 4 + 3 = 7$$
$$62 + 19 = 71 \quad 19 + 62 = 71$$

The same is true for multiplication.

$$5 \times 2 = 10 \quad 2 \times 5 = 10$$
$$8 \times 7 = 56 \quad 7 \times 8 = 56$$

If you are multiplying more than two numbers, the Commutative Law still applies.

$$3 \times 2 \times 6 = 36 \quad 6 \times 2 \times 3 = 36 \quad 2 \times 6 \times 3 = 36$$
$$2 \times 3 \times 6 = 36 \quad 6 \times 3 \times 2 = 36 \quad 3 \times 6 \times 2 = 36$$

**eBook, E series: Multiplication and Division, page 20**

Pupils work through an explanation of Commutative Law and then practise some examples.

### Small step: Factor Pairs

Write the factors of the number 48.

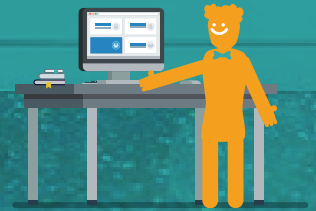
Factor pairs:

$$1 \times 48 = 48$$
$$2 \times 24 = 48$$
$$3 \times 16 = 48$$
$$4 \times 12 = 48$$
$$6 \times 8 = 48$$

**Topic: Multiply and Divide**

**Activity: Factors**

Pupils are required to find factor pairs for a given number and then list the factors in ascending order.

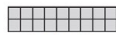


### Using known facts – factors and multiples

Factors are numbers that you multiply together to give a multiple.



$$3 \times 6 = 18$$



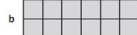
$$2 \times 9 = 18$$

These arrays show some of the factors of 18: 3, 6, 2 and 9.  
Can you think of any other factors of 18?

1 Complete the number sentence for each set of arrays and then list the factors.



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



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



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

d The factors of 12 are:

### eBook, E series: Multiplication and Division, page 16

The explanation shows pupils the relationship between factors and multiples. Pupils are then asked to find factor pairs.

### Rainforest Maths – Level E – Multiplication

Pupils input any number up to 99 and are shown all the pairs of factors for that number and a systematic way of finding them. The activity works well on an interactive whiteboard, with the class finding all pairs before clicking to check them.

### Small step: Efficient Multiplication

Use known facts to do more sums in your head.

$$12 \times 9 = 108$$

$$12 \times 10 = 120$$

$$120 - 12 = 108$$

### Topic: Multiply and Divide

#### Activity: *Mental Methods Multiplication 1*

Pupils are encouraged to use an efficient strategy to multiply a 2-digit and 1-digit number. Strategies used are: rounding and compensating, repeated doubling (4 x, 8 x), multiply by 10 and then double to multiply by 20.

### Mental multiplication strategies – doubling strategy

There are many double facts that you should know.  
This includes numbers outside the times tables we have been working on.  
Here are 2 double facts that are handy to know:  
double 15 is 30    double 50 is 100    Can you think of more?

1 Complete these function machines:

a

Double	
IN	OUT
15	30
24	
30	
45	
18	

b

Double-double	
IN	OUT
15	60
24	
30	
45	
50	

Can you see what double-double is the same as? Yes, that's right. It's the same as  $\times 4$ .



### eBook, E series: Multiplication and Division, pages 21–22

Doubling is shown as a strategy to use when multiplying by 2, and doubling and doubling again is explored as a strategy for multiplying by 4.

Pupils practise a range of activities using this method.



# Year 4 White Rose Maths (WRM) Spring Scheme of Learning, 2018

Mathletics

## 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  $26 \times 4$ .

- 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,  $26 \times 4 = 104$

1 Use the split strategy to answer these:

a  $34 \times 3 \rightarrow 30 \times 3 + 4 \times 3$

$$90 + \square = \square$$

So,  $34 \times 3 = \square$

eBook, E series: [Multiplication and Division, page 23](#)

The split strategy is explained through an example, and pupils then practise using the method on a series of exercises to multiply a 2-digit number by a 1-digit number.

## Mental multiplication strategies – compensation strategy

Use the compensation strategy to make it easier to multiply 2-digit numbers that are close to a ten.

Look at  $4 \times 19$ .

19 is close to 20, so we can multiply by the next multiple of ten which is 20. Then we build down because we have an extra group of 4.

$$4 \times 19 \rightarrow 4 \times 20 = 80 - 4$$

So,  $19 \times 4 = 76$

1 Use the compensation strategy to answer these:

a  $5 \times 29 \rightarrow 5 \times \square = \square - \square$

So,  $5 \times 29 = \square$

b  $3 \times 49 \rightarrow 3 \times \square = \square - \square$

So,  $3 \times 49 = \square$

eBook, E series: [Multiplication and Division, page 24](#)

Pupils work through an example with an explanation of how to use the compensation strategy to multiply 2-digit numbers by a 1-digit number. A series of exercises then provides opportunities to consolidate their learning.

**Strategies ... doubles relationships.** score 0

A way to use doubles to work out multiplication facts.  
For example, the multiplication facts for 4 are double the multiplication facts for 2.

2 × 8 =

4 × 8 =

Choose a pair. Enter numbers in the boxes.

Rainforest Maths – Level E – Strategies to multiply and divide – doubles

This exercise explains how to use doubling as a strategy to support multiplication. It uses examples of doubling x 2 to find x 4 and then also doubling x 3 to find x 6 and doubling x 4 to find x 8.

**Strategies ... split strategy.** score 0

A way to multiply larger numbers by splitting tens and ones.

1. Split the tens and ones.
2. Multiply the tens, multiply the ones.
3. Add them back together.

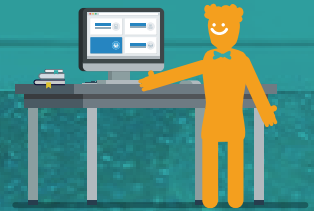
30 3 × 6 = 180 + 18

33 × 6 =

Enter number in the box.

Rainforest Maths – Level E – Strategies to multiply and divide ... split strategy

This page explains how to split a 2-digit number into tens and ones and then multiply each by the 1-digit number. Pupils then add the multiplication answers to find the total.



Small step: Written Methods

**Multiplication ... extended.** score 0

EXAMPLE: Extended form multiplying 2 digits by 1 digit

3	5
x	4
2	0
1	2
1	4

multiply the ones  
multiply the tens  
add them together

6	2
x	1
	0

multiply the ones  
multiply the tens  
add them together

check next more

contracted form extended form

Rainforest Maths – Level F – Multiplication ... by 1 digit (extended form)

Pupils practise multiplying a 2-digit number by a 1-digit number using the extended form.

Small step: Multiply 2-digits by 1-digit

Written methods – short multiplication

	H	T	O
		5	4
x			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.  
 $3 \times 5$  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
x			9

 b 

	H	T	O
		3	8
x			7

 c 

	H	T	O
			2
x			5

eBook, E series: Multiplication and Division, page 42

Following an explanation of short multiplication, pupils work through a series of exercises to practise the concept, multiplying a 2-digit number by a 1-digit number.

Small step: Multiply 3-digits by 1-digit

Multiply:

4	0	2
x		2
	8	0
		4

Thousands Tens Ones

Back

Topic: Multiply and Divide

Activity: Multiply: 1-Digit Number

Pupils practise multiplying 2-digit and 3-digit numbers by a 1-digit number with no exchanges.

Written methods – short multiplication

2 Solve these multiplications:

a 

	Th	H	T	O
		1	2	3
x				4

 b 

	Th	H	T	O
		2	5	6
x				6

 c 

	Th	H	T	O
			1	8
x				7

d 

	Th	H	T	O
		3	4	2
x				7

 e 

	Th	H	T	O
		4	6	5
x				5

 f 

	Th	H	T	O
			6	7
x				8

eBook E series: Multiplication and Division, page 43

Pupils practise multiplying 3-digit numbers by 1-digit numbers involving exchanges in either 1 or 2 columns.





# Year 4 White Rose Maths (WRM) Spring Scheme of Learning, 2018

Mathletics

## Written methods – short multiplication

Short multiplication is one way to solve a multiplication problem.  
First we use our mental strategies to estimate an easier problem:  
 $3 \times 150 = 450$ . The answer will be around 450.  
We start with the ones.  $3 \times 6$  is 18 ones. We rename this as 1 ten and 8 ones.  
We put 8 in the ones column and carry the 1 to the tens column.  
 $3 \times 5$  plus the carried 1 is 16 tens. We rename this as 1 hundred and 6 tens.  
We put 6 in the tens column and carry the 1 to the hundreds column.  
 $3 \times 1$  plus the carried 1 is 4 hundreds. We put 4 in the hundreds column.

	H	T	O
	1	5	6
x			3
	4	6	8

1 Solve these problems using short multiplication. Estimate first:

a

	H	T	O
	3	2	7
x			3

b

	H	T	O
	2	4	7
x			4

c

	H	T	O
	1	5	4
x			5

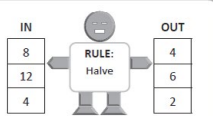
## eBook, F series: Multiplication and Division, pages 24–25

Following an explanation of how to multiply a 3-digit number by a 1-digit number using short multiplication, pupils work through a series of exercises to practise the concept.

## 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.



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

a

IN	OUT
80	
140	
20	

RULE: Halve

b

IN	OUT
70	
24	
36	

RULE: Halve

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

These activities explain the concept of dividing a 2-digit number by 2 as halving, and then extends to division by 4 as halving and halving again. Exercises provide an opportunity to practise the concept.

**Strategies ... doubles relationships.** score

A way to use doubles and halves to work out division facts.  
For example, the result of dividing by 4 is half the result of dividing by 2.

Choose a pair. Enter answers in the boxes.

6	÷ 2	=	
12	÷ 2	=	(double)
12	÷ 4	=	(half)

check next

## Rainforest Maths – Level F – Strategies to multiply and divide ... doubles relationships

An array is used to support pupils' understanding of the relationship between dividing by 2 and dividing by 4. The exercise also models the relationships between dividing by 3 and 6 and 4 and 8, using halving as a strategy.

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

$41 \div 5 = 8$  remainder 1

We know that:

$8 \times 5 = 40$	Working: $41 - 40 = 1$
$9 \times 5 = 45$	Eliminated: 45 is too large

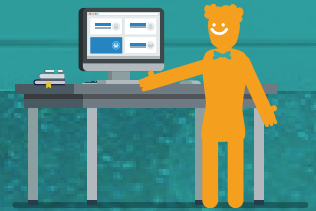
Find the remainder.

Back

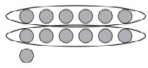
## Topic: Multiply and Divide

### Activity: *Remainders by Tables*

Using their knowledge of the multiplication facts, pupils divide a 2-digit number by a 1-digit number where the answer includes a remainder.



Written methods – division with remainders



Sometimes division is not exact.  
From 13, we can make 2 fair shares of 6 with 1 left over.  
We call the left over the remainder.  
 $13 \div 6 = 2$  remainder 1

3 In each array, ring the fair shares to see the remainder:

a  $22 \div 5 = \square$  remainder

b  $19 \div 6 = \square$  remainder

c  $31 \div 7 = \square$  remainder

eBook, F series: **Multiplication and Division, pages 28–31**

Beginning on page 28 with an introduction to the concept using visual models, these exercises involve division of 2-digit numbers by 1-digit numbers with remainders.

Rainforest Maths – Level E – **Division ... remainders**

Pupils use the visual array to help them divide a 2-digit number by a 1-digit number where the answer includes a remainder.

Small step: Divide 3-digits by 1-digit

Use known facts to do sums in your head.

$$104 \div 8 = 13$$

$$52 \div 4$$

$$26 \div 2 = 13$$

Topic: **Multiply and Divide**

Activity: **Mental Methods Division 1**

Pupils practise using efficient mental strategies to divide 2-digit and 3-digit numbers by 1-digit numbers. Strategies include doubling and halving and splitting the dividend into easier multiples of the divisor.

Mental division strategies – split strategy

Division problems can be much easier to solve if you split the number.  
Look at  $125 \div 5$ .  
Can we split the number into two multiples of 5?  
Yes, we can split 125 into 100 and 25.  
We divide each part by 5 and then add the two answers together.

$$\begin{array}{r} 125 \div 5 \\ \downarrow \quad \searrow \\ 100 \quad 25 \\ \div 5 \quad \div 5 \\ 20 \quad + 5 = 25 \end{array}$$

1 Use the split strategy to divide these by 5:

a  $115 \div 5$   $\square \div 5 = \square$   
 $\square + \square = \square$

b  $135 \div 5$   $\square \div 5 = \square$   
 $\square + \square = \square$

eBook, E series: **Multiplication and Division, pages 38–41**

Division of 3-digit numbers by 1-digit numbers is explored using the strategy of splitting the 3-digit number into smaller (easier) multiples of the divisor.

On page 40–41 pupils apply their understanding of using the split strategy to solve word problems involving division.



# Year 4 White Rose Maths (WRM) Spring Scheme of Learning, 2018

Mathletics

**Division ... no remainders.** score 0

$6)246$  means 246 divided by 6.

choose

EXAMPLE:  $3)96$  32

2-digit divisors:  $4)20$ ,  $5)20$ ,  $4)22$ ,  $5)22$ ,  $15)78$ ,  $11)78$

3-digit divisors:  $20)200$ ,  $15)222$ ,  $11)78$

check next

Enter the answer, click check.

## Rainforest Maths — Level F — Division

Pupils can select the first activity under the option of 3-digit numbers to practise dividing a 3-digit number by a 1-digit number with no remainders.

(Note: The first example may be a 2-digit number; click 'More' for a 3-digit number.)

## Small step: Correspondence Problems

### Leftovers

You have some counters.

You put them into groups of 3, and there is 1 counter left over.

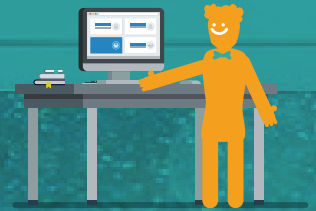
If you put THE SAME counters into groups of 4, there are 3 counters left over.

- How many counters could you have?
- How many different ways can you find to do this?
- How many counters might you have had if the total number of counters was more than 50?

List as many possibilities as you can.

### eBook, E series: Leftovers (rich task)

Pupils explore division with remainders whilst coordinating 2 factors (3 and 4).



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

National Curriculum Objectives	WRM Small Steps
<p>► Find the area of rectilinear shapes by counting squares.</p>	<p>► What is Area? ► Counting Squares ► Making Shapes ► Comparing Area</p>

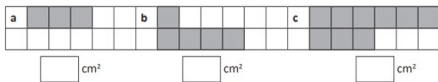
Small step: What is Area?

Area – square centimetres

An area is the amount of surface on a shape or object.  
Small areas are measured in square centimetres.  
We write this as  $\text{cm}^2$  for short.



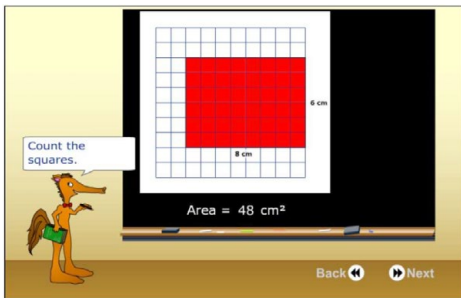
1 Calculate the area of each of the following shapes by counting the square centimetres.\*



eBook, E series: Length, Perimeter and Area, page 18

This activity explains the concept of finding the area of a shape using square centimetres. Pupils complete a series of exercises to practise the concept.

Small step: Counting Squares



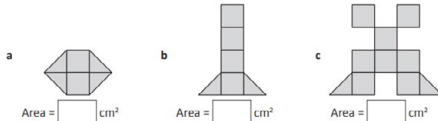
Topic: Area

Activity: Area of Shapes

Pupils count centimetre squares to find the area of squares and rectangles.

Area – square centimetres

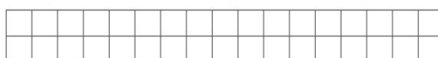
3 Count the square centimetres that each shape is made up of.



eBook, E series: Length, Perimeter and Area, page 19

Pupils count squares to find the area of a variety of irregular shapes, including shapes where they need to add together fractions of squares.

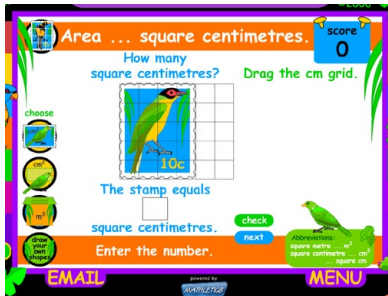
4 Measure the area of your hand on the grid below by counting how many squares it takes up. Is it easier to measure with your fingers stretched out or together?





# Year 4 White Rose Maths (WRM) Spring Scheme of Learning, 2018

Mathletics



## Rainforest Maths — Level D — Area

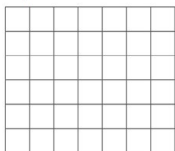
Pupils drag a centimetre grid over the top of rectangular shapes to find the area by counting the square centimetres.

## Small step: Making Shapes

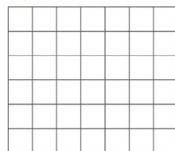
### Area – square centimetres

5 Use the 1 square centimetre grid paper to shade some irregular shapes with the following areas:

a 4 square centimetres



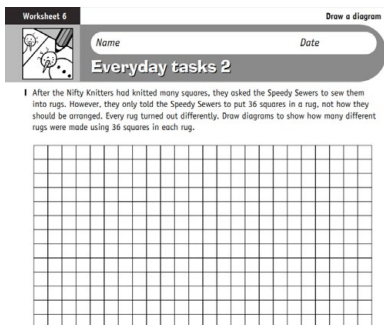
b 6 square centimetres



6 How many shapes can you make with an area of 9 square centimetres? Show them on the grid below. The first one has been done for you.

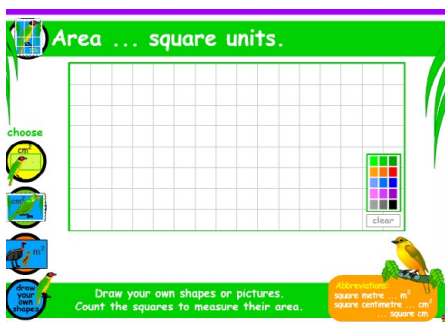
## eBook, E series: Length, Perimeter and Area, page 20

Using a square grid, pupils are asked to create irregular shapes with a specified area.



## eBook, E series: Problem Solving, page 9

Pupils explore making different rectangular shapes with a given number of squares and find the total number of different arrangements possible.

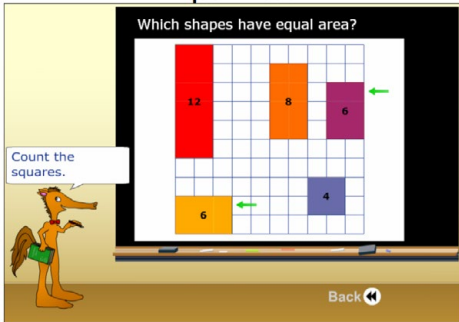


## Rainforest Maths — Level E — Area

Pupils can create their own shapes on the grid, using a range of coloured markers. Pupils can also be given a specified area and then be challenged to create a shape with the given area.



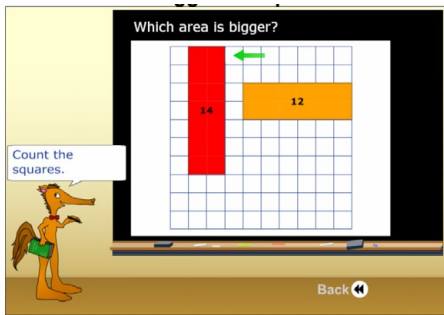
Small step: Comparing Area



Topic: **Area**

Activity: *Equal Areas*

Pupils count the square centimetres to compare the area of squares and rectangles and find shapes that have an equal area.



Topic: **Area**

Activity: *Biggest Shape*

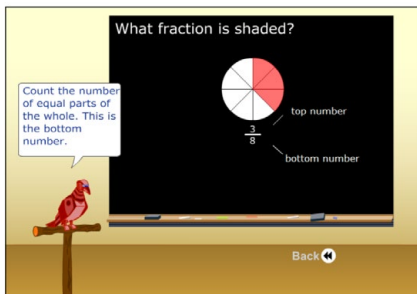
Pupils count square centimetres to compare the area of squares and rectangles and find the shape with the bigger area.



### Examples of alignment to Mathletics Block 3 (Weeks 5–8) Fractions

National Curriculum Objectives	WRM Small Steps
<ul style="list-style-type: none"> <li>▶ Recognise and show, using diagrams, families of common equivalent fractions.</li> <li>▶ Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.</li> <li>▶ Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.</li> <li>▶ Add and subtract fractions with the same denominator.</li> </ul>	<ul style="list-style-type: none"> <li>▶ What is a Fraction?</li> <li>▶ Equivalent Fractions (1)</li> <li>▶ Equivalent Fractions (2)</li> <li>▶ Fractions Greater than 1</li> <li>▶ Count in Fractions</li> <li>▶ Add 2 or More Fractions</li> <li>▶ Subtract 2 Fractions</li> <li>▶ Subtract from Whole Amounts</li> <li>▶ Fractions of a Quantity</li> <li>▶ Calculate Quantities</li> </ul>

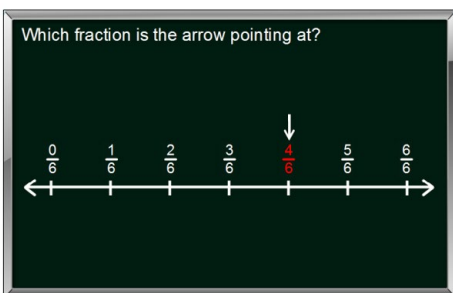
#### Small step: What is a Fraction?



Topic: **Fractions**

Activity: *Model Fractions*

Pupils record the numerator and denominator for a given fraction (less than 1). The support area provides an explanation of how to correctly record a fraction.



Topic: **Fractions**

Activity: *Identifying Fractions on a Number Line*

Pupils identify fractions on an unmarked number line by identifying the total number of segments in the number line and then counting along the segments.

#### Working with fractions – modelling fractions

A fraction is a part of a whole. This circle had been divided into 8 pieces and has 5 pieces shaded.



$$\frac{5}{8} = \frac{5 \text{ shaded parts}}{8 \text{ parts altogether}}$$

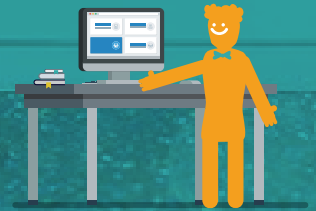


The top number is the numerator, the bottom number is the denominator.

1 Divide each shape into quarters. Shade one quarter:

eBook, E series: **Fractions, pages 1–2**

This activity explains what a fraction is and shows pupils the numerator and denominator. Exercises then involve shading fractions and naming them.



**Rainforest Maths – Level D – Fractions**

This page introduces pupils to the concept of fractions and explains the terms numerator and denominator. It illustrates fractions as shaded areas in shapes and pupils input the fractions.

The first examples are unit fractions, but by clicking on 'More', examples of non-unit fractions are shown.

**Small step: Equivalent Fractions (1)**

**Topic: Fractions**

**Activity: Equivalent Fractions on a Number Line 1**

Pupils locate the correct position on a number line for a given fraction. Pupils will need to first identify the equivalent fraction before being able to locate the position.

**Types of fractions – equivalent fractions**

**eBook, E series: Fractions, pages 12–13**

These pages explain the concept of equivalent fractions. Pupils create their own fraction wall and then use it to play 2 different paired games. Game 1 involves pupils removing fractions from a whole, while game 2 involves pupils adding fractions until they have completely covered 2 wholes.

**Rainforest Maths – Level E – Fractions**

This brightly-coloured fraction wall works well on an interactive whiteboard. The pieces of the fraction wall can be dragged over other fractions to show their equivalence. Pupils find the equivalent fraction then enter the answer.

**Small step: Equivalent Fractions (2)**

**Topic: Fractions**

**Activity: Equivalent Fractions**

Pupils use multiplication and division facts to find equivalent fractions. The support area reminds pupils that the denominator and the numerator must be multiplied or divided by the same number.



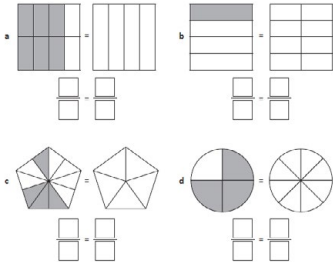


# Year 4 White Rose Maths (WRM) Spring Scheme of Learning, 2018

Mathletics

## Types of fractions – equivalent fractions

2 Shade and label these models to show equivalent fractions:

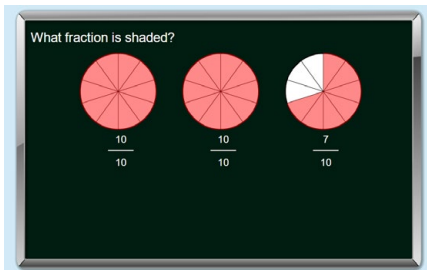


### eBook, E series: Fractions, pages 14–16

Pupils shade equivalent fractions using the visuals to help them record the pairs of equivalent fractions.

On pages 15–16 pupils play a paired game. Using printable game cards, each player turns over a fraction card. The player who places down the largest fraction wins both cards. If the fractions are equivalent, the players put down another 2 cards.

## Small step: Fractions Greater than 1



### Topic: Fractions

#### Activity: *What Fraction Is Shaded 1?*

Pupils identify the fraction that is shaded identifying the number of wholes and parts left over. The fraction is recorded as a mixed number.

## Fractions – mixed numbers and improper fractions

Mixed numbers consist of both a whole number and a fraction.  
Ky has 2 full packets of pencils and one half packet of pencils.  
This is shown as  $2\frac{1}{2}$

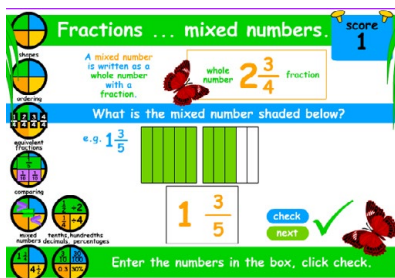


1 Write a mixed number for each of the shaded sets of shapes:



### eBook, F series: Fractions, Decimals and Percentages, page 10

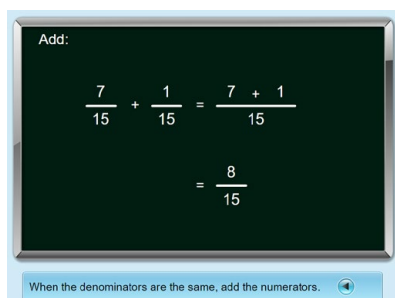
Pupils are introduced to the concept of mixed numbers being a whole number and a fraction. Pupils look at shaded shapes and record the whole number and the fraction. They then draw diagrams to show mixed numbers.



### Rainforest Maths – Level E – Fractions

This activity models how fractions greater than 1 are written as a mixed number.

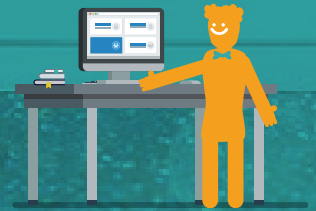
## Small step: Add 2 or More Fractions



### Topic: Fractions

#### Activity: *Add Like Fractions*

Pupils add 2 fractions where the denominators are the same. The support area reminds pupils that when the denominators are the same, the numerators can be added together.



Calculating – adding and subtracting fractions with the same denominator

I ate  $\frac{2}{4}$  of a cake for breakfast. Then I ate another  $\frac{1}{4}$  for lunch.  
How many quarters did I eat altogether?

$$\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$$

1 Shade the shapes to help you answer the problems:

a  $\frac{1}{2} + \frac{1}{2} = \frac{2}{2}$       b  $\frac{2}{9} + \frac{1}{9} = \frac{3}{9}$

eBook, F series: Fractions, Decimals and Percentages, page 32

Pupils are shown how to add fractions when the denominator is the same. Exercises involve solving a range of problems, including word problems.

**Fractions ... like fractions.** score 0

Like fractions have the same denominator.

To add like fractions:  
- add the numerators  
- the denominators stay the same

EXAMPLE:  $\frac{3}{10} + \frac{4}{10} = \frac{7}{10}$

$\frac{1}{7} + \frac{4}{7} = \frac{5}{7}$

addition + subtraction -

Enter the numbers in the boxes, click check.

Rainforest Maths – Level F – Fractions

In the exercise pupils can add and subtract like fractions. When pupils select 'addition', the concept of addition of fractions with the same denominator is explained. Pupils complete the calculation and check to see they are correct. If an incorrect answer is entered, pupils can re-enter an answer and check again.

Small step: Subtract 2 Fractions

Subtract:

$$\frac{10}{16} - \frac{9}{16} = \frac{10 - 9}{16}$$

$$= \frac{1}{16}$$

When the denominators are the same, subtract the numerators.

Topic: Fractions

Activity: *Subtract Like Fractions*

Pupils subtract 2 fractions where the denominators are the same. The support area reminds pupils that when the denominators are the same, the numerators can be subtracted.

Calculating – adding and subtracting fractions with the same denominator

I had  $\frac{3}{4}$  of a cake in the fridge. I ate  $\frac{1}{4}$ . I had  $\frac{2}{4}$  left.  $\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$

3 Find answers to these subtraction problems. The first one has been done for you.

a  $\frac{10}{10} - \frac{6}{10} = \frac{4}{10}$       b  $\frac{9}{9} - \frac{8}{9} = \frac{1}{9}$

c  $\frac{8}{8} - \frac{4}{8} = \frac{4}{8}$       d  $\frac{6}{6} - \frac{2}{6} = \frac{4}{6}$

e  $\frac{6}{6} - \frac{2}{6} = \frac{4}{6}$       f  $\frac{8}{8} - \frac{6}{8} = \frac{2}{8}$

eBook, F series: Fractions, Decimals and Percentages, page 33

Pupils are shown how to subtract fractions when the denominator is the same. Models and number lines are provided for support.

**Fractions ... like fractions.** score 0

Like fractions have the same denominator.

To subtract like fractions:  
- subtract the numerators  
- the denominators stay the same

EXAMPLE:  $\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$

$\frac{10}{12} - \frac{5}{12} = \frac{5}{12}$

addition + subtraction -

Enter the numbers in the boxes, click check.

Rainforest Maths – Level F – Fractions

In the exercise addition and subtraction of like fractions is explained. When pupils select subtraction, the concept of subtracting fractions with the same denominator is explored. Pupils complete the calculation and check to see they are correct. If an incorrect answer is entered, pupils can repeat the question and check the answer again.



### Small step: Subtract from Whole Amounts

Calculate:

$$\begin{array}{r}
 1 - \frac{3}{5} \\
 = \frac{5}{5} - \frac{3}{5} \\
 = \frac{2}{5}
 \end{array}$$

Topic: **Fractions**

Activity: **One Take Fraction**

In this activity, pupils subtract a fraction from 1 whole. The support area shows pupils how to rewrite the whole as a fraction before subtracting.

How do we subtract fractions from a whole? We rename the wholes to make it simpler.  
 Look at the problem  $1 - \frac{1}{3}$ .  
 How many  $\frac{1}{3}$  are in 1 whole? There are  $\frac{3}{3}$  in a whole.  
 Now the problem is easier:  $\frac{3}{3} - \frac{1}{3} = \frac{2}{3}$



2 Rename the wholes as fractions and use the diagrams to help you solve these problems:

a  $1 - \frac{2}{5} =$

b  $2 - \frac{1}{3} =$

eBook, F series: **Fractions, Decimals and Percentages, page 34**

Pupils are shown how to convert the whole number to a fraction to help them to subtract a fraction. Pupils then practise the concept of conversion and subtraction to reinforce the concept.

### Small step: Fractions of a Quantity

Show 8 pieces of fruit where:

- $\frac{1}{2}$  of the total is made up of apples
- the rest is made up of pears

Share 8 into 2 equal groups. Each group is half of the total.

Let's think of counters arranged into equal groups.

Topic: **Fractions**

Activity: **Fraction Fruit Sets 1**

Pupils find halves, quarters and thirds (including non-unit fractions) of quantities of fruit. Answers are shown by representing the correct number of each type of fruit.

halves

quarters

thirds

1

2

3

4

5

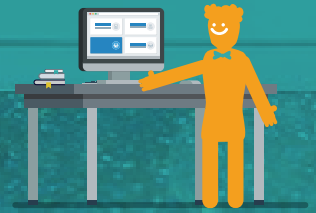
One quarter of 20 is 5.

Count how many are in one part of the placemat.

Topic: **Fractions**

Activity: **Fractions of a Collection 1**

In this activity, pupils use an interactive to find the halves, quarters or thirds of amounts (including non-unit fractions) by partitioning a rectangle and placing the correct number of counters in each section.



Working with fractions – fractions of a collection

1 Shade  $\frac{1}{4}$  on these grids and complete the statements:

a	b	c
$\square + \square = \square$	$\square + \square = \square$	$\square + \square = \square$
$\frac{1}{4}$ of $\square = \square$	$\frac{1}{4}$ of $\square = \square$	$\frac{1}{4}$ of $\square = \square$

2 Shade  $\frac{1}{5}$  on these grids and complete the statements:

a	b	c
$\square + \square = \square$	$\square + \square = \square$	$\square + \square = \square$
$\frac{1}{5}$ of $\square = \square$	$\frac{1}{5}$ of $\square = \square$	$\frac{1}{5}$ of $\square = \square$

**eBook, E series: Fractions, pages 6–9**

Pupils are shown the relationship between finding fractions of quantities and division. Models are used for support in the exercises that follow. Word problems are also included.



### Examples of alignment to Mathletics Block 4 (Weeks 9–11) Decimals

National Curriculum Objectives	WRM Small Steps
<ul style="list-style-type: none"> <li>▶ Recognise and write decimal equivalents of any number of tenths or hundredths.</li> <li>▶ Find the effect of dividing a one or two-digit number by 10 or 100, identifying the value of the digits in the answer as ones, tenths and hundredths.</li> <li>▶ <b>Solve simple measure and money problems involving fractions and decimals to two decimal places.</b></li> <li>▶ Convert between different units of measure [for example, kilometre to metre].</li> </ul>	<ul style="list-style-type: none"> <li>▶ Tenths &amp; Hundredths</li> <li>▶ Tenths as Decimals</li> <li>▶ Tenths on a Place Value Grid</li> <li>▶ Tenths on a Number Line</li> <li>▶ Divide 1-digit by 10</li> <li>▶ Divide 2-digit by 10</li> <li>▶ Hundredths</li> <li>▶ Hundredths as Decimals</li> <li>▶ Hundredths on a Place Value Grid</li> <li>▶ Divide 1 or 2-digits by 100</li> </ul>

#### Small step: Tenths & Hundredths

Fractions and decimals – introducing hundredths

We can divide a whole into one hundred parts. These are called hundredths. This hundred grid shows 33 out of 100. As a fraction it is  $\frac{33}{100}$ .

1 whole = 100 hundredths

1. Write what each grid shows part out of 100 that is shaded and record it as a fraction:

a.  $\frac{\quad}{100}$  out of  $\frac{\quad}{100}$  b.  $\frac{\quad}{100}$  out of  $\frac{\quad}{100}$  c.  $\frac{\quad}{100}$  out of  $\frac{\quad}{100}$

2. Shade these grids according to the fraction:

a.  $\frac{24}{100}$  b.  $\frac{37}{100}$  c.  $\frac{75}{100}$  d.  $\frac{95}{100}$

It is easier to work with the small parts of a hundred grid of shading each one.

[eBook, E series: Fractions, page 17](#)

The concept of hundredths is introduced as a fraction, using hundredths shaded on a 100 square. Pupils identify, record and then order hundredths.

Fractions and decimals – writing tenths as decimals

1 whole = 100 hundredths = 10 tenths =  $\frac{100}{100}$  is the same amount as  $\frac{10}{10}$

We can divide a whole into one hundred parts. These are called hundredths. Hundredths are made up of 10 lots of tenths.

3. Show how these amounts are the same:

a.  $\frac{20}{100}$  is the same amount as  $\frac{2}{10}$  b.  $\frac{30}{100}$  is the same amount as  $\frac{3}{10}$

c.  $\frac{40}{100}$  is the same amount as  $\frac{4}{10}$  d.  $\frac{50}{100}$  is the same amount as  $\frac{5}{10}$

[eBook, E series: Fractions, page 21](#)

Pupils shade hundredths and tenths to represent equivalent amounts and explore the relationship between hundredths and tenths.

#### 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

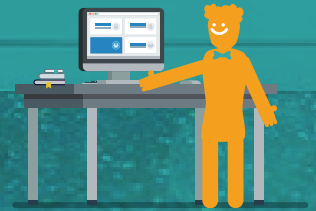
The decimal point separates the whole number from the decimal. We would write 1 or  $\frac{10}{10}$  as 1.0

[eBook, E series: Fractions, page 18](#)

The concept of tenths as fractions and the way they can be written as decimals is explained and modelled.

The following exercises involve pupils identifying tenths and writing them as fractions.

1. Complete this number line showing equivalent tenths and decimals:



Small step: Tenths on a Place Value Grid

5 Show the place value of these decimals by writing them in the table:

	Ones	Tenths
a	0.6	
b	2.7	
c	5.1	

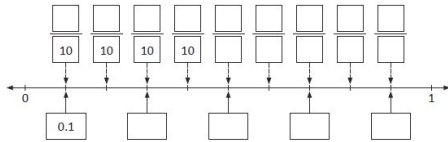
The decimal point signals the place value of numbers smaller than 1. This number is 3 and  $\frac{8}{10}$  or 3 and 0.8

eBook, E series: Fractions, page 19

Question 5 on page 19 introduces pupils to recording tenths as decimals on a place value grid.

Small step: Tenths on a Number Line

1 Complete this number line showing equivalent tenths and decimals:



eBook, E series: Fractions, page 18

Question 1 involves pupils labelling tens on a number line and writing the equivalent decimals.

Small step: Hundredths as Decimals

Write the decimal using digits.  
thirty-eight and eighty-two hundredths

Write the words using digits. Use a decimal point for the word and.

thirty-eight and eighty-two hundredths

38 . 82

38.82

Back

Topic: Fractions

Activity: *Decimals from Words to Digits 1*

Pupils read numbers including tenths and hundredths and record the numbers using digits.

Fractions and decimals – relating tenths, hundredths and decimals



1 Complete this table to show the amounts as tenths, hundredths and decimal

a

Tenths	
Hundredths	
Decimals	

b

Tenths	
Hundredths	
Decimals	

c

Hundredths	
Decimals	

d

Hundredths	
Decimals	

1.5 is same as 1.50

eBook, E series: Fractions, page 22

Pupils continue to explore the relationship between tenths and hundredths as they complete a table to record amounts as tenths, hundredths and decimals.

Small step: Hundredths on a Place Value Grid

State the digit in the tenths place.

274.52

Hundreds Tens Ones  
Tenths Hundredths

Identify the digit.

Answer = 5

Back

Topic: Fractions

Activity: *Decimal Place Value*

Pupils continue to develop their knowledge of decimal place value as they identify the digit in the tenths or hundredths place. The support area shows the places of the digits in a similar way to a place value grid.



# Year 4 White Rose Maths (WRM) Spring Scheme of Learning, 2018



4 Show the place value of these decimals by writing them in the table:

	Hundreds	Tens	Ones	Tenths	Hundredths
a	2.6				
b	3.76				
c	112.6				
d	45.67				

eBook, E series: Fractions, page 22

Pupils transpose numbers up to 2 decimal places onto a place value grid.

Rainforest Maths – Level D– Decimals

Pupils record the decimal number they see in the visual on a place value grid, showing whole numbers, tenths and hundredths.

## Live Mathematics

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

To support progress in Year 4, encourage pupils to use **Level 3 and 4** of Live Mathematics.

Teachers can set minimum levels on Live Mathematics 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 Mathematics 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!



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For more information about Mathletics,  
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