

Y5- Overview

	Autumn 1		Autumn 2		Spring 1		Spring 2		Summer 1		Summer 2	
Unit	1	2	3	4	5		6	7	8	9	10	

- Number and place value
- Number facts
- Addition and subtraction
- Multiplication and division
- Fractions
- Geometry
- Other

Spring 2	Calculating with decimal fractions (3 weeks)
Ready to progress	5MD-1 Multiply and divide numbers by 10 and 100; understand this as equivalent to making a number 10 or 100 times the size, or 1 tenth or 1 hundredth times the size.
NCETM documents	THE WHOLE DOCUMENT https://www.ncetm.org.uk/media/grmpyc0z/ncetm_spine2_segment29_y6.pdf#page=8 THE WHOLE DOCUMENT https://www.ncetm.org.uk/media/lqpag5fw/ncetm_spine2_segment19_y5.pdf#page=5
Small steps	• <i>o</i> explain the effect of multiplying and dividing a number by 10, 100, and 1,000. • <i>To</i> explain the effect of multiplying and dividing a number by 10, 100, and 1,000 including bridging 1. • <i>To</i> explain how to multiply and divide a number by 10, 100, and 1,000. • <i>To</i> convert units of length using multiplication and division. • <i>To</i> convert units of mass and capacity using multiplication and division by 10, 100, and 1,000. • <i>To</i> multiply tenths by whole numbers using known facts and unitising. • <i>To</i> multiply hundredths by whole numbers using known facts and unitising. • <i>To</i> solve measure problems by multiplying decimal fractions by whole numbers. • <i>To</i> explain the relationship between multiplying by 0.1 and dividing by 10. • <i>To</i> explain the relationship between multiplying by 0.01 and dividing by 100. • <i>To</i> multiply 1-digit numbers by decimals using multiplication and division by 10 or 100. • <i>To</i> multiply 1-digit numbers by decimal fractions using written methods. • <i>To</i> predict the size of a product by using the size of one number in a multiplication. • <i>To</i> divide decimal fractions by 1-digit numbers mentally using multiplication by 10 or 100. • <i>To</i> divide decimal fractions by 1-digit numbers using written methods.
Links	NCETM - https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.ncetm.org.uk%2Fmedia%2F4psbwrds%2Fcp-year-5-unit-6-calculating-with-decimal-fractions.pptx&wdOrigin=BROWSELINK OAK https://www.thenationalacademy/teachers/programmes/maths-primary-ks2/units/calculating-with-decimal-fractions/lessons?sid-1de84b=8K-j24HCub&sm=0&src=3 WHITE ROSE https://whiteroseeducation.com/account/resources <i>Mastery with greater depth</i> https://www.ncetm.org.uk/media/lp0o2lgr/mastery_assessment_y5.pdf
Reasoning	Spot the Mistake 0.41 ÷ 10 = 0.041 0.03 × 100 = 3.00 Can you spot the mistake in each? Explain why the answers are incorrect What Comes Next? 0.5, 0.05, 0.005, ... What comes next in the pattern? Explain the rule used to find the next number. What Do You Notice? One tenth of £41 One hundredth of £41 One thousandth of £41 What do you notice about the pattern? How are the numbers changing? Continue the Pattern 0.3 × 10 = 3 0.03 × 100 = 3 0.003 × 1000 = 3 Can you continue this pattern backwards and forwards? What's happening to the decimal point? Missing Symbol Put the correct symbol < or > in each box: 0.63 ____ 0.603 3.01 ____ 3.001 30 ÷ 100 ____ 3 × 0.1 Do, Then Explain Circle each calculation that has the correct answer: 6.4 ÷ 10 = 0.64 0.8 × 100 = 80 0.36 × 10 = 36 Explain your reasoning for each Top Tips Explain how to divide by 10 and 100. What happens to the digits and the decimal point? Odd One Out

Calculating with decimal fractions

Problem solving



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Glossary

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| Glossary | <ul style="list-style-type: none"> • Thousandth - One-thousandth is one part in one thousand equal parts. • Equivalent - If something is equivalent, it has the same value. For example, £1 is equivalent to 100 p - they have the same value. • Tenth - One-tenth is one part in ten equal parts. • Hundredth - One-hundredth is one part in one hundred equal parts. • Convert - To convert means to change a value or expression from one form to another. In this context it means to change from one unit of measurement to another such as from cm to mm. • Decimetre - A decimetre is a metric unit of length, equal to one-tenth of a metre. Decimetre can be abbreviated to dm. • Mass - Mass is a measure of how much matter there is in an object. It is commonly measured in kilograms (kg) or grams (g). • Capacity - Capacity is a measure of the amount that something can hold. It is commonly measured in litres (l) or millilitres (ml). • Convert - When we convert, we change a value or expression from one form to another. • Unit fraction - A unit fraction is any fraction with a numerator of one. • Unitising - Treating groups that contain the same number of things as 'ones' or 'units'. It is important particularly in handling money and in understanding place value and supports us to think multiplicatively. • Distributive law - The distributive law says that multiplying a number by a group of numbers added together is the same as doing each multiplication separately. • Estimation - When we estimate, we find a value that is close enough to the right answer, usually with some thought or calculation involved. • Scaling - Scaling is when a given quantity is made ___ times the size. It can be used to adjust the size of a factor. In this lesson, scaling will involve making values 10 or 100 times the size. • Product - The product is the result of two or more numbers multiplied together. • Factor - Factors are integers that are multiplied together to get a product. • Integer - An integer is a whole number with no fractional part eg. 0, 1, 14, 103. Decimal numbers such as 3.4 are not integers. |
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Stem sentences

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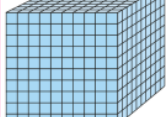
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Representations

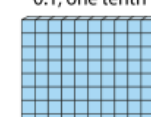
1, one



1,000s	100s	10s	1s	0.1s	0.01s	0.001s
			1			

• 'One is the whole.'

0.1, one tenth

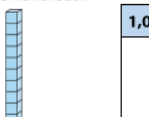


1,000s	100s	10s	1s	0.1s	0.01s	0.001s
				1		

• 'When a whole is divided into ten equal parts, each part is one tenth of the whole.'
 • 'There are ten tenths in one whole.'

$1 \div 10 = 0.1$ $1 \times 0.1 = 0.1$

0.01, one hundredth



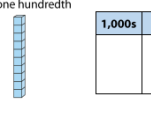
1,000s	100s	10s	1s	0.1s	0.01s	0.001s
					1	

• 'When a whole is divided into one hundred equal parts, each part is one hundredth of the whole.'
 • 'There are one hundred hundredths in one whole.'
 $1 \div 100 = 0.01$ $1 \times 0.01 = 0.01$
 • 'When one tenth of the whole is divided into ten equal parts, each part is one hundredth of the whole.'
 • 'There are ten hundredths in one tenth.'

$0.1 \div 10 = 0.01$ $0.1 \times 0.1 = 0.01$

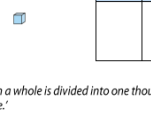
Representations

0.01, one hundredth



• 'When a whole is divided into one hundred equal parts, each part is one hundredth of the whole.'
 • 'There are one hundred hundredths in one whole.'
 $1 \div 100 = 0.01$
 • 'When one tenth of the whole is divided into ten equal parts, each part is one hundredth of the whole.'
 • 'There are ten hundredths in one tenth.'
 $0.1 \div 10 = 0.01$ $0.1 \times 0.1 = 0.01$

0.001, one thousandth



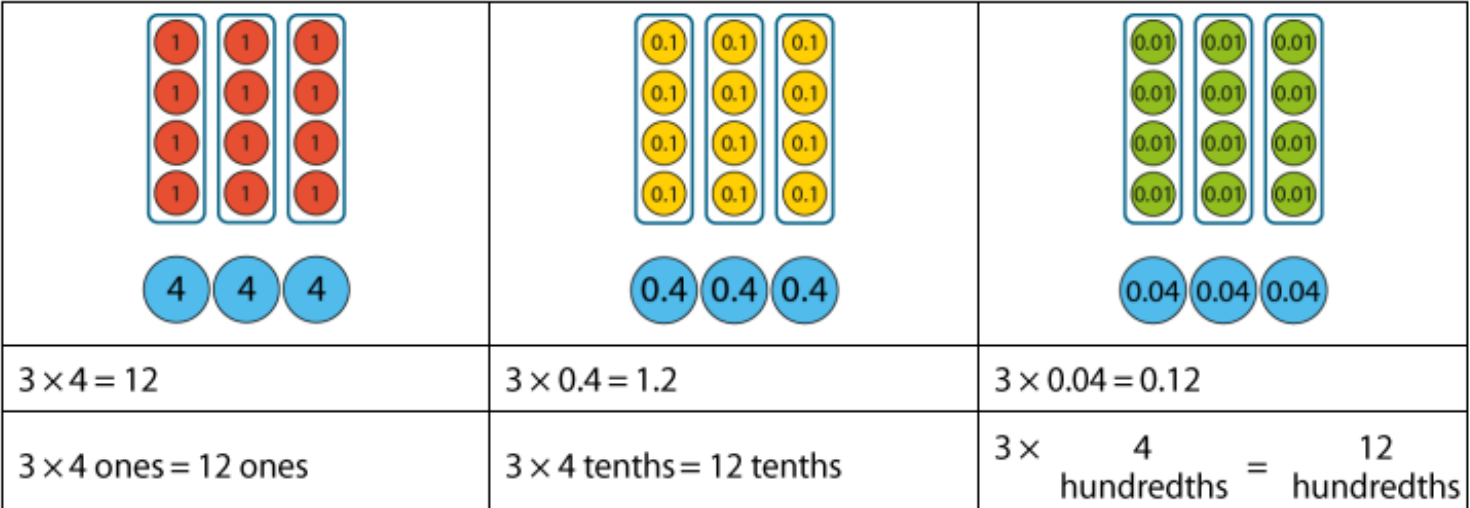
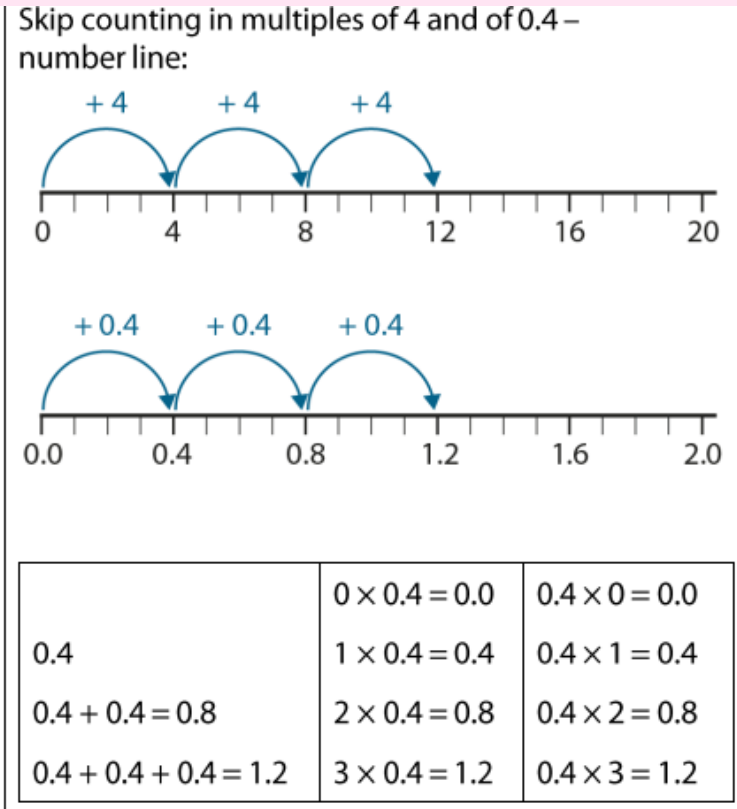
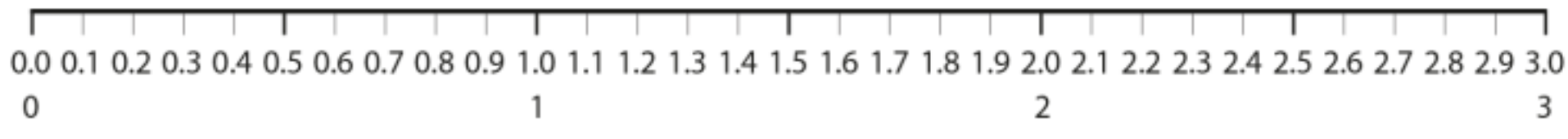
• 'When a whole is divided into one thousand equal parts, each part is one thousandth of the whole.'
 • 'There are one thousand thousandths in one whole.'
 $1 \div 1,000 = 0.001$ $1 \times 0.001 = 0.001$

Summary of measures conversions – mℓ, cℓ, dℓ and ℓ:

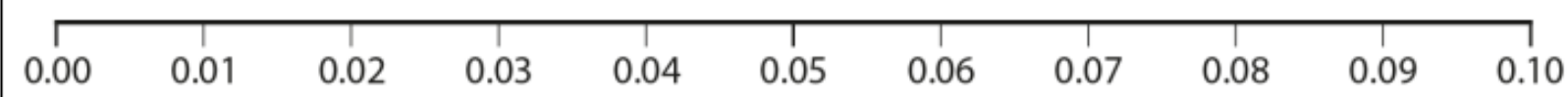
1 ℓ= 10 dℓ
1 ℓ= 100 cℓ
1 ℓ= 1,000 mℓ

		Convert from			
		mℓ	cℓ	dℓ	ℓ
to	mℓ		× 10	× 100	× 1,000
	cℓ	÷ 10 or × 0.1		× 10	× 100
	dℓ	÷ 100 or × 0.01	÷ 10 or × 0.1		× 10
	ℓ	÷ 1,000 or × 0.001	÷ 100 or × 0.01	÷ 10 or × 0.1	

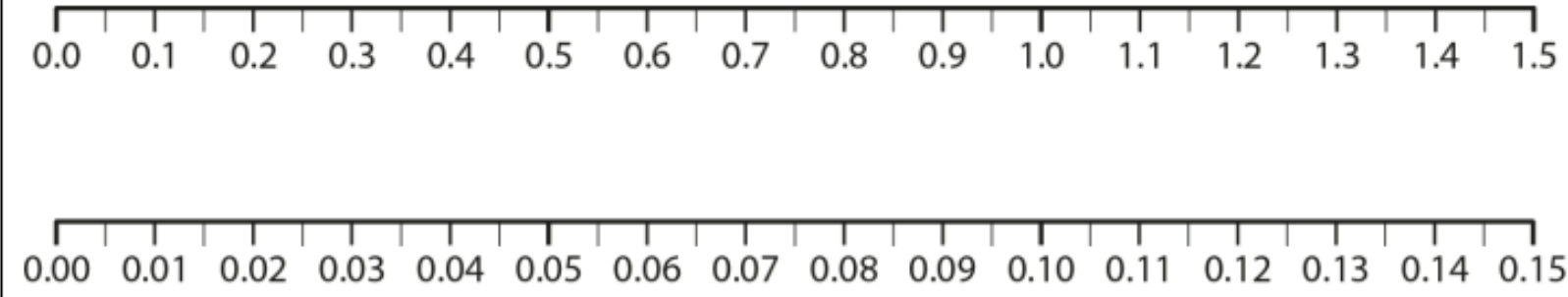
Number line:



Number line – ten hundredths in one tenth:



Stacked number lines:



Connecting to division by 100:

• Example 1 – dividend is a multiple of 100

Divide 200 by 100. $\downarrow \div 100$

1,000s	100s	10s	1s
	2	0	0
			2

$200 \times 0.01 = 2$ $200 \div 100 = 2$

• Example 2 – dividend is a three-digit multiple of ten

Divide 120 by 100. $\downarrow \div 100$

1,000s	100s	10s	1s	0.1s	0.01s
	1	2	0		
			1	2	0

$120 \times 0.01 = 1.2$ $120 \div 100 = 1.2$

• Example 3 – dividend is a two-digit number

Divide 12 by 100. $\downarrow \div 100$

1,000s	100s	10s	1s	0.1s	0.01s
		1	2		
			0	1	2

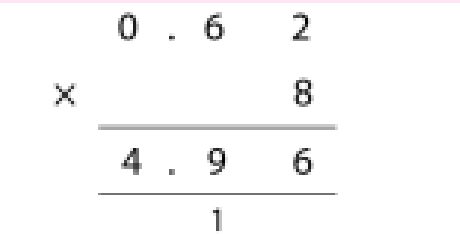
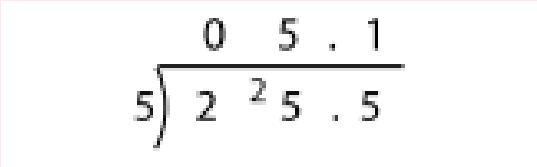
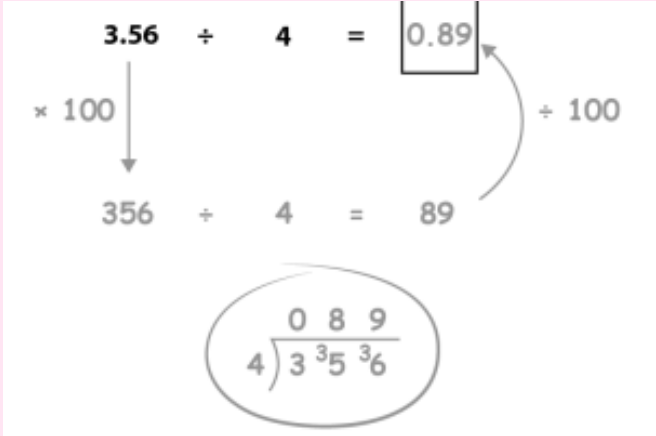
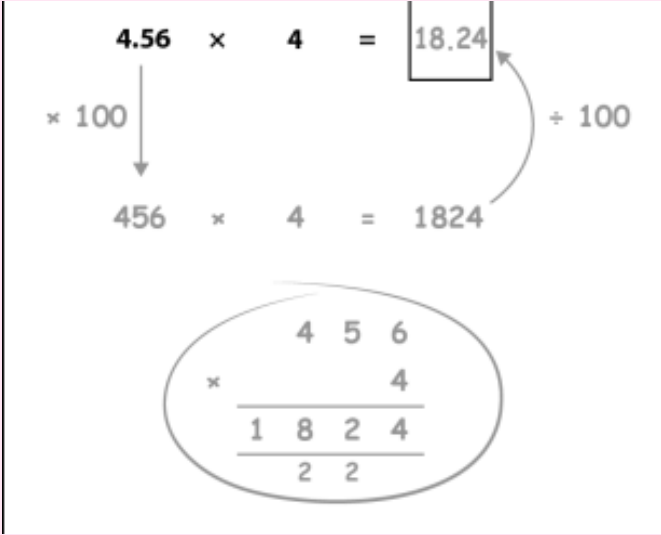
$12 \times 0.01 = 0.12$ $12 \div 100 = 0.12$

Comparing the equations:

4	$\times$	25	=	100
		$\times 0.1 \div 10$		$\times 0.1 \div 10$
4	$\times$	2.5	=	10

• 'Two-point-five is one-tenth the size of twenty-five, so four times two-point-five is one-tenth the size of four times twenty-five.'

4	$\times$	25	=	100
		$\times 0.01 \div 100$		$\times 0.01 \div 100$
4	$\times$	0.25	=	1



$2 \times 600 = 1,200$	$\uparrow$	• 'If one factor is made <u>one hundred</u> times the size, the product will be <u>one hundred</u> times the size.'
$2 \times 60 = 120$	$\uparrow$	• 'If one factor is made <u>ten</u> times the size, the product will be <u>ten</u> times the size.'
$2 \times 6 = 12$	$\uparrow$	
$2 \times 0.6 = 1.2$	$\downarrow$	• 'If one factor is made <u>one tenth</u> times the size, the product will be <u>one tenth</u> times the size.'
$2 \times 0.06 = 0.12$	$\downarrow$	• 'If one factor is made <u>one hundredth</u> times the size, the product will be <u>one hundredth</u> times the size.'