Spring 2 Year 6

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Links to prior learning/ objectives:	Resources:	Vocabulary:
Place value including decimal places. ~ Formal written methods for all 4 number operations. ~ Multiplication facts up to 12 x 12 and how to derive facts based on these. ~ Word problems for all four operations. ~ Using algebra in its basic form- missing numbers, area. ~ Facts relating to units of measure. ~ Imperial measures.	Base10, place value charts, place value counters, multiplication squares, physical objects, shapes for volume, cubes **Mastery:** (where to find some resources) • Teaching for Mastery • White Rose New and old documents • Mastery maths stickers • Nrich (curriculum mapping)	Divide, multiply, place value, units of measure, miles, kilometres, metric, imperial, Area, calculate, multiply, measures, formulae, parallelogram, triangle, volume, 3D, 2D, parallel lines, length, width, depth. calculate, multiply, measures, formulae, parallelogram, triangle, volume, 3D, 2D, parallel lines, length, width, depth.

Objectives and Teaching

Week 1

Barriers to ARE (misconceptions):

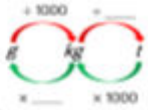
Children may struggle to recall the relationship between different units of measure.
Children may not have a strong understanding of place value and struggle to recognise that when multiplying the number increases while a number decreases when divided.
Children may struggle to see the pattern of a digit moving depending on the number of zeros when multiplying/dividing by the power of 10.
Children may be unable to explain/ say the decimal places.

Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
Use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places
Convert between miles and kilometres

- To develop my understanding of metric measures.
- To develop the skill of converting metric measures.
- To know how to perform calculations with metric measures.
- To understand the relationship between metric and imperial measures.
- To know how to convert between miles and kilometres.
- To develop my understanding of imperial measures.

Fluency	Problem Solving	Reasoning
	A shop sells litre bottles of water for 99 p each. 300 ml bottles of water are on offer for 8 for £2 If Jess wants to buy 12 L of water for the cheapest amount, which should she buy and why?	**True or false?** If you convert any amount of grams to kilograms, then it will never have a digit in the ones column. E.g. 76 $g = 0.076\ kg$

There are ☐ grams in one kilogram.
There are ☐ kilograms in one tonne.
Use these facts to fill in the blanks:



g	kg
1,500	
	2.05
1,005	

kg	tonnes
1,202	
	4.004
125	

There are ☐ mm in one centimetre.
There are ☐ cm in one metre.
There are ☐ m in one kilometre.
Use these facts to fill in the blanks:

mm	cm	m	km
44,000			
	2,780		
		15.5	
			1.75

Sort the lengths of time from shortest to longest.

360 minutes	270 seconds
72 hours	$\frac{1}{14}$ fortnight
$\frac{1}{2}$ day	5,760 minutes

Week 2

Barriers to ARE (misconceptions):

Children may confuse area and perimeter.
Children may struggle to identify that area is the space covered.
Children may struggle to identify and explain volume.
Children may struggle to generalise with algebra.
Children may not have a clear understanding of the properties of shape.

Recognise when it is possible to use formulae for area and volume of shapes
Recognise that shapes with the same areas can have different perimeters and vice versa
Calculate the area of parallelograms and triangles

- To know that different shapes can have the same area.
- To develop the skill of using formulae to calculate area and perimeter.
- To develop my understanding of the relationship between area and perimeter.
- To know how to find the area of a triangle.
- To develop the skill of finding the area of a triangle.
- To know how to find the area of a parallelogram.

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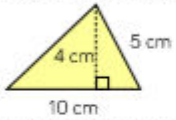
Fluency

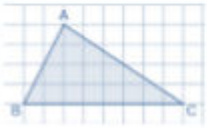
Work out the missing values.

To calculate the height of a triangle, you can use the formula:
base × height ÷ 2
Choose the correct calculation to find the area of the triangle.



- 10 × 5 ÷ 2
- 10 × 4 ÷ 2
- 5 × 4 ÷ 2

Calculate the area of the triangle.



How did you calculate the area?

Could you do it another way?

Problem Solving

A farmer has 60 metres of perimeter fencing.

For every 1m² he can keep 1 chicken.

How can he arrange his fence so that the enclosed area gives him the greatest area?

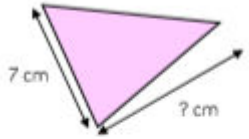
Reasoning

True or false?

Two rectangles with the same perimeter can have different areas.

Explain your answer.

The area of this triangle is 42cm²



Two children worked out the height. Here are their answers:

Simon: 42 ÷ 7 = 6 cm

Jade: 42 × 2 = 84

84 ÷ 7 = 12 cm

Who is correct?

Explain how you know.

Week 3

Barriers to ARE (misconceptions):

Children may struggle to identify and explain volume as an abstract concept.
Children may struggle to generalise with algebra.
Children may not have a clear understanding of the properties of shape.

Calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm3) and cubic metres (m3), and extending to other units [for example, mm3 and km3].

- To develop my understanding of volume.
- To know how to find the volume of a cuboid by counting cubes.
- To know how to use a formula to find the volume of a cuboid.

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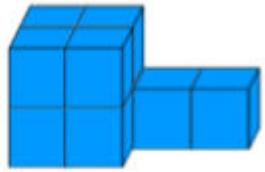
Fluency	Problem Solving	Reasoning
If each cube has a volume of 1 cm³, find the volume of each solid.  Calculate the number of cubic units in each shape. 	Reuben is making cubes using multilink. He has 64 multilink cubes altogether. How many cubes could he make?	Ibrahim says he will need 8 cm³ to build this shape. Aleena says she will need 10 cm³  Who do you agree with? Explain why.
Week 4 **Barriers to ARE (misconceptions):** Confusion between terms 'ratio' and 'proportion' and when it is appropriate to use each. Difficulty in making links to fractions/percentages.	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Solve problems involving similar shapes where the scale factor is known or can be found Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. • To understand the language of ratio. • To understand the links between ratio and fractions. • To know how to use the ratio symbol. • To know how to calculate ratio.	
Fluency	Problem Solving	Reasoning
	In a box there are some red, blue and green pens. The ratio of red pens to green pens is 3 : 5 For every 1 red pen there are two blue pens. Write down the ratio of red pens to blue pens to green pens.	

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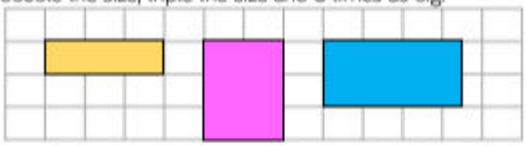
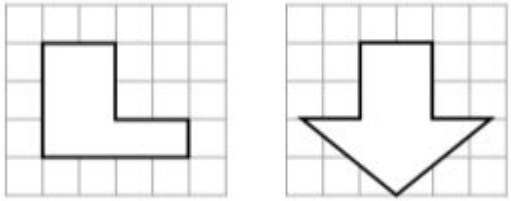
Complete.  The ratio of red counters to blue counters is ☐ : ☐ The ratio of blue counters to red counters is ☐ : ☐ Here are the ingredients for a smoothie. Write down the ratio of:  • Bananas to strawberries • Strawberries to bananas to blackberries • Blackberries to strawberries to bananas • Blackberries to strawberries The ratio of red to green marbles it 3 : 7 Draw an image to represent the marbles. What fraction of the marbles are red? What fraction of the marbles are green?		Tick the correct statements.  • There are two yellow tins for every three red tins. • There are two red tins for every three yellow tins. • The ratio of red tins to yellow tins is 2 : 3 • The ratio of yellow tins to red tins is 2 : 3 Explain which statements are incorrect and why.
Week 5 **Barriers to ARE (misconceptions):** Confusion between terms 'ratio' and 'proportion' and when it is appropriate to use each. Difficulty in making links to fractions/percentages.	Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Solve problems involving similar shapes where the scale factor is known or can be found Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. • To know how to use scale factors. • To know how to calculate scale factors. • To develop the skill of solving problems involving ratio and proportion.	
Fluency	**Problem Solving**	**Reasoning**

Copy these rectangles onto squared paper then draw them double the size, triple the size and 5 times as big.

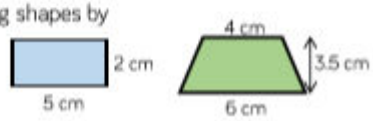


Copy these shapes onto squared paper then draw them twice as big and three times as big.



Enlarge the following shapes by

- Scale factor 2
- Scale factor 3
- Scale factor 4



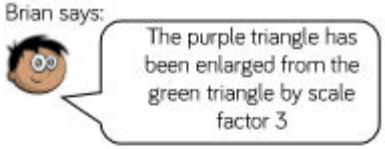
Draw 3 rectangles with the same area where the length increases by the scale factor 2

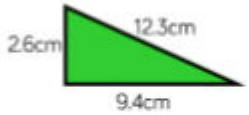
Can you find more than one way of doing this?

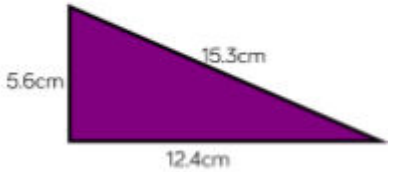
Here are two equilateral triangles.
The blue triangle is three times larger than the green triangle.

Find the perimeter of both triangles

Brian says:







Do you agree?
Explain why.

Week 6 Barriers to ARE (misconceptions):	Consolidation/Assessment	
Fluency	Problem Solving	Reasoning

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