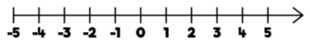
WRPS Maths Medium Term Planning: Spring Term Year 5 Year 6

Week.	Mathematical aspect	Non-negotiable end points Year 5.	Non-negotiable end points Year 6	Curriculum statements – Year 5.	Curriculum Statements. Year 6.
1.	Number and place value: positive and negative numbers and rounding	Knows how to read and interpret negative numbers and find differences between negative and positive numbers.	Knows how to calculate with negative and positive numbers.	● To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. ● To round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. ● To solve number problems and practical problems that involve all of the above.	● To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To use negative numbers in context and calculate intervals across zero. ● To solve number problems and practical problems that involve all of the above.
2.	All four operations: order of operations, Addition and subtraction: written methods	Knows the formal written methods of columnar addition and subtraction with increasingly large numbers and decimals.	Knows the rules of BODMAS. Knows the compact algorithms for addition and subtraction operations.	● To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.	● To perform mental calculations, including with mixed operations and large numbers. ● To use their knowledge of the order of operations to carry out calculations involving the four operations ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. ● To solve problems involving addition, subtraction, multiplication and division.

Links to resources and policy documents:

Use the number line to answer the questions.



- What is 6 less than 4?
- What is 5 more than –2?
- What is the difference between 3 and –3?

Here are the temperatures in four cities at midnight and at midday.

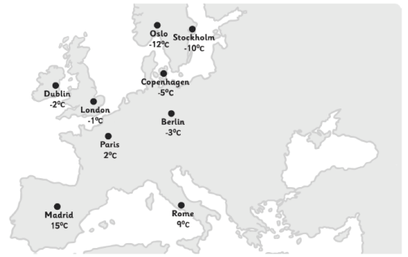
City	Temperature	
	At midnight	At midday
Paris	−4°C	−2°C
Oslo	−13°C	−7°C
Rome	3°C	10°C
Warsaw	−6°C	2°C

At **midnight**, how many degrees colder was Paris than Rome?

degrees

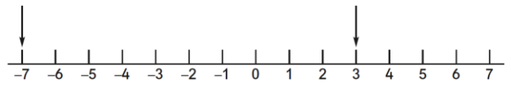
Which city was 6 degrees colder at midnight than at midday?

In the daytime, the temperature reached a maximum of 8 °C in Suzie's garden. At night it fell to -4 °C. By how many degrees did the temperature fall?



Which place has the coldest temperature?	
Which place has the warmest temperature?	
What is the difference in the temperatures in Stockholm and Rome?	°c
What is the difference in the temperatures in Dublin and Copenhagen?	°c
The temperature in Paris decreases by 5°C. What is the new temperature?	°c
The temperature in London increases by 6°C. What is the new temperature?	°c
The temperature in Oslo increases by 4°C. What is the new temperature?	°c
The temperature in Berlin decreases by 3°C. What is the new temperature?	°c

Calculate the difference between the numbers shown by the two arrows.



Nikolas is finding the difference in temperature between midday and midnight.

The thermometer shows the temperature at midday.

At midnight it is 7°c colder.

What is this temperature at midnight?

What is the temperature measured by this thermometer?

If the temperature fell by 18 °C what would it be?

a) Continue this number sequence:

7	5	3	1				

b) Continue this number sequence:

12	8	4	0				

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				● To solve problems involving numbers up to three decimal places.	● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy. ●Add whole numbers and decimals using formal written methods (columnar addition). ●Subtract whole numbers and decimals using formal written methods (columnar subtraction).
Links to resources and policy documents: Find the missing digits. What do you notice? 5 2 2 4 7 ? + 3 ? 5 9 0 4 9 0 ? 3 ? 2 3,565 + 2,250 = 5,815 Use this calculation to decide if the following calculations are true or false. **True or False?** 4,565 + 1,250 = 5,815 5,815 – 2,250 = 3,565 4,815 – 2,565 = 2,250 3,595 + 2,220 = 5,845				65,442 + 26,894 = 92,336 84,583 - 58,109 = 26,454	Join each of these calculations to the number that is **nearest** to the correct answer. One has been done for you. 110 + 230 357 – 149 62 × 8 777 – 679 801 – 444 100 200 300 400 500
3.	Multiplication and division: square and cube numbers written methods	Knows the definition of square and cube numbers and the correct notation. Knows compact notation for long multiplication. Knows the compact algorithm for short division including remainders.	Knows the efficient written algorithms for long/short multiplication and division	● To recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3). ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context.	● To identify common factors, common multiples and prime numbers ● To multiply multi-digit numbers up to 4 digits by a one-digit whole number using the efficient written method of short multiplication. ● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. ● To divide numbers up to 4 digits by a one-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, ● To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, ● To solve problems involving addition, subtraction, multiplication and division.
Links to resources and policy documents: **Square numbers** A square number is a number multiplied by itself. This can also be called 'a number squared'. The symbol for squared is ². **Cube numbers** A cube number is a number multiplied by itself 3 times. This can also be called 'a number cubed'.The symbol for cubed is ³.				Write the following as a number sentence and then solve them: 1) $2^2 =$ 2) $4^2 =$ 3) $5^2 =$ 4) $10^2 =$	Circle the square numbers. 1 49 66 17 36 9 144 89 75 101 81 46 12 64 25 100 4 123 121 **Work out:** $6^2 =$ $3^3 =$ 4 squared = 8 cubed = Julian thinks that 4^2 is 16. Do you agree? Convince me.

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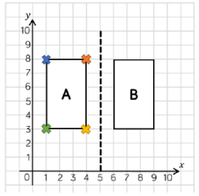
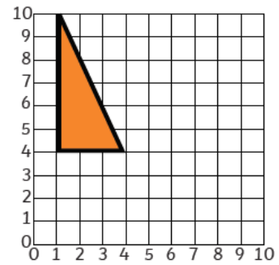
4.	Geometry: position and direction all four quadrants	Knows how to describe a translation or reflection of a shape, including reference to the axes in the first quadrant.	Knows how to draw and label a pair of axes in all four quadrants with equal scaling, including the use of negative numbers.	● To identify, describe and represent the position of a shape following a reflection or translation using the appropriate language, and know that the shape has not changed.	● To describe positions on the full co-ordinate grid (all four quadrants). Including on blank axis. ● To draw and translate simple shapes on the co-ordinate plane and reflect them in the axes.
5.	Fractions: calculating	Knows how to convert fractions to a common denominator for addition and subtraction.	Knows how to calculate with fractions. Knows that dividing by 2 is the same as multiplying by $\frac{1}{2}$.	● To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number. ● To add and subtract fractions with the same denominator and multiples of the same number	● To add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions. ● To multiply simple pairs of proper fractions, writing the answer in its simplest form. ● To divide proper fractions by whole numbers.

Object A is reflected in the mirror line to give image B.
Write the coordinates of the vertices for each shape.

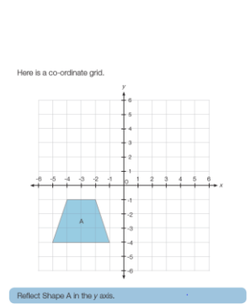


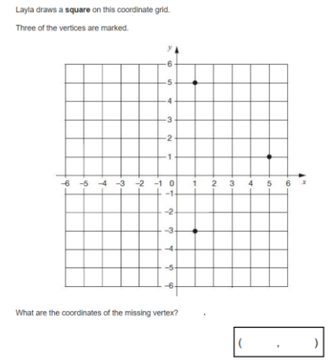
	Original Coordinate	Reflected Coordinate
✖		
✖		
✖		
✖		



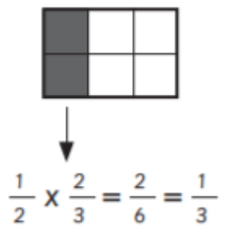
This right-angled triangle is translated **right 6, down 3.**

Draw the triangle in its new position.

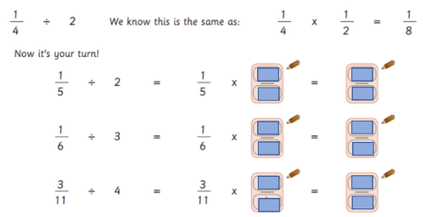




Links to resources and policy documents:



$\frac{1}{2} \times \frac{2}{3} = \frac{2}{6} = \frac{1}{3}$



Convert the mixed numbers to improper fractions to calculate:

$4\frac{4}{5} - 1\frac{9}{10} =$ $2\frac{1}{7} - 1\frac{1}{3} =$ $3\frac{5}{12} - 1\frac{7}{9} =$ $3\frac{5}{11} - 1\frac{4}{5} =$

Eva has a full tin of paint. She uses $\frac{1}{3}$ of the tin on Friday, $\frac{1}{21}$ on Saturday and $\frac{2}{7}$ on Sunday. How much paint does she have left?

Tommy is adding mixed numbers. He adds the wholes and then adds the fractions. Then, Tommy simplifies his answer.

$1\frac{1}{2} + 2\frac{1}{6} = 1\frac{3}{6} + 2\frac{1}{6} = 3\frac{4}{6} = 3\frac{2}{3}$

Use Tommy's method to add the fractions.

$3\frac{1}{2} + 2\frac{3}{8} =$ $34\frac{1}{9} + 5\frac{2}{5} =$ $12\frac{5}{12} + 2\frac{1}{7} =$

Whitney is calculating $\frac{5}{8} + \frac{3}{16}$

She finds the lowest common multiple of 8 and 16 to find a common denominator.

LCM of 8 and 16 is 16 $\frac{5}{8} = \frac{10}{16}$ $\frac{10}{16} + \frac{3}{16} = \frac{13}{16}$

Use this method to calculate:

$\frac{1}{3} + \frac{2}{9} =$ $\frac{3}{7} + \frac{7}{21} =$ $\frac{8}{15} + \frac{1}{5} =$ $\frac{3}{16} + \frac{3}{8} + \frac{1}{4} =$

Use **<**, **>** or **=** to make the statements correct.

$\frac{1}{4} \times \frac{1}{2}$ ◯ $\frac{1}{4} \times 2$

$\frac{1}{4} \times \frac{1}{3}$ ◯ $\frac{1}{4} \div 3$

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6.	Fractions: calculating with decimals	Knows that percentages, decimals and fractions are different ways of expressing proportions.	Knows how to multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. Knows multiply decimals by whole numbers in practical contexts, such as measures and money. Knows how to divide decimal numbers by one-digit whole number, in practical contexts involving measures and money.	● To solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	● To multiply one-digit numbers with up to two decimal places by whole numbers. ● To use written division methods in cases where the answer has up to two decimal places. ● To solve problems which require answers to be rounded to specified degrees of accuracy. ● To recall and use equivalences between simple fractions, decimals and percentages, including in different contexts.

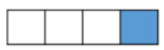
Links to resources and policy documents:

A jar of sweets weighs 1.213 kg.
How much would 4 jars weigh?

A boy bought 4 magazines at £1.34 each and 3 birthday cards at £1.65 each.

How much did he spend? £

Complete the table.

Decimal	Fraction in tenths or hundredths	Simplified fraction
0.6	$\frac{6}{10}$	$\frac{3}{5}$
		
0.95		

Q12. Here are three bags in a shop

A	B	C
£11.50	£14.65	£16.50

How much does bag B cost to the nearest pound?

rounded to the nearest whole number is

6.01	6
9.51	
7.75	

E.g. 560 ÷ 24 =

$$24\overline{)560.000} = 23.3\dot{3}$$

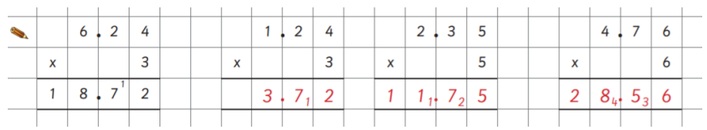
(5 8 8 8 8)

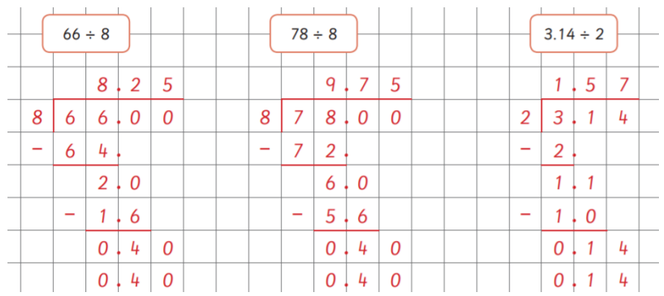
let's try some mental multiplication using decimals.

a) 0.6 x 7 = b) 0.5 x 9 =

c) 0.03 x 8 = d) 0.08 x 6 =

e) 0.002 x 4 = f) 0.006 x 12 =





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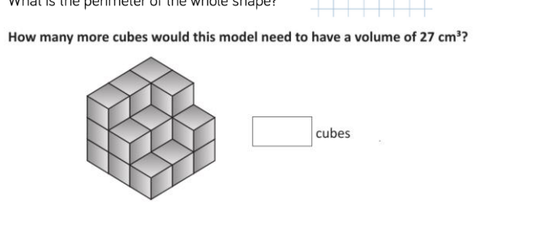
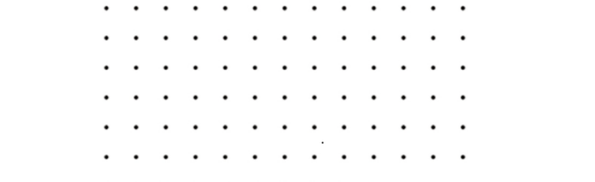
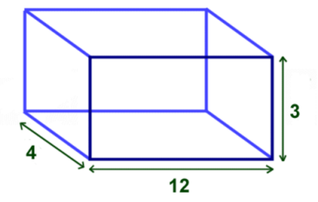
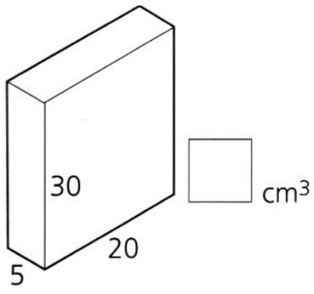
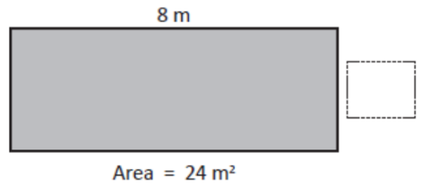
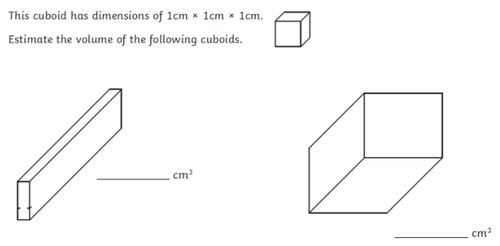
7.	Percentages: Calculation FDP equivalence	Knows that percentages, decimals and fractions are different ways of expressing proportions.	Knows how to calculate % Knows how to use equivalence between fractions, decimals and % when calculating.	● To recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal. ● To solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}, \frac{1}{4}, \frac{1}{5}, \frac{2}{5}, \frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	● Recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. ● Find percentages of amounts. ● Solve problems involving the calculation of percentages (for example, of measures, and such as 15% of 360) and the use of percentages for comparison.
 100% = 500 What is 10%? What is 50% Is 70% = 350 100% = £400 What is 30%? Is 20% = £90?				
8.	Measurement: area, perimeter and volume	Knows the three dimensions for finding the volume.	Knows how to recognise that shapes with the same area can have different perimeters and vice versa. Knows the formula for volume *l x b x h*	●To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres; ●To calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes; ● To estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]	● To recognise that shapes with the same area can have different perimeters and vice versa. ● To calculate the area of parallelograms and triangles. ● To recognise when it is necessary to use the formulae for area and volume of shapes. ● To calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm3) and cubic metres (m3) and extending to other units such as mm3 and km3.
Links to resources and policy documents:  Volume = length x width x height Volume = 12 x 4 x 3 = 144 			 Each square has an area of 4 square cm. What is the length of each square? What is the perimeter of the whole shape? **How many more cubes would this model need to have a volume of 27 cm³?** cubes	

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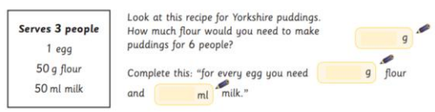
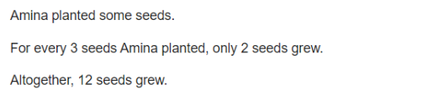
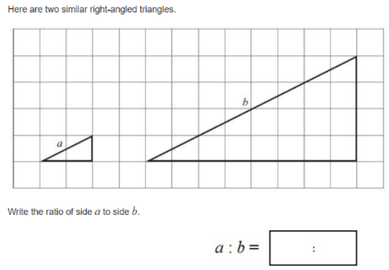
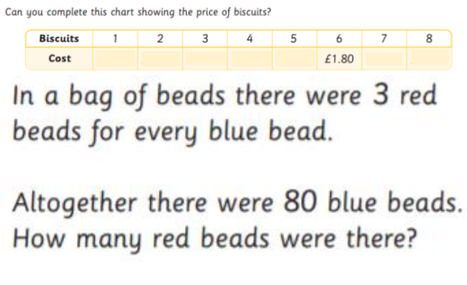
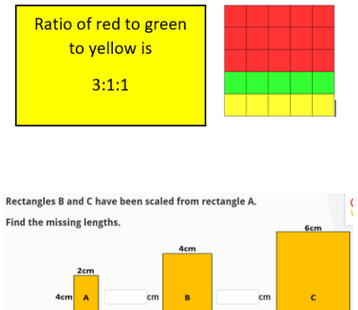
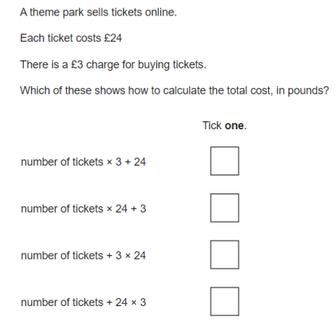
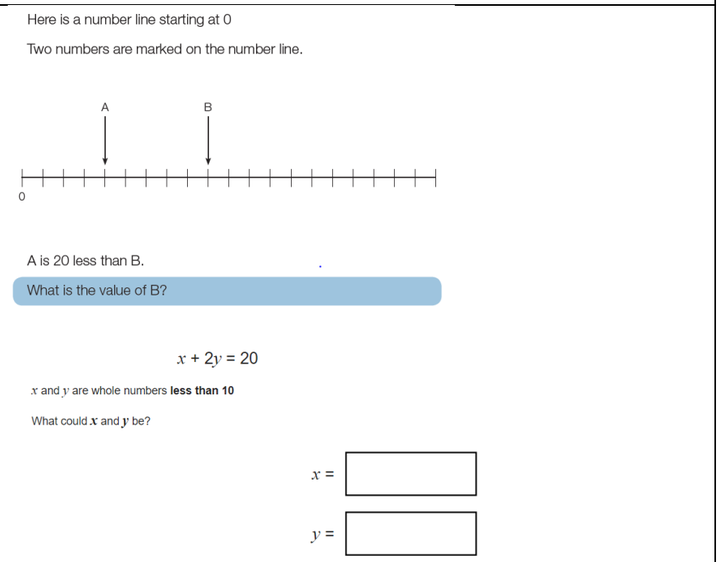
9.	Ratio and proportion: ratio, scaling and scale factors	Knows proportions are out of the whole and can be represented as fractions, decimals or percentages.	Knows ratios compares quantities. Knows the notation *a:b* to record a ratio. Knows how to use multiplication/division to find a scale factor.	● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	● To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts ● To solve problems involving similar shapes where the scale factor is known or can be found. ● To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.
Links to resources and policy documents:   					
10.	Algebra: finding unknowns and variables	Knows how to find missing numbers in a sequence.	Knows how to use the arithmetic relationships to find unknowns or variables.	● To find pairs of numbers that satisfy number sentences involving two unknowns.	● To find pairs of numbers that satisfy number sentences involving two unknowns. ● To enumerate all possibilities of combinations of two variables.
Links to resources and policy documents: 					
11.	Statistics: mean average line graphs	Knows which representations of data are most	Knows the arithmetic for finding the mean average.	● To solve comparison, sum and difference problems using information presented in a line graph.	● To calculate and interpret the mean as an average. ● To interpret and construct pie charts and line graphs and use these to solve problems;

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Week.	Mathematical aspect	Non-negotiable end points Year 5.	Non-negotiable end points Year 6	Curriculum statements – Year 5.	Curriculum Statements. Year 6.
		appropriate and why using a line graph.			
Links to resources and policy documents: Calculate the mean number of crayons: **Crayon colour / Amount** Blue 14 Green 11 Red 10 Yellow 9 Seven children measured their heights. **Children / Height (cm)** Stefan 144 Lara 136 Olivia 142 Chen 143 Maria 152 Dev 148 Sarah 150 What is the mean height of the children?				Here is a method to find the mean. No. of glasses of juice drunk by 3 friends / Total glasses of juice drank / If each friend drank the same no. of glasses The mean number of glasses of juice drunk is 3 Use this method to calculate the mean average for the number of slices of pizza eaten by each child.	Last year, Jacob went to four concerts. Three of his tickets cost £5 each. The other ticket cost £7 What was the **mean** cost of the tickets? Hassan is the top batsman for the cricket team. His scores over the year are: 134, 60, 17, 63, 38, 84, 11 Calculate the mean number of runs Hassan scored.
12.	Geometry: properties of shape, 3D nets circles missing lengths ad angles	Knows how to use angle sum facts and other properties to make deductions about missing angles and lengths.	Knows how to visualise 3D shapes from nets. Knows the parts of the circle.	● To use the properties of rectangles to deduce related facts and find missing lengths and angles.	● To recognise, describe and build simple 3D shapes, including making nets ● To illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius

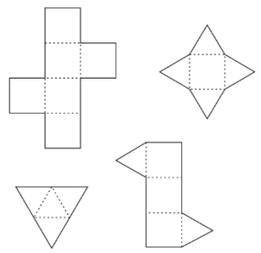
WRPS Maths Medium Term Planning: Spring Term Year 5 Year 6

Week.	Mathematical aspect	Non-negotiable end points Year 5.	Non-negotiable end points Year 6	Curriculum statements – Year 5.	Curriculum Statements. Year 6.

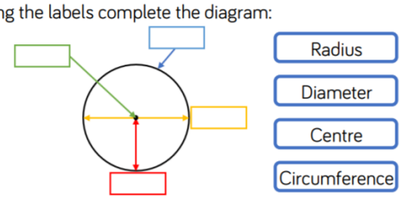
Links to resources and policy documents:

Here are some nets of shapes.

For each net, put a tick (✓) if it folds to make a **pyramid**.
Put a cross (✗) if it does not.



Using the labels complete the diagram:



A bicycle wheel has a diameter of 64 cm.

What is the **radius** of the bicycle wheel?

cm

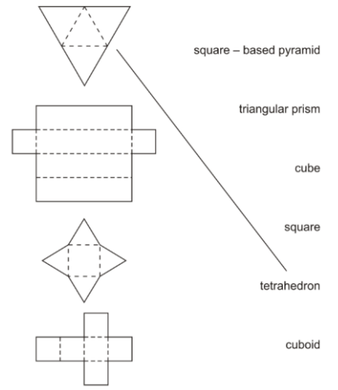
- Here is a rectangle.

What is the sum of angles a and b?

Find angle c.

Complete the table:

Radius	Diameter
26 cm	
	37 mm
2.55 m	
	99 cm
	19.36 cm

Match each net to the name of its shape.

One has been done for you.