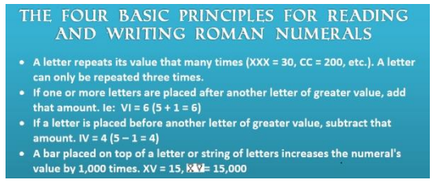
WRPS Maths Medium Term Planning: Summer Term Year 4 Year 5

Week.	Mathematical aspect	Non-negotiable end points Year 4.	Non-negotiable end points Year 5	Curriculum statements – Year 4.	Curriculum Statements. Year 5.
1.	Number and place value: Roman Numerals solving problems	Knows the symbols for Roman numerals up to C = 100. Knows the rules of Roman numerals i.e. rule of three symbols, rule of order. Knows the role of zero in the concepts of place value.	Knows the Roman numerals up to M = 1000. Knows the rules of reading Roman numerals including years.	● To recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). ● To identify, represent and estimate numbers using different representations. ● To order and compare numbers beyond 1000. ● To round any number to the nearest 10, 100 or 1000. ● To count in multiples of 6, 7, 9, 25, 1000. ● To find 1000 more or less than a given number. ● To read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value.	● To read numerals to 1000 (M) and recognise years written in Roman numerals. ● 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.

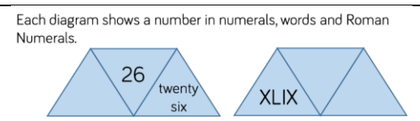
Links to resources and policy documents:

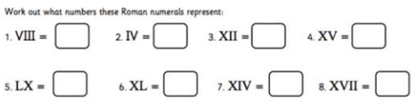
Roman Numeral	Number
I	1
V	5
X	10
L	50
C	100
D	500
M	1000

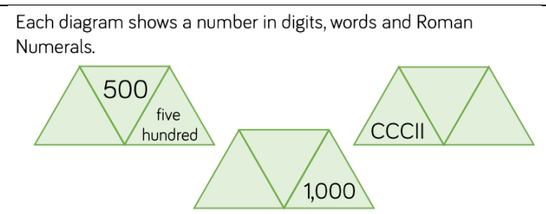


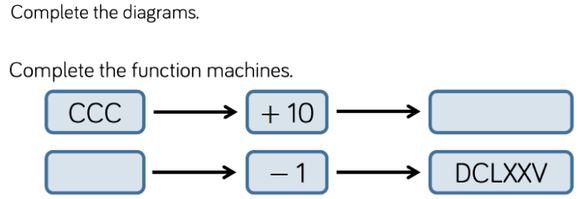
Which year is shown by MMVIII?

_____









2.	Number and place value: Sequences Negative and positive numbers	Knows how to find the difference between negative and positive numbers.	Knows how to describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule.	● To count backwards through zero to include negative numbers. ● To count in multiples of 6, 7, 9, 25 and 1000;	● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. ● To read, write, order and compare numbers with up to three decimal places. ● To count using decimals and fractions including bridging zero, for example on a number line.

Links to resources and policy documents:

The formula 3n - 1 can be used to calculate the value of these terms in this sequence.

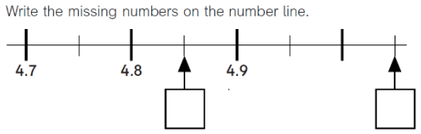
2 5 8 11

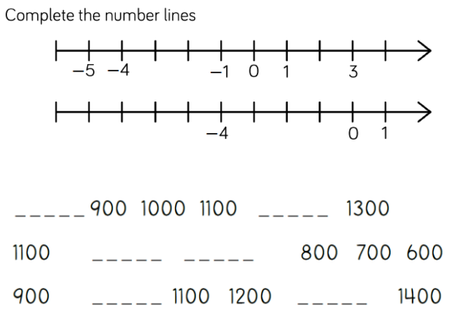
Find the 7th term. _____ Find the 10th term. _____

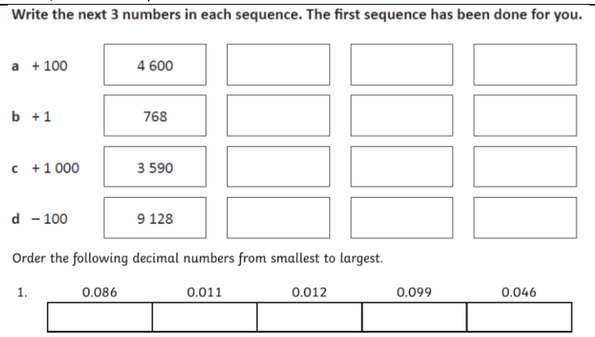
Here is part of a sequence:

30, 70, 110, ☐, 190, ☐.

What are the missing numbers?







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3.	Addition and subtraction: Mental and written methods solving problems	Knows how to choose the order of calculations in two step problems.	Knows efficient written methods for addition and subtractions	● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To estimate and use inverse operations to check answers to a calculation. ● To solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why. ● To estimate, compare and calculate different measures, including money in pounds and pence.	● 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 solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To solve problems involving numbers up to three decimal places.
4.	Multiplication and Division: Properties of number	Knows how to solve integer scaling problems and harder correspondence problems.	Know the terms factor, multiple, prime, square and cube numbers.	● To recall multiplication facts for multiplication tables up to 12 × 12. ● To 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. ● To multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	● To recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) ● To solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes

Links to resources and policy documents:

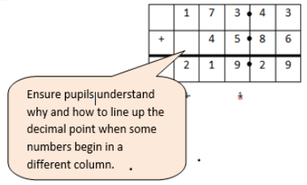
25567 + 16397 + 15984 = 57948

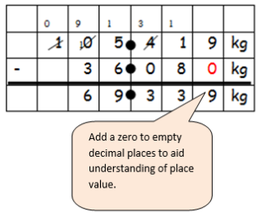
5234 − 1187 = 51157

124.9 + 7.25 = 132.25

324.9 − 7.25 = 317.65

Key Skill and Strategy	Question stems
Read and analyse the problem.	What is the question asking you to do?
Identify the steps.	What calculation/s do you need to do?
Calculate efficiently.	What methods would be best?
Check the solution.	Have you answered the question correctly? Have you used the correct unit in your answer?





2. At a market stall by the seaside, Hannah can buy the following items:

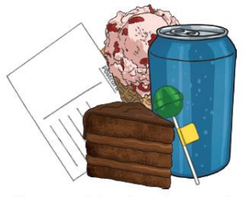
postcard 25p

lolly 35p

ice cream 75p

cake £1.20

cola 55p



Hannah has £2. She buys three items and has less than £1 in change. Which three items could she have bought?

12, 400	456,247	278,194	45,200	5,500
2,300	983,190	13,895	120,000	40,660
45,000	157,321	1, 500	25,678	27,460
37,890	34, 678	35,000	1,800	30,000
39,500	567,210	578,472	234,160	150,000

Choose two numbers that you can:

- add together in your head
- add using a written method
- subtract in your head
- subtract using a written method

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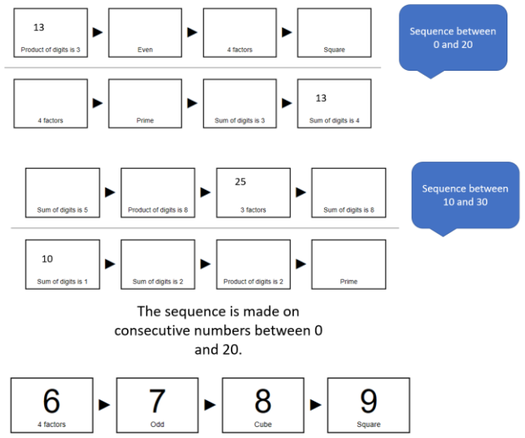
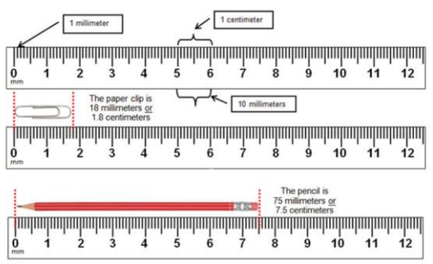
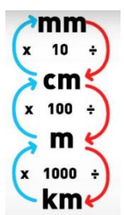
				● To solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which *n* objects are connected to *m objects.*	
Links to resources and policy documents: You have been given the exciting task of organising the end of term party for your class. There are **43** children coming to the party. **1. Party Drinks** a. A carton of apple juice makes 8 cups. How many cartons will you need to buy? _____ b. Cups come in packs of 10. How many packs will you need? _____ At the aquarium and reptile house. The *Wild and Wonderful* TV camera crew filmed the octopus tank and the lizard enclosure. The crew said they have 12 heads and 76 legs on camera. How many creatures are octopi and how many are lizards?				Use the distributive law to solve this multiplication word problem. Show your working out. Adam buys 8 packets of biscuits. There are 17 biscuits in each packet. How many biscuits does he have? Use the distributive law to solve these multiplication problems: 1. **18** × 4 = □ × 4 + □ × 4 = □ + □ = □ 2. **23** × 5 = □ × 5 + □ × 5 = □ + □ = □ 3. **24** × 6 = □ × 6 + □ × 6 = □ + □ = □ 4. **25** × 8 = □ × 8 + □ × 8 = □ + □ = □	
5.	Measurement: converting between units of measure,	Knows how to use multiplication to convert from larger to smaller units.	Knows how to solve missing measures questions such as these can be expressed algebraically. .	● To convert between different units of measure (for example, kilometre to metre; hour to minute).	● To convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre); ● To understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints;
Links to resources and policy documents:  				**Can you convert the cm to mm, m to cm and km to m?** **1)** 45cm = ____ mm **2)** 87m = ____ cm **3)** 1.1km = ____ m **4)** 102cm = ____ mm **5)** 43.26m = _____ cm	Milk is sold in pint, 2 pint, 4 pint or 6 pint cartons. A cook requires 2 litres of milk. Which would be the smallest carton of milk the cook could buy? 1 pint = 0.57 litres 1 litre = 1.75 pints Some pieces of wood are still sold in inches. These are known as 2 x 2, because the square end is 2 inches x 2 inches. What is the area of the end in square centimetres?  1 inch = 2.5cm 1 cm = 0.4 inches

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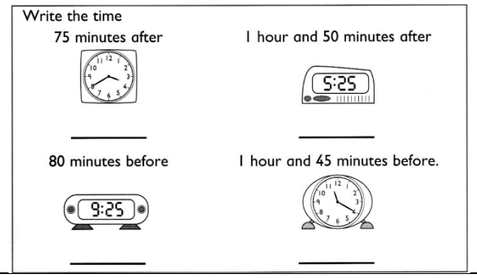
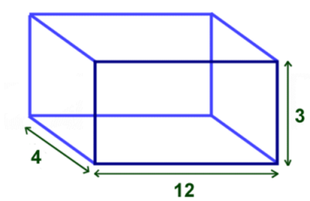
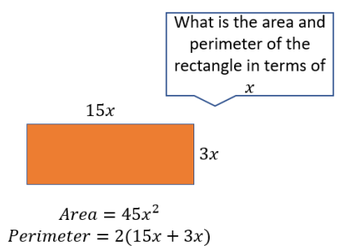
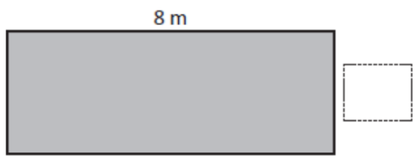
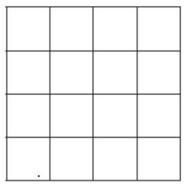
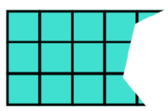
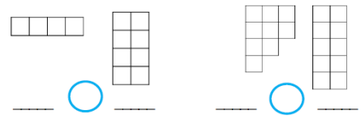
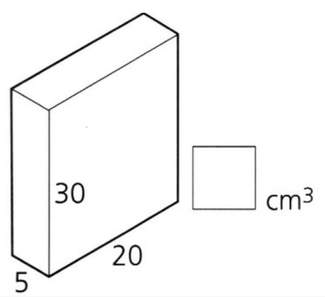
Put these lengths of time in order starting with the longest time. 105 minutes 1 hour 51 minutes 6360 seconds					
6.	Measurement: area and perimeter volume	Knows perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit.	Knows how to calculate the area from scale drawings using given measurements Knows that percentages, decimals and fractions are different ways of expressing proportions.	● To measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres To find the area of rectilinear shapes by counting squares.	● To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. ● To calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes. ● To estimate volume [for example, using 1 cm^3 blocks to build cuboids (including cubes)] and capacity [for example, using water].
 Volume = length x width x height Volume = 12 x 4 x 3 = 144  $Area = 45x^2$ $Perimeter = 2(15x + 3x)$				 **Shade the grid to show a rectangle with the area of 6 cm².**  This rectangle has been ripped.  What is the smallest possible area of the original rectangle?	Use the words 'greater than' and 'less than' to compare the rectilinear shapes. Complete the sentence stems using < and >  
7.	Fractions: Decimals and fractions in the context of measurements.	Knows that decimals and fractions are different ways of expressing numbers and proportions.		● To find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as units, tenths and hundredths. ● To round decimals with one decimal place to the nearest whole number.	● To use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling. ● To solve problems involving number up to three decimal places;

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		Knows decimal notation and the language associated with it, including in the context of measurements.		● To compare numbers with the same number of decimal places up to two decimal places. ● To solve simple measure and money problems involving fractions and decimals to two decimal places.	
Complete the table. Pictorial / Percentage / Fraction / Decimal 41 parts per hundred — 41% — 41 out of 100 — $\frac{41}{100}$ — 41 hundredths — 0.41 7 parts per hundred — 7%				Using these cards can you make a number between 4·1 and 4·61? 1 4 6 · What is the smallest number you can make using all four cards? What is the largest number you can make using all four cards?	1. Find 10% of these numbers. **a.** 900 _____ **b.** 160 _____ **c.** 50 _____ 2. Find 1% of these numbers. **a.** 900 _____ **b.** 6,800 _____ **c.** 550 _____
8.	Geometry: properties of shape, diagonals symmetry	Knows the properties of regular and irregular polygons.	Knows the term diagonal and can make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals.	● To compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular. ● To compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes. ● To identify lines of symmetry in 2D shapes presented in different orientations. ● To complete a simple symmetric figure with respect to a specific line of symmetry.	● To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles ● To draw given angles and measure them in degrees (º). ● To identify: angles at a point and one whole turn (total 360º) ● angles at a point on a straight line and 1/2 a turn (total 180º) ● other multiples of 90º. ● To use the properties of a rectangle to deduce related facts and find missing lengths and angles. ● To distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
Links to resources and policy documents: Complete the table with information about each regular polygon. You may wish to explore rotational symmetry. Cut out, fold and rotate the shapes to check the pattern is correct. Regular polygon / Number of sides / Number of lines of symmetry / Rotational symmetry of order … Triangle Quadrilateral (square) Pentagon Hexagon Heptagon Octagon Nonagon Decagon				Find and mark any lines of symmetry on these regular polygons. These can be vertical, horizontal or diagonal. **a** A square has ____ lines of symmetry. **b** An equilateral triangle has ____ lines of symmetry. **c** An octagon has ____ lines of symmetry. **d** A hexagon has ____ lines of symmetry.	Calculate the size of the angles in each shape. What's the same? What's different?

How to work out percentages

To find **1% of a number…**	divide it by 100
To find **10% of a number…**	divide it by 10
To find **5%**	find 10% then halve it
To find **25% of a number**	divide it by 4
To find **50% of a number**	divide it by 2
To find **20%, 30%, 40%, 60%**, etc.	find 10% and then multiply by 2, 3, 4, 6, etc.

Turn these shapes in your head. Do they have rotational symmetry? If so, what is the order?

a b c d

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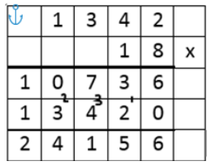
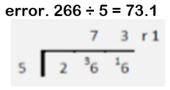
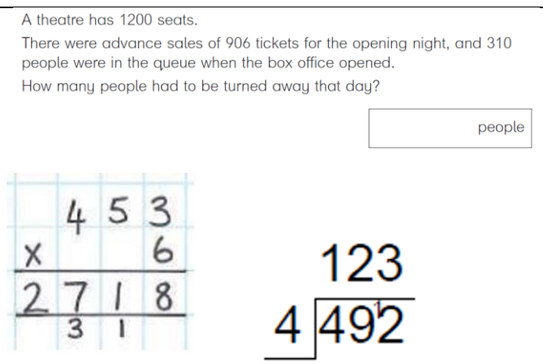
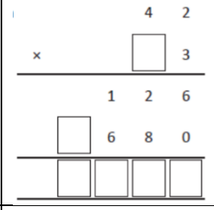
9.	All four operations: Mental and written methods.	Knows the efficient written algorithms for addition and subtraction with increasing fluency for large numbers. Knows the formal written method of short multiplication and short division with exact answers.	Knows efficient methods for adding, subtracting, multiplying and dividing	● To add and subtract numbers with up to four digits using the efficient written methods of columnar addition and subtraction where appropriate. ● To multiply two-digit and three-digit numbers by a one-digit number using formal written layout. ● To estimate and use inverse operations to check answers to a calculation. ● To solve two-step problems in contexts, deciding which operations and methods to use and why.	● To add and subtract numbers mentally with increasingly large numbers ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To multiply and divide numbers mentally drawing upon known facts.
Links to resources and policy documents:  Correct the errors in the calculation below. Explain the error. 266 ÷ 5 = 73.1 				 	 
10.	Fractions: Factors, multiples and simplifying Calculating	Knows how to make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. Knows how to use factors and multiples to recognise equivalent fractions and simplify where appropriate.	Knows how to calculate with fractions. Knows how to find LCM and HCF for simplifying.	● To 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. ● To recognise and write decimal equivalents of any number of tenths or hundredths. ● To recognise and write decimal equivalents to $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$	● To add and subtract fractions with the same denominator and multiples of the same number. ● To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

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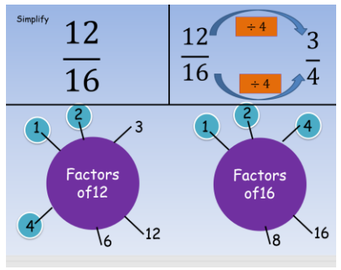
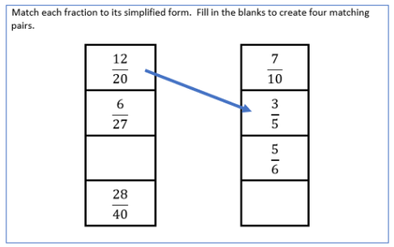
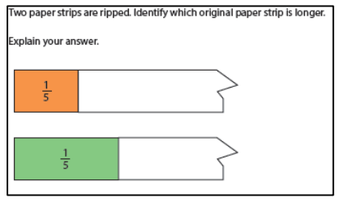
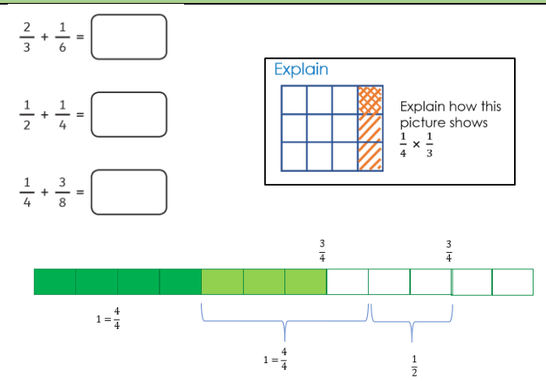
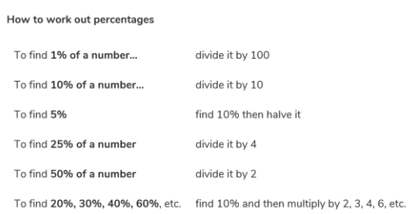
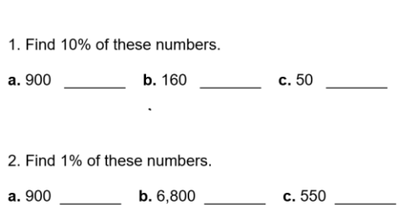
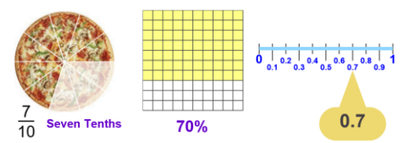
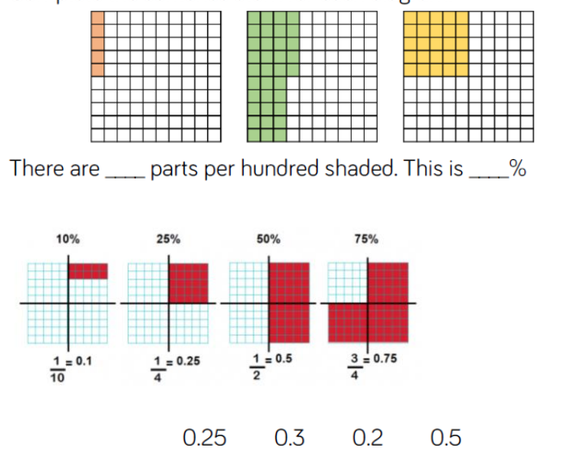
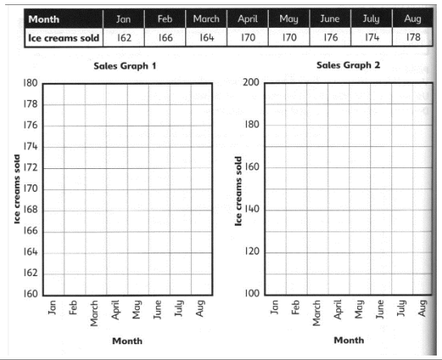
Links to resources and policy documents:  				 	
11.	Fractions Calculating %	Knows the effect on a number when it is multiplied or divided by 10 or 100.	Knows how to find 10% and 1% of an amount using division by 10 and 100.	● To find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths; ● To solve simple measure and money problems involving fractions and decimals to two decimal places.	● 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.
Links to resources and policy documents:   Becky shared a chocolate bar with her two friends. She gave 40% to Ella and 25% to Ben. What percentage did she keep?					
12.	Statistics; Reading timetables line graphs	Knows how to use a greater range of scales in their representations. Knows the graphical representation of data	Knows how to read a timetable and complete missing information.	● To interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs. ● To solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and simple line graphs	●To complete, read and interpret information in tables, including timetables ● To solve comparison, sum and difference problems using information presented in a line graph;

WRPS Maths Medium Term Planning: Summer Term Year 4 Year 5

Week.	Mathematical aspect	Non-negotiable end points Year 4.	Non-negotiable end points Year 5	Curriculum statements – Year 4.	Curriculum Statements. Year 5.
		to record change over time.			

Links to resources and policy documents:

Month	Jan	Feb	March	April	May	June	July	Aug
Ice creams sold	162	166	164	170	170	176	174	178



This timetable shows the morning flights from Manchester to London.
The timetable shows the times and days of the flights.

Dep	Arr	Airline	Flight number	Mon	Tue	Wed	Thur	Fri	Sat	Sun
06:00	07:00	B.A.	BA1371	✓	✓			✓		
07:20	08:30	B.A.	BA1385						✓	
07:25	08:25	V.A.A.	VS3046	✓	✓	✓	✓	✓	✓	✓
07:25	08:35	B.A.	BA1385	✓	✓	✓	✓			✓
07:35	08:45	B.A.	BA1385					✓		
08:35	09:45	B.A.	BA1373			✓	✓			
08:50	10:00	B.A.	BA1387	✓	✓	✓	✓	✓		✓
09:50	11:00	B.A.	BA1389		✓				✓	✓
09:55	11:05	B.A.	BA1389	✓				✓		
10:40	11:40	V.A.A.	VS3042	✓	✓	✓	✓	✓	✓	✓
11:20	12:30	B.A.	BA1391	✓		✓				
11:25	12:35	B.A.	BA1391		✓		✓	✓		

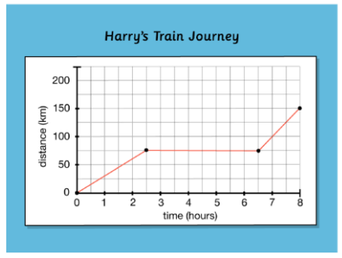
Answer these questions.

a) What is the longest flight time?

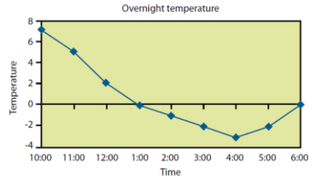
b) How many flights to London are there on a Friday?

c) Dev arrives at Manchester Airport at 08:00 on Saturday for the next flight to London.
At what time will he arrive in London?

Harry travels on a train to work for the day, and then returns home. How many hours did Harry spend travelling?



Look at this 'Overnight temperature' graph for a desert area. It shows the outside temperatures in °C.



What was the highest temperature? When did it occur?
What was the lowest temperature? When did it occur?
When was the temperature at freezing point (0 °C)
How far did the temperature fall from 11:00 pm to 3:00 am?
How long did the temperature stay below zero?
How long did the temperature stay above zero?
Roughly what temperature was it at 11:30 pm?