



Week.	Mathematical aspect	Non-negotiable end points Year 3.	Non-negotiable end points Year 4	Curriculum statements – Year 3.	Curriculum Statements. Year 4.																				
1.	Number and place value: Roman Numerals Read, write and order and round two, three and four digit numbers, Negative numbers	Knows the standard form for writing numbers up to 1000. Knows how to write numbers in words.	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.	<ul style="list-style-type: none"> To recognise the place value of each digit in a three-digit number (hundreds, tens, ones). To compare and order numbers up to 1000. To identify, represent and estimate numbers using different representations. To read and write numbers up to 1000 in numerals and in words. To solve number problems and practical problems involving these ideas. 	<ul style="list-style-type: none"> 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. 																				
Links to resources and policy documents: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>400 + 90 + 2 492 Four hundred and ninety two</p> <p>500 + 40 + 7 547 Five hundred and forty seven</p> <p>200 + 4 204 Two hundred and four</p> </div> <div style="width: 45%; text-align: center;"> <p>Roman numeral match</p> <table border="0"> <tr><td><input type="text" value="100"/></td><td><input type="text" value="LI"/></td></tr> <tr><td><input type="text" value="29"/></td><td><input type="text" value="XCIX"/></td></tr> <tr><td><input type="text" value="33"/></td><td><input type="text" value="C"/></td></tr> <tr><td><input type="text" value="94"/></td><td><input type="text" value="XXVI"/></td></tr> <tr><td><input type="text" value="75"/></td><td><input type="text" value="LXVIII"/></td></tr> <tr><td><input type="text" value="26"/></td><td><input type="text" value="XLVIII"/></td></tr> <tr><td><input type="text" value="51"/></td><td><input type="text" value="XXIX"/></td></tr> <tr><td><input type="text" value="48"/></td><td><input type="text" value="XXXIII"/></td></tr> <tr><td><input type="text" value="68"/></td><td><input type="text" value="XCIV"/></td></tr> <tr><td><input type="text" value="99"/></td><td><input type="text" value="LXXV"/></td></tr> </table> </div> </div>				<input type="text" value="100"/>	<input type="text" value="LI"/>	<input type="text" value="29"/>	<input type="text" value="XCIX"/>	<input type="text" value="33"/>	<input type="text" value="C"/>	<input type="text" value="94"/>	<input type="text" value="XXVI"/>	<input type="text" value="75"/>	<input type="text" value="LXVIII"/>	<input type="text" value="26"/>	<input type="text" value="XLVIII"/>	<input type="text" value="51"/>	<input type="text" value="XXIX"/>	<input type="text" value="48"/>	<input type="text" value="XXXIII"/>	<input type="text" value="68"/>	<input type="text" value="XCIV"/>	<input type="text" value="99"/>	<input type="text" value="LXXV"/>	Write the numbers in standard form $300 + 60 + 3$ $400 + 6$ $900 + 30 + 1$ Now write the numbers in words. Which of these are not correct? 457 Four hundred and seventy five 600 + 8 Six hundred and eighty 719 Seven hundred and nineteen	Circle the Roman numerals that stand for 50. I V X L C What are the values of these Roman Numerals? II = <input type="text"/> VII = <input type="text"/> XXI = <input type="text"/> XI = <input type="text"/> XV = <input type="text"/> XIX = <input type="text"/> XXIX = <input type="text"/> XXV = <input type="text"/> XXIV = <input type="text"/>
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2.	Number and place value: Sequences Negative and positive numbers	Knows how to count in step sizes and estimate numbers	Knows how to find the difference between negative and positive numbers.	<ul style="list-style-type: none"> To count from 0 in multiples of 4, 8, 50 and 100, finding 10 or 100 more or less than a given number. To solve number problems and practical problems involving these ideas. 	<ul style="list-style-type: none"> To count in multiples of 6, 7, 9, 25 and 1000; To count backwards through zero to include negative numbers. 																				
Links to resources and policy documents: Positive and Negative Numbers 				Complete the number lines 	Find the missing numbers in each pattern: 24, 32, 40, _____, _____, _____ 20, 24, 28, 32 _____, 40, _____, _____ 150, 200, _____, 300, _____, _____ <div style="border: 1px solid blue; padding: 5px; display: inline-block; background-color: #0056b3; color: white;"> Explain the mistake </div> <div style="border: 1px solid blue; padding: 5px; display: inline-block;"> 450, 500, 550, 600, 700, 800 </div>	What numbers are the arrows pointing at? The day temperature was three degrees Celsius. At night, the temperature dropped seven degrees. What was the night temperature? <input style="width: 50px;" type="text"/> °C																			



3.	Addition and subtraction of three-digit numbers and 1s, 10s and 100s Solving problems	Knows the compact algorithms for addition and subtraction including regrouping and exchanging.	Knows how to choose the order of calculations in two step problems.	<ul style="list-style-type: none"> ● To add and subtract numbers mentally, including: <ul style="list-style-type: none"> ● a three-digit number and ones ● a three-digit number and tens ● a three-digit number and hundreds. ● To estimate the answer to a calculation and use inverse operations to check answers. ● To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. 	<ul style="list-style-type: none"> ● 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.
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Links to calculation policy expanded and compact methods.

Columnar addition

$$\begin{array}{r} 625 \\ + 48 \\ \hline 673 \\ 1 \end{array}$$

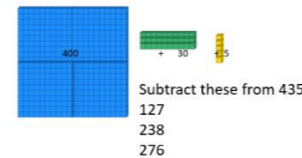
Regroup the 10

Columnar subtraction

$$\begin{array}{r} 625 \\ - 286 \\ \hline 339 \end{array}$$

Exchange from tens to ones, hundreds to tens

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?



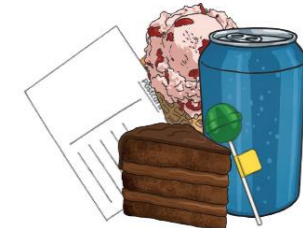
Subtract these from 435
127
238
276

812	115	736	515	617
164	380	111	953	528
957	517	150	569	772
342	408	456	581	567
770	388	40	417	167

- 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

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?

4.	Multiplication and Division: Commutativity and associativity Solving problems including correspondence problems.	Knows how to represent problems including <i>four times as long, twice as high etc</i> Knows the commutative and associative laws for multiplication	Knows how to solve integer scaling problems and harder correspondence problems.	<ul style="list-style-type: none"> ● To recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. ● To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. ● To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which <i>n</i> objects are connected to <i>m</i> objects. 	<ul style="list-style-type: none"> ● 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 solve problems involving multiplying and adding, including using the distributive law and harder multiplication problems such as which <i>n</i> objects are connected to <i>m</i> objects.
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Everyone in the Patel family likes toast for their breakfast, with either jam or marmalade. Two people say their favourite spread is jam. There are four more marmalade-lovers than jam-lovers. How many people are in the family altogether?



8 in the family altogether.

Claire is given 48 packets of sweets. Each packet contains 6 sweets. How many sweets does Claire have altogether?

Sam has four times as many toy cars than Amy. If Amy has 16 toy cars, how many does Sam have?

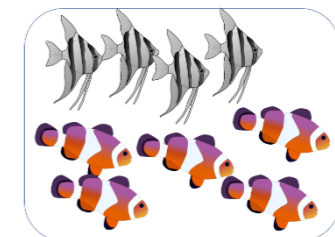


One weekend Sam played twice as many games of tennis than Alex did, and together they played 12 games. How many games did Alex play?



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?



There are 36 angel fish at the aquarium. How many clown fish are there?



5.	Measurement: converting between units of measure, area and perimeter, solving problems.	Knows how to add and subtract in the context of measures.	Knows how to use multiplication to convert from larger to smaller units. Knows perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.	<ul style="list-style-type: none"> To measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml). 	<ul style="list-style-type: none"> To convert between different units of measure (for example, kilometre to metre; hour to minute). 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.
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Links to resources and policy documents:

Calculate the perimeter of the rectangles.

___ cm + ___ cm + ___ cm + ___ cm = ___ cm

Measure the perimeter of these shapes.

a) Perimeter = ___ cm

b) Perimeter = ___ cm

c) Perimeter = ___ cm

Which of the two shapes covers most surface?

How do you know?

Jack uses his times-tables to count the squares more efficiently.

There are 4 squares in 1 row.
There are 3 rows altogether.
3 rows of 4 squares = 12 squares

Use Jack's method to find the area of this rectangle.

Amy has 400ml of juice in a jug. She pours two equal glasses of juice from the jug. She now has 50ml left on the jug. How much juice is in one glass?

Which of the following statements make sense? Tick those that do. For those that don't, suggest an alternative.

An apple has a mass of about 100 grams	
A child is about 120 millimetres tall	
A sensible portion of cereal has a mass of about 40 metres	
A ruler is about 300 millilitres long	

Calculate the perimeter of the shapes.

Find the perimeter of the shapes.

A shape has an area of 19 squares. Can the shape be a rectangle? How do you know?

6.	Geometry: Properties of shape, symmetry	Knows how to describe and classify shapes using mathematical properties.	Knows the properties of regular and irregular polygons.
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- To draw 2D shapes and make 3D shapes using modelling materials; recognise 3D shapes in different orientations and describe them with increasing accuracy.
- To identify horizontal, vertical, perpendicular and parallel lines in relation to other lines.

- 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 compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular

Shade three squares so that this design is symmetrical in the line of symmetry.

Line of symmetry

Equilateral Triangle
(all sides equal, all angles equal)

Isosceles Triangle
(two sides equal, two angles equal)

Scalene Triangle
(no sides equal, no angles equal)

Always, sometimes, never

A square is also a rectangle.

A triangle always has a right angle.

A pentagon can have right angles.

Build three different 3d shapes.
What is the same and what is different?

Complete the shapes according to the line of symmetry.



7.	All four operations: Mental and written methods.	Knows how to multiply/divide two-digit numbers by one-digit numbers using expanded or formal written methods of short multiplication and division.	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.	<ul style="list-style-type: none"> • To write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. • To solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects. • To solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. 	<ul style="list-style-type: none"> • 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.
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Links to calculation policy methods.

$3 \times 4 \times 2 = 24$
Jane did 3×4 then doubled for $\times 2$.
James did $4 \times 2 = 8$, then 8×3 .

96
90 + 6
60 + 36

Use this model to calculate

16
 $6(9 \div 6)$
 $72 \div 3$
 $84 \div 6$

Associativity
 $(2 \times 3) \times 4 = 2 \times (3 \times 4)$

Commutative law

9	12	15	18	21
12	16	20	24	28
15	20	25	30	35

How would you do it? $4 \times 6 \times 3$
 $3 \times 10 \times 8$
 $2 \times 8 \times 4$

What is the missing value?
 $4 \times \bullet \times 6 = 240$
 $8 \times 2 \times \bullet = 64$
 $\bullet \times 3 \times 5 = 45$

\times	30	5
8	240	40

35
 $\times 8$
40
240
280

Use this model to calculate
 72×4
 64×3

How many ways can you find to multiply three numbers and make 120?
E.g. $5 \times 12 \times 2$

Calculate:

a) $4 \times 3 \times 12$

b) 200×6

c) $2400 \div 8$

d) $1734 - 48$

e) $3479 + 2667$

f) $5334 - 2785$

8.	Fractions: Factors, multiples and simplifying Calculating Equivalence, addition and subtraction within 1	Knows unit and non-unit fractions as numbers on the number line and how to represent equivalence.	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.	<ul style="list-style-type: none"> • To recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators; • To recognise and show, using diagrams, equivalent fractions with small denominators; • To add and subtract fractions with the same denominator within one whole [for example, $+ =$]; • To compare and order unit fractions, and fractions with the same denominators; • To solve problems that involve all of the above. 	<ul style="list-style-type: none"> • 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 $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}$
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Write three fraction equations for this model.

Answer

$\frac{3}{8} + \frac{4}{8} =$

$\frac{5}{7} - \frac{2}{7} =$

True or false?

$\frac{5}{6} + \frac{2}{6} = \frac{7}{12}$

$\frac{13}{20} - \frac{3}{20} = \frac{1}{2}$

Do both of these models show $\frac{4}{10}$?

Convince me that $\frac{5}{10} = \frac{1}{2}$

Match each fraction and decimal to the corresponding image.

0.75

0.5

0.25

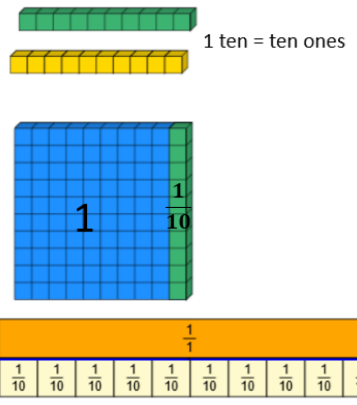
$\frac{1}{4}$

$\frac{3}{4}$

$\frac{1}{2}$



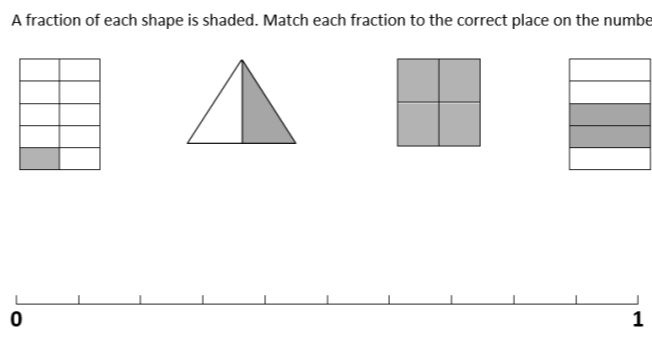
9.	Fractions: Decimals and fractions in the context of measurements.	Knows how to connect tenths to place value, decimal measures and to division by 10.	Knows that decimals and fractions are different ways of expressing numbers and proportions. Knows decimal notation and the language associated with it, including in the context of measurements.	<ul style="list-style-type: none"> To count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10; 	<ul style="list-style-type: none"> 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 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.
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1 ten = ten ones

Image	Words	Fraction	Decimals
	56 hundredths		
		$\frac{17}{100}$	
			0.2


A fraction of each shape is shaded. Match each fraction to the correct place on the number line.



A bag of doughnuts cost £1.25. 

Liz and John want to buy 4 bags.


If Liz pays £2.15, how much must John pay?

Max is 1.62m tall. 

He is 47cm taller than his sister.

How tall is his sister?

10.	Measurement: time 12-hour, 24-hour clocks	Knows the time in 12- hour and 24-hour representations. Knows the number of seconds in a minute and the number of days in each month, year and leap year.	Knows how to read, write and convert time between analogue and digital 12- and 24- hour clocks.	<ul style="list-style-type: none"> To tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks. To estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as am/pm, morning, afternoon, noon and midnight. To know the number of seconds in a minute and the number of days in each month, year and leap year. To compare durations of events, for example to calculate the time taken by particular events or tasks. 	<ul style="list-style-type: none"> To read, write and convert time between analogue and digital 12- and 24- hour clock To solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to day.
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7 o'clock
7:00 pm
19:00

Half past 1
1:30 am
01:30

Ten past 2
10:10 pm
22:10

Draw these times on a clock face

26 minutes past one
14 minutes to seven
12 minutes past 9



Put these times on order starting at midnight

5 past two, am
7 minutes to 6, pm
Quarter to 9, am
Half past 11, pm
25 to 8, pm

What comes next?

I II III

VIII IX X

Complete the statements:

There are seconds in one minute


There are days in one year

There are days in a leap year

There are days in December

There are days in April

There are days in June



Show these times on an analogue clock.
Write them in am or pm.

Put these times in order from midnight.

17:45 03:18 23:07 06:24

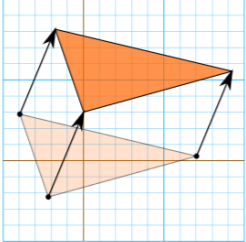


11.	Geometry: Position and direction	Know how to describe positions and movement using the correct terms	Know how to describe positions as translations using the correct terms	<ul style="list-style-type: none"> To describe movements between positions as translations of a given unit to the left/right and up/down. 	<ul style="list-style-type: none"> To describe a position on a 2D grid as coordinates in the first quadrant. To describe movements between positions as translations of a given unit to the left/right and up/down. To plot specified points and draw sides to complete a given polygon.
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To Translate a shape:

Every point of the shape must move:



- the same distance
- in the same direction.



The Beebot is going to draw this rectangle.

What instructions would you program in?

You can use the word bank to help you.

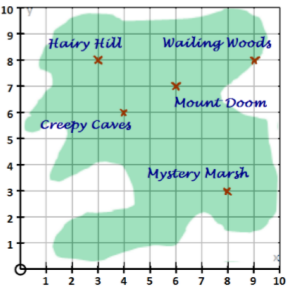
Word bank:

- Forwards – ↑
- Backwards – ↓
- Clockwise – ↻
- Anti-clockwise – ↺
- Quarter-turn – ↻

The pirates have buried their treasure somewhere on Tremlock Island. They drew a map to help them remember where. Unfortunately before they could add the X they had a disagreement and fell out.

Jolly Jane knows the treasure is buried at the corner of an isosceles triangle that has Hairy Hill and Wailing Woods at its other two vertices.

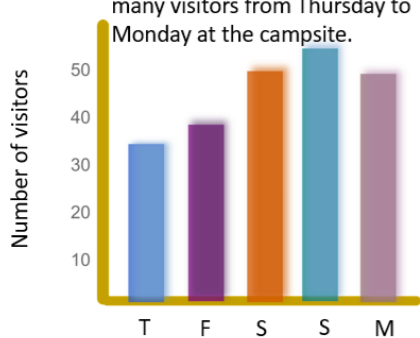
Mean Michael knows the treasure is also the final vertex when a rectangle is drawn with Mount Doom, Creepy Caves and Mystery Marsh at its other three vertices.



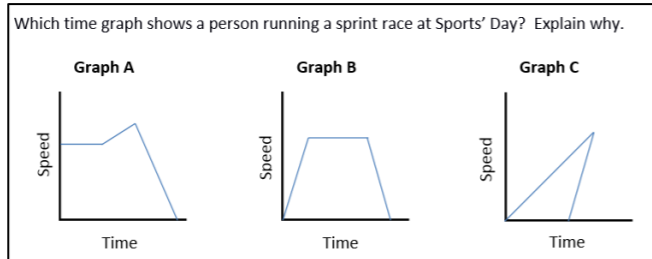
What are the coordinates where the X should be? (,)

12.	Statistics; Reading timetables line graphs, read, present and interpret pictograms and tables	Knows how to present data in many contexts.	Knows how to use a greater range of scales in their representations. Knows the graphical representation of data to record change over time.	<ul style="list-style-type: none"> To interpret and present data using bar charts, pictograms and tables To solve one-step and two-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts and pictograms and tables. 	<ul style="list-style-type: none"> 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
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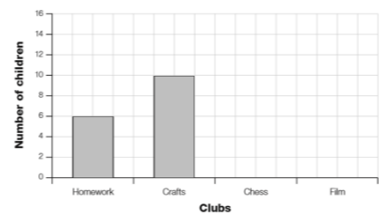
The bar graph shows how many visitors from Thursday to Monday at the campsite.



Which time graph shows a person running a sprint race at Sports' Day? Explain why.



Complete the bar chart



Chess	Film
9	12

How many fewer children go to homework club than crafts?

A family were driving along the motorway. To pass the time they counted the different colours of cars that they saw.

Colour	Frequency
Silver	8
Red	5
Black	12
Pink	1

Here is a table of results for the first two minutes. Construct a bar chart of their results.

