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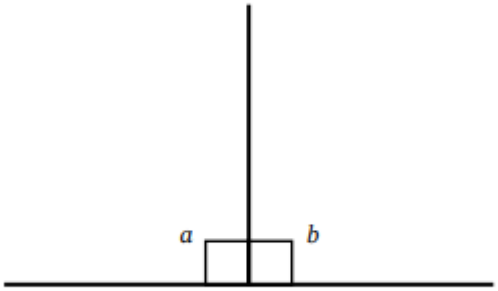
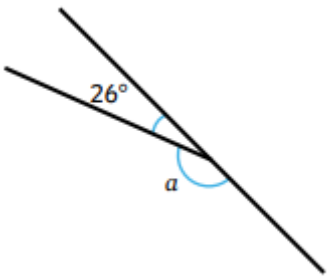
Power Maths Key Vocabulary
Year 6 – Block C

Key Vocabulary	Explanation of Terms	Example Question(s)
degree	Degrees are a unit of angle measure. A full circle is divided into 360 degrees. For example, a right angle is 90 degrees. A degree has the symbol ° and so ninety degrees would written 90°.	Two straight lines are drawn in order to make angles a and b. Tick the statements that are true. Correct any incorrect statements.  • a + b = 180° • If angle a was increased by 50°, then it would equal 140°. • If angle a was decreased by 75°, then it would equal 10°. • If angle b was increased by 30°, then angle a would now equal 50°. Identify the type of A angle below. (a + b = 180° True If angle a was increased by 50°, then it would equal 40° True If angle a was decreased by 75°, then it would equal 10° False. It would equal 15°. If angle b was increased by 30°, then angle a would equal 50° False. If b was increased by 30°, it would equal 120°. This would mean angle a would equal 60°.)
angle	An angle is a measure of a turn, measured in degrees or °. There are 360° in a full turn. You can find out the size of an angle using a protractor.	Calculate the missing angles. 

<table>
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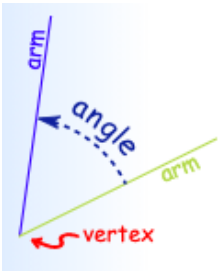
<td></td>
<td> 
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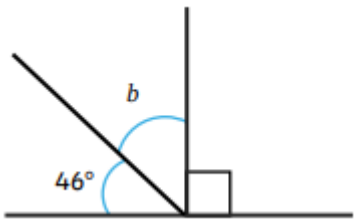
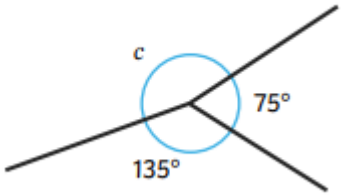
<td> 



Angle a = 154° Angle b = 44° Angle c = 150°</td>
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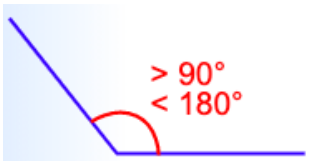
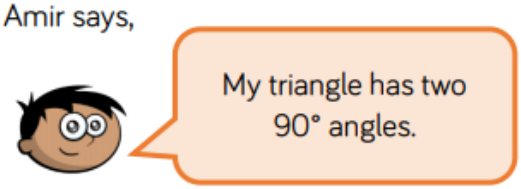
<tr>
<td>obtuse</td>
<td>An obtuse angle has a measurement greater than 90 degrees but less than 180 degrees.
 

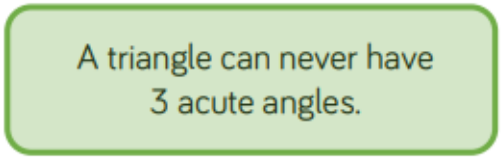
Examples of obtuse angles are: 100°, 120°, 140°, 160°, 170° etc.</td>
<td rowspan="4">There are five equal angles around a point. What is the size of each angle? Explain how you know.
(72° because 360 ÷ 5 = 72)

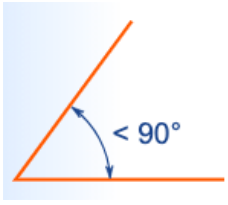
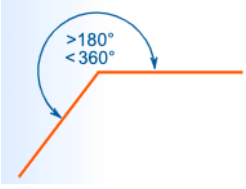
Four angles meet at the same point on a straight line. One angle is 81° The other three angles are equal. What size are the other three angles? Draw a diagram to prove your answer.
(180 − 81 = 99°, 99 ÷ 3 = 33°)

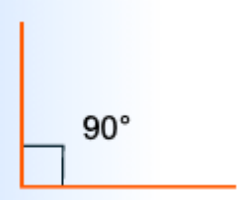
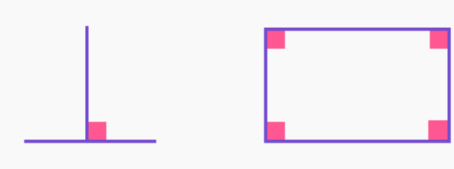
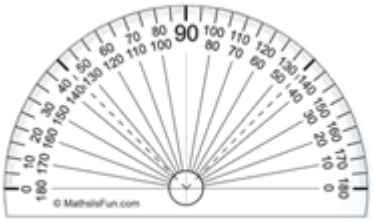
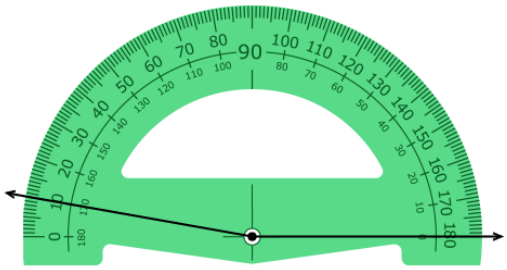
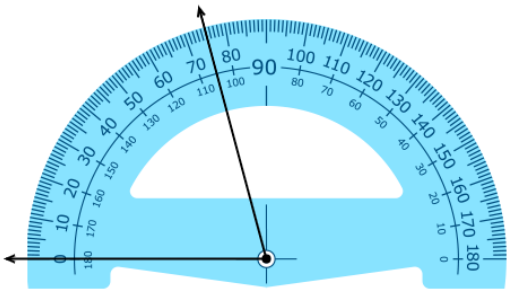
Amir says,
 

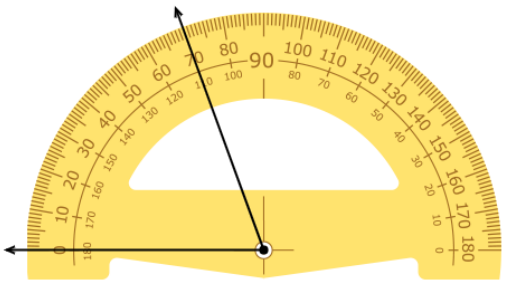
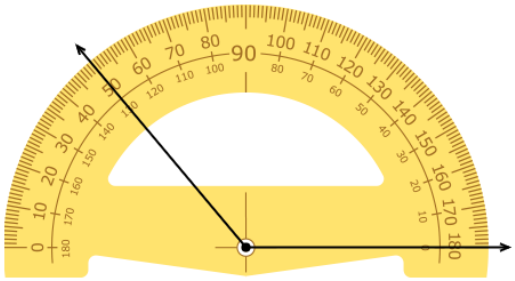
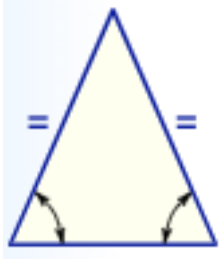
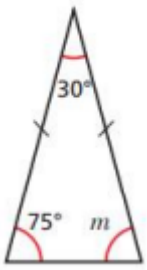
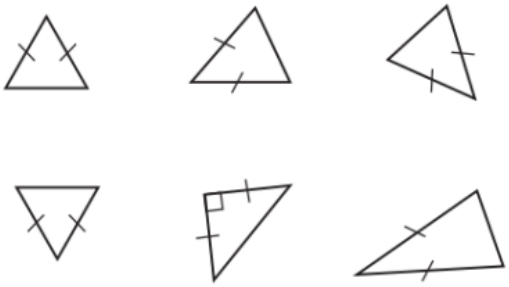
Can Amir be correct? Can you demonstrate this?

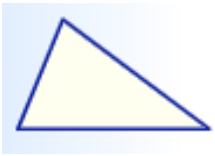
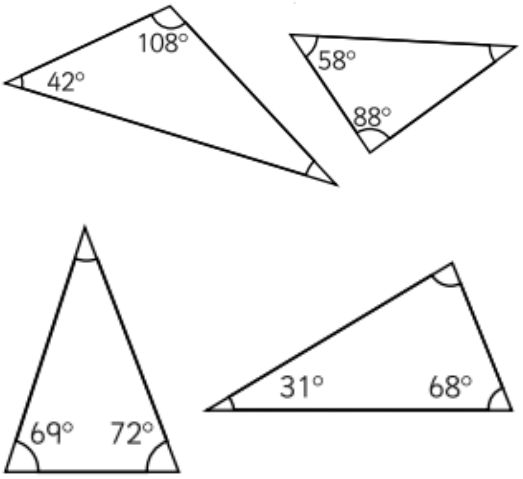
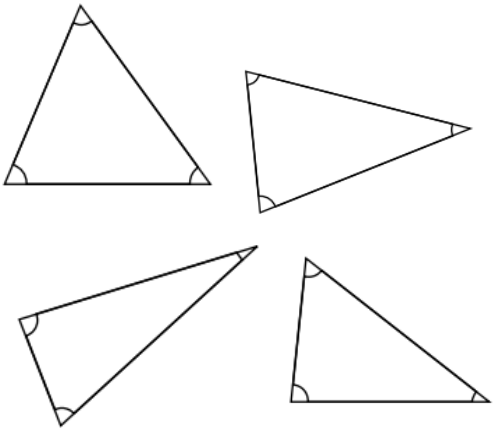
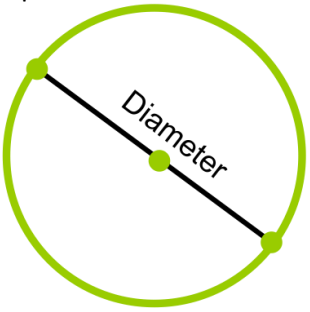
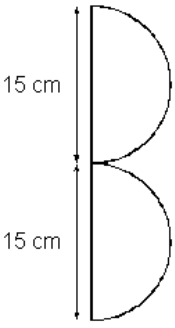
(Amir can’t be correct because these two angles would add up to 180 degrees, and the third angle can’t be 0 degrees.)

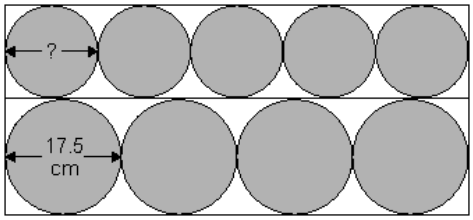
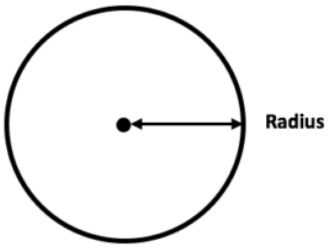
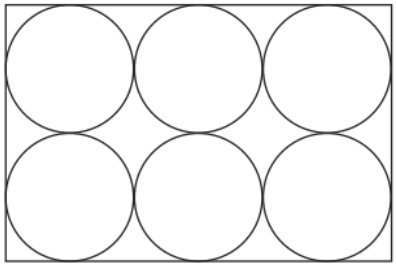
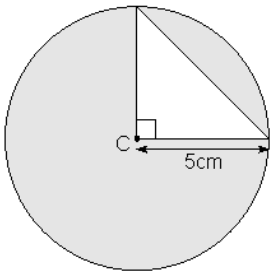
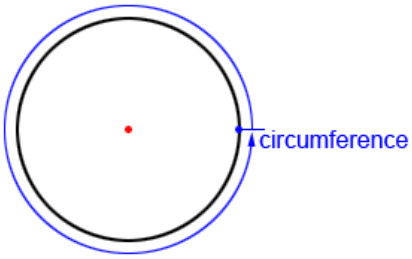
True or False?
 

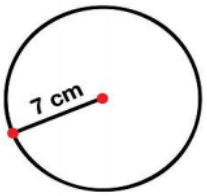
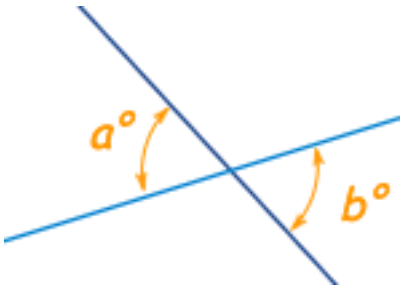
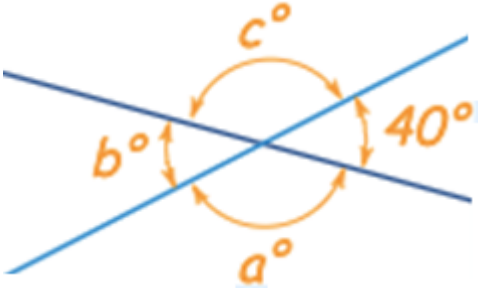
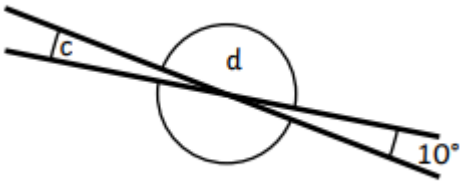
(False)</td>
</tr>
<tr>
<td>acute</td>
<td>An acute angle is an angle that measures between 90° and 0°, meaning it is smaller than a right angle (an “L” shape) but has at least some space between the two lines that form it. A “V” shape is an example of an acute angle.
 
</td>
</tr>
<tr>
<td>reflex</td>
<td>A reflex angle is more than 180° but less than 360°.
 
</td>
</tr>
<tr>
<td>right angle</td>
<td>A right angle is equal to 90°, one quarter of a full revolution.</td>
</tr>
</table>

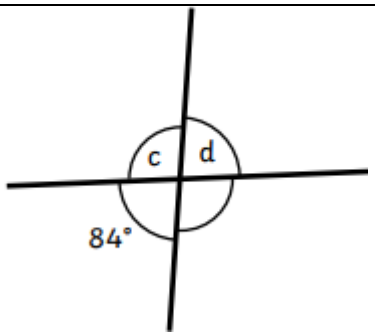
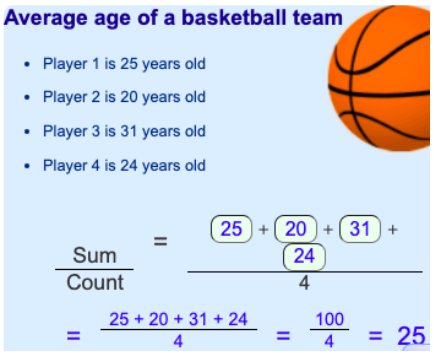
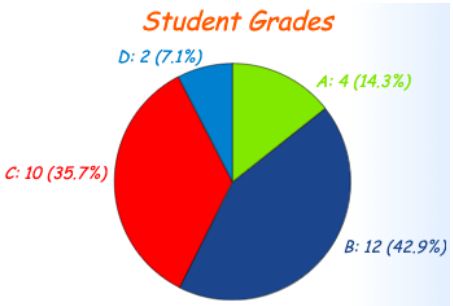
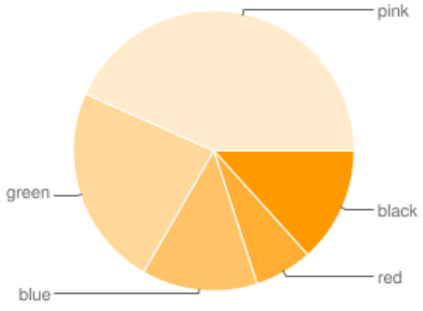
	 We can find the right angles in shapes. A square or rectangle has four corners with right angles. All triangles with one angle right are called right-angled triangles.  	Eva says,  My triangle is a scalene triangle. One angle is obtuse. One of the angles measures 56° The obtuse angle is three times the smallest angle. Work out the size of each of the angles in the triangle. (The interior angles of Eva's triangle are 56°, 93° and 31°) Can you have an isosceles right-angled triangle? (no)
protractor	A protractor is an instrument in the form of a semicircle, used for plotting and measuring angles. 	Measure the following angles:  

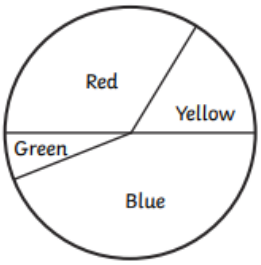
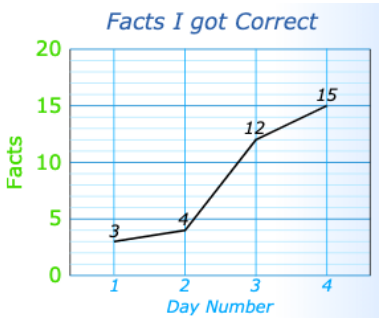
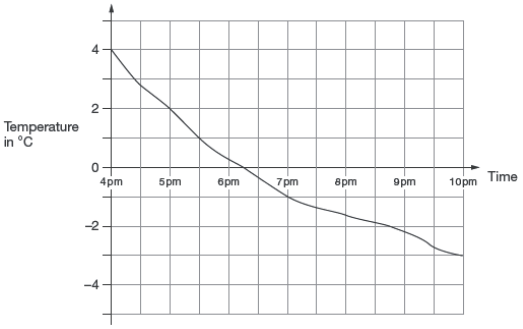
		  (170°, 75°, 70°, 130°)
isosceles triangle	An isosceles triangle is a triangle with two equal sides. The angles opposite the equal sides are also equal. 	Here is a triangle. What type of triangle is it? (isosceles) How do you know? (it has two equal sides and two equal angles) Work out the size of angle m? (75°)  Identify and label the angles which will be equal in each triangle.  One angle in an isosceles triangle is 29°. What could the other angles be? Give two possible answers. (29° and 122° or 75.5° and 75.5°)
scalene triangle	A scalene triangle is a triangle that has three unequal sides all of different lengths. All angles are different, too.	Calculate the missing angles in these scale triangles.

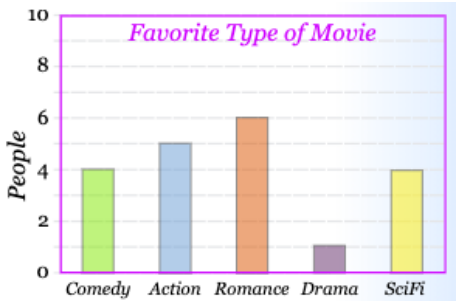
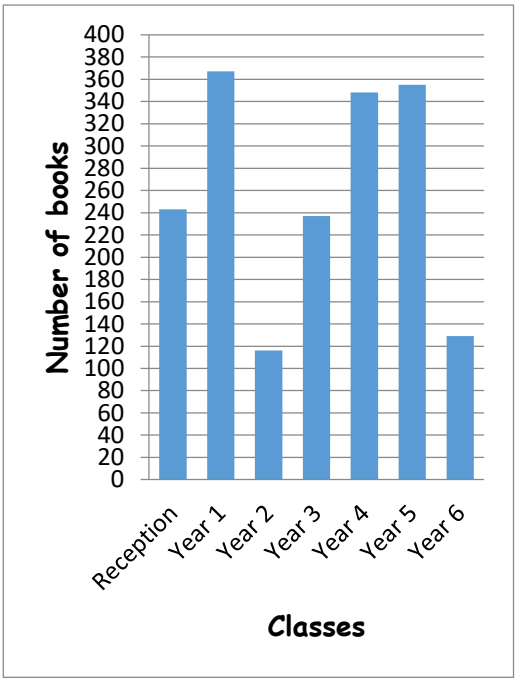
		 (30°, 34°, 39°, 81°) Estimate the missing angles in these scalene triangles. Measure the angles when you have finished to check how accurate your estimations were.  (triangle 1: 59°, 67°, 54° triangle 2: 70°, 74°, 36° triangle 3: 89°, 69°, 25° triangle 4: 58°, 38°, 84°)
diameter	The diameter is the distance from one point on a circle through the centre to another point on the circle. 	 Ben makes a letter 'B' out of a piece of wire. It has a straight side and two equal semicircles. Each semicircle has a diameter of 15cm. Calculate the total length of the wire. (77cm) Four large circles and five small circles fit exactly inside this rectangle.

		 The diameter of a large circle is 17.5 centimetres. Calculate the diameter of a small circle. (14cm)
radius	The radius is the distance from the centre of the circle to the outside of the circle. It is half of the circle's diameter. 	This design is made up with 6 circles, each with a radius of 14cm, inside a rectangle. Calculate the length and width of the rectangle.  (length: 84cm, width: 56cm) The diagram shows a right-angled triangle inside a circle. The circle has a radius of 5 centimetres. Calculate the area of the triangle.  (12.5cm or 12½cm)
circumference	The circumference is the distance around the outside of a circle. It is a type of perimeter. 	How is circumference similar to perimeter? How is it different? (Circumference and perimeter both measure distance around a shape. Perimeter is the distance around a polygon with straight sides. Circumference is distance around a circle.) Every year March 14 is known as International Pi Day. Why was this particular day chosen to celebrate pi?

		(When you write the date for March 14, it looks like this: 3/14 (third month of the year, fourteenth day). 3.14 is also the number for pi, which is why March 14 is the ideal time to celebrate pi day.)  The radius of this circle is: The diameter of this circle is: The circumference of this circle is: (The radius of this circle is 7 cm. The diameter of this circle is 14 cm. The circumference of this circle is 43.96 cm.)
vertically opposite angles	When two lines intersect each other, then the opposite angles, formed due to intersection are called vertical angles or vertically opposite angles. A pair of vertically opposite angles are always equal to each other.  a° = b°	Find the angles a, b and c below:  (Because b, Is vertically opposite 40°, it must also be 40°. A full circle is 360°, so that means c + a = 280°. Angles a and c are vertically opposite angles, so must be equal. Therefore they are both 140°.) Calculate the missing angles:  (c = 10°, d = 170°)

		 (c = 96° , d = 84°)
average **mean**	The average value (mean) in a set of numbers is the middle value, calculated by dividing the total of all the values by the number of values. When we need to find the average of a set of data, we add up all the values and then divide this total by the number of values. 	6 friends are going on holiday and it works out to be £120 each. 1 of them is the birthday boy so his friends decide to cover his cost. How much do all 5 friends need to pay each now? (£144) The average of a list of 6 numbers is 20. If we remove one of the numbers, the average of the remaining numbers is 15. What is the number that was removed? (45) The mean weight of a group of seven boys is 56kg. The individual weights of six of them are 52kg, 57kg, 55kg, 60kg, 59kg and 55kg. Find the weight of the seventh boy. (54kg)
pie chart	A pie chart is a special chart that uses 'pie slices' to show relative sizes of data. The chart is divided into sectors, where each sector shows the relative size of each value. 	The pie chart shown below shows favourite colours of a group of people.  Find the total number of people in the survey, given that 7 people prefer green. (30) The table below shows the favourite car brands of 30 people. Calculate the angle for each colour and construct a pie chart.

		<table><tr><td>Colour</td><td>Toyota</td><td>Honda</td><td>Ford</td><td>VW</td><td>BMW</td></tr><tr><td>Frequency</td><td>5</td><td>1</td><td>3</td><td>7</td><td>14</td></tr><tr><td>Angle</td><td></td><td></td><td></td><td></td><td></td></tr></table> (Toyota = 60 °, Honda = 12 ° Ford = 36 °, VW = 84 °, BMW = 168 °) This pie chart shows the favourite colour of each member of a class.  3 of children have red as their favourite colour. Nine times as many children prefer blue to green. Give the number of degrees represented by each colour on the pie chart. Red = Yellow = Green = Blue = (Red: 120° Yellow: 60° Green: 18° Blue: 162°)
line graph	A line chart or line graph is a type of chart which displays information as a series of data points called 'markers' connected by straight line segments. Examples: How you are improving at a quiz question each day. 	This graph shows the outside temperature from 4pm to 10pm on a day in winter.  a) What was the lowest temperature recorded on the chart? (-3°C) b) By how much did the temperature decrease in the first hour? (2°C) c) At what time did the temperature reach freezing point? (18:15) d) How far did the temperature drop between 4pm and 10pm? (7°C) e) Estimate the temperature at 7.30. (-1.3°C) f) Estimate the time when the temperature was exactly -2. (20:45) g) For how long was the temperature below 0? (3 ¾ hours)

		h) During which hour did the temperature fall by 2 degrees? (between 16:00 and 17:00)
bar chart **bar graph**	Bar charts are a type of graph that are used to display and compare the number, frequency or other measure (e.g. mean) for different discrete categories of data. The chart is constructed such that the lengths of the different bars are proportional to the size of the category they represent. The bars can be horizontal or vertical.  	A graph to show the number of books each class has read.  1. Miss Key wanted her class to read 450 books. How many more books did Year 3 need to read? (213) 2. What was the total number of books read by Year 6 and Reception? (372) 3. What is the sum of books read by Year 1 and Year 2? How many more books did Year 1 read? (483) 4. Year 4 and 5 read 703 books. What is the difference between their total and the total of books read by both Year 3 and Year 6? (337) 5. Did Year 1 read more books than the total of books read by Year 6 and Year 2? What is the difference between the two totals? (Year 1 read more – 122) 6. How many fewer books did Year 2 read than Year 3? (121)