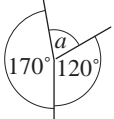
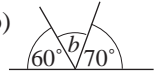
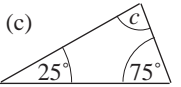
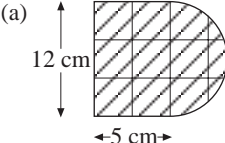
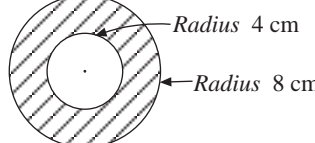
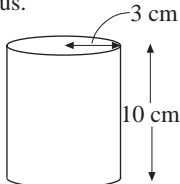




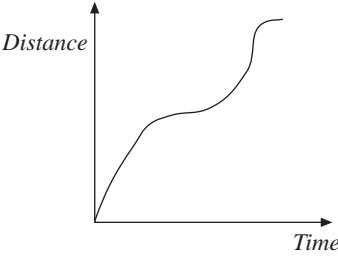



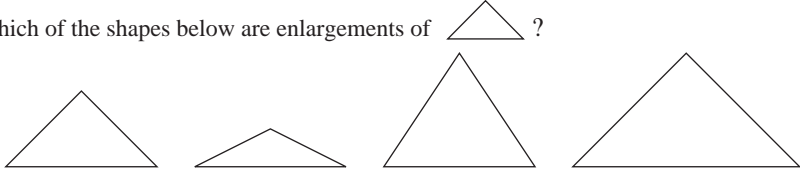
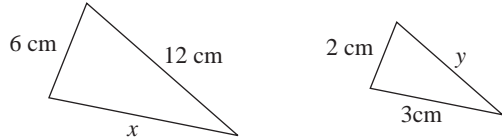
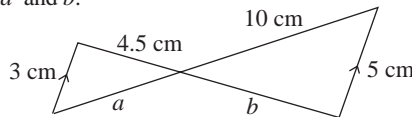
Unit	Notes	Examples
<p><b>14 <u>STRAIGHT LINE GRAPHS</u></b></p> <p>14.1 Coordinates</p> <p>14.2 Plotting Points on Straight Lines</p> <p>14.3 Plotting Graph given Equation</p> <p>14.4 Equation of Straight Line</p> <p>14.5 Finding Equation of Line given Two Points</p> <p>14.6 Scatter Graphs and Correlation</p>	<p>Recap: first quadrant and all four quadrants</p> <p>Pattern and relationship between <math>x</math> and <math>y</math></p> <p>By completing table of values</p> <p>Equations of lines through origin; general equations in the forms <math>y = mx + c</math>, noting significance of gradient of <math>m</math> and intercept <math>c</math></p> <p>Finding gradient and then equation by using one of the points</p> <p>Simple concept of correlation</p> <p>Line of best fit by eye, and obtaining equation</p>	<p>Plot the points <math>(2, 1)</math>, <math>(0, 5)</math>, <math>(4, 1)</math> and <math>(2, 5)</math>. When joined up in order, what shape is made?</p> <p>Plot the points (a) <math>(-1, 5)</math> (b) <math>(0, -3)</math> (c) <math>(-4, -2)</math> (d) <math>(-2, 0)</math></p> <p>Plot the points <math>(1, 2)</math>, <math>(2, 4)</math>, <math>(3, 6)</math>, <math>(4, 8)</math>. Join these points up. What do you notice?</p> <p>Plot points on the line <math>y = 3x - 1</math> for <math>x = -2, -1, \dots, 2</math>. Draw the line. What is its gradient?</p> <p>Draw (a) <math>y = 3x</math> (b) <math>y = -x</math> (c) <math>y = -3x</math></p> <p>Draw <math>y = 2x + 1</math>. What is its gradient and intercept?</p> <p>Find the equation of the line joining the points <math>(3, 7)</math> and <math>(6, 13)</math>.</p> <p>What sort of correlation is expected when you plot:</p> <p>(a) average temperature against (i) latitude (ii) longitude (b) height against shoe size, (c) average car speed against journey time?</p> <p>Here are the results of tests in Maths and English given to 10 pupils (maximum mark for each test is 10):</p> <p><math>(7, 3)</math>, <math>(8, 4)</math>, <math>(5, 5)</math>, <math>(5, 7)</math>, <math>(4, 3)</math>, <math>(4, 9)</math>, <math>(3, 5)</math>, <math>(3, 8)</math>, <math>(2, 5)</math>, <math>(2, 3)</math></p> <p>Plot these points. Draw the line of best fit by eye. Estimate the English score for a pupil scoring 6 on the Maths test.</p>

Unit	Notes	Examples
<p><b>15 POLYGONS</b></p> <p>15.1 Angle Facts</p> <p>15.2 Angle Properties of Polygons</p> <p>15.3 Symmetry</p> <p>15.4 Quadrilaterals</p>	<p>Recap: angles at a point; angles on a line; angles in a triangle</p> <p>Interior and exterior angles</p> <p>Sum of interior angles in polygons (by splitting into triangles)</p> <p>Sum of exterior angles = <math>360^\circ</math></p> <p>Regular polygons: interior and exterior angles</p> <p>Recap: line and rotational symmetry</p> <p>Order of rotational symmetry and number of lines of symmetry of regular polygons</p> <p>Systematic listing of properties (e.g. equal sides, equal angles, parallel sides, properties of diagonals)</p> <p>Flow chart to distinguish special types</p>	<p>Find the unknown angles: (a)  (b)  (c) </p> <p>What is the sum of the interior angles of a 12-sided polygon?</p> <p>If the exterior angle of a regular polygon is <math>18^\circ</math>, how many sides does it have?</p> <p>What is the size of the exterior angle of a regular 12-sided polygon?</p> <p>If the interior angle of a regular polygon is <math>150^\circ</math>, how many sided does the polygon have?</p> <p>Find: (a) the order of rotational symmetry, (b) all lines of symmetry</p> <p>of (i) regular 5-sided polygons (ii) regular 8-sided polygons.</p> <p>What type of quadrilateral has diagonals which are equal in length, bisect each other but not at right angles?</p>

Unit	Notes	Examples
<p><b>16 CIRCLES AND CYLINDERS</b></p> <p>16.1 Introduction to Circles</p> <p>16.2 Estimating Circumference of Circle</p> <p>16.3 Estimating Area of Circle</p> <p>16.4 Formulae for Circumference and Area</p> <p>16.5 Problems in Context</p> <p>16.6 Volume and Surface Area of a Cylinder</p>	<p>Draw circles accurately using compasses. Definition of radius, diameter, chord, segment, sector and arc</p> <p>Find approximate relationships between the circumference and diameter of circles</p> <p>Estimate the area of circles by approximate methods; relationship between area and square of radius</p> <p>Definition of <math>\pi</math>. Formula for circumference. Derivation of formula by area by cutting circle into segments</p> <p>Use of <math>\pi</math> button on calculator</p> <p>Problems involving semicircles and quarter circles and simple sectors</p> <p>Recap volume of prism. Volume of cylinder Surface area of curved surface Total surface area</p>	<p>Draw a circle of radius 5 cm. On a radius, 3 cm from the centre, draw a chord that is a perpendicular bisector to the radius. Measure its length.</p> <p>Draw a scatter diagram to represent experimental data for the circumference against diameter of a circle. Estimate the value of <math>k</math> if <math>C = kd</math>.</p> <p>Draw a circle of radius 5 cm on squared paper. Estimate its area. Repeat the experiment for different values of the radius, and plot scatter diagrams of area against:</p> <p>(i) radius, (ii) square of radius.</p> <p>Estimate value of <math>k</math> if <math>A = kr^2</math>.</p> <p>What are the circumference and the area of a circle of radius 2.5 cm?</p> <p>If the circumference of a circle is 2 cm, what is its:</p> <p>(a) radius, (b) area?</p> <p>How many times will a wheel of diameter 30 cm revolve when travelling 500 m? Calculate area and perimeter of shaded parts of diagrams:</p> <p>(a) </p> <p>(b) </p> <p>Given that the area of a circle is <math>60 \text{ m}^2</math>, calculate its radius.</p> <p>For a closed cylinder, shown opposite, calculate its TOTAL surface area.</p> <p></p>

Unit	Notes	Examples
<p><b>17 UNITS OF MEASURE</b></p> <p>17.1 Estimating Metric Units of Length, Mass and Capacity</p> <p>17.2 Extending Metric System</p> <p>17.3 Estimating Imperial Units of Length, Mass and Capacity</p> <p>17.4 Metric and Imperial Units</p> <p>17.5 Problems in Context</p>	<p>Practical experiments in estimation Knowledge that standard bag of sugar weighs 1 kg, teaspoon has capacity 5 ml, etc.</p> <p>'kilo' = 1000; 'centi' = <math>\frac{1}{100}</math>; 'milli' = <math>\frac{1}{1000}</math></p> <p>Practical experiments in estimation Rule of thumb (1 inch <math>\approx</math> adult thumb width) Knowledge of inches, feet, miles, lbs, pints and gallons</p> <p>Conversion facts: 8 km <math>\approx</math> 5 miles      1 kg <math>\approx</math> 2.2 lbs 1 m <math>\approx</math> 40 inches      1 litre <math>\approx</math> <math>1\frac{3}{4}</math> pints 1 foot <math>\approx</math> 30 cm      1 gallon <math>\approx</math> <math>4\frac{1}{2}</math> litres 1 inch <math>\approx</math> 2.5 cm</p> <p>Variety of contexts using metric and imperial measures</p>	<p>Estimate: (a) height of door, in m, (b) length of bus, in m, (c) mass of Smarties or Polos, in g, (d) mass of school bag, in g.</p> <p>(a) 300 cm = ? m      (b) <math>\frac{1}{2}</math> litre = ? ml      (c) 3.75 kg = ? g (d) 40 mm = ? m      (e) 56 mm = ? cm      (f) 81 000 kg = ? tonne</p> <p>Estimate: (a) height in feet, (b) length of room in inches, (c) foot size in inches, (d) weight in lbs, (e) capacity of kettle in pints.</p> <p>(a) 15 kg = ? lbs      (b) 7 pints = ? litres      (c) 10 gallons = ? litres (d) Convert 2 m to feet and inches      (e) Convert 6 feet to metres      (f) 30 mph = ? km/h</p> <p>How many 5 ml doses can be obtained from a 200 ml bottle? How many 125 ml glasses of wine can be obtained from a 1 litre bottle? How many books of width 2.5 cm can be put on a shelf of length 3 feet?</p>

Unit	Notes	Examples
<p><b>18 <u>SPEED, DISTANCE and TIME</u></b></p> <p>18.1 Concept of Speed</p> <p>18.2 Calculating Speed, Time and Distance</p> <p>18.3 Problems with Mixed Units</p> <p>18.4 Distance-Time Graphs</p> <p>18.5 Other Compound Measures</p>	<p>Instantaneous speed and average speed</p> <p>Speed = distance <math>\div</math> time; appropriate units; 60 mph is equivalent to 1 mile per minute</p> <p>Time = distance <math>\div</math> speed</p> <p>Distance = speed <math>\times</math> time</p> <p>Changing between (decimal) hours and hours and minutes</p> <p>Changing from km/h to m/s</p> <p>Illustrating practical situations, including constant or varying speed</p> <p>Speed or gradient for linear graphs</p> <p>Plotting (linear) distance-time graph from given information</p> <p>In context, e.g. runs per over, goals per game, postal rates, taxi fares</p>	<p>You can type 200 words in 5 minutes. Estimate how many words you can type in 1 hour.</p> <p>A car travels 120 miles in 4 hours. How many miles does it travel in 1 hour? What is the average speed of the car?</p> <p>An athlete can run 100 m in 10 seconds. Calculate her speed in: (a) m/s, (b) km/h.</p> <p>A car travels 200 miles at an average speed of 40 mph. How many hours does the journey take?</p> <p>A lorry travels at an average speed of 50 mph for <math>1\frac{1}{2}</math> hours. How far does the lorry travel?</p> <p>Change 1.2 hours to hours and minutes.</p> <p>Change 3 hours 10 minutes to hours.</p> <p>80 km/h = ? m/s</p> <div style="text-align: right;">  </div> <p>Describe the features of the journey given by the distance-time graph shown opposite.</p> <p>A car travels for one hour at a constant speed of 70 mph, and for the next hour at 50 mph. Illustrate this journey on a distance-time graph.</p> <p>Calculate the number of goals scored per game by each of the Premier League football teams. Does a league table based on the number of goals scored per game result in a different league champion?</p>

Unit	Notes	Examples
<p><b>19 SIMILARITY</b></p> <p>19.1 Enlargement</p> <p>19.2 Similar Shapes</p> <p>19.3 Line, Area and Volume Ratios</p> <p>19.4 Maps and Scale Models</p>	<p>Recognising enlarged shapes</p> <p>Line ratio; calculation of unknown lengths Implications of parallel lines</p> <p>Area ratio = (line ratio)<sup>2</sup></p> <p>Volume ratio = (line ratio)<sup>3</sup></p> <p>Expressed in the form 1 : n; the ratio 1 : 500 000 is equivalent to 1 cm ⇒ 5 km</p> <p>Change in area and volume</p>	<p>Which of the shapes below are enlargements of  ?</p>  <p>Given that these two shapes are similar, calculate the lengths <math>x</math> and <math>y</math>.</p>  <p>Calculate <math>a</math> and <math>b</math>:</p>  <p>If the line ratio of two similar shapes is 1.5, what is the area ratio?</p> <p>A cube is enlarged so that its volume is 27 times larger. What is the line ratio?</p> <p>On a map, the area of a lake is <math>4 \text{ cm}^2</math>. The scale of the map is 1 : 500 000. What is the actual area of the lake in <math>\text{km}^2</math>?</p> <p>A model is made of a ship to a scale of 1 : 10.</p> <p>(a) The volume of the ship's hold is <math>500 \text{ m}^3</math>. What is the volume of the model's hold?</p> <p>(b) The angle of the ship's bow is <math>50^\circ</math>. What is the angle of the model's bow?</p>

