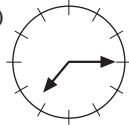
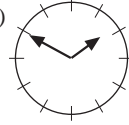
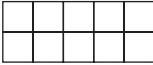





Unit	Notes	Examples															
<p><b>14 TIME AND TIMETABLES</b></p> <p>14.1 Telling the Time</p> <p>14.2 12 and 24 Hour Clocks</p> <p>14.3 Units of Time</p> <p>14.4 Timetables</p> <p>14.5 Time Problems in Context</p>	<p>Reading times from analogue clocks Understanding am and pm</p> <p>Using 'past' and 'to' the hour, and equivalence with digital</p> <p>Equivalence of times</p> <p>Second, minute, hour, day, week, year</p> <p>Calendars: no. of days in each month</p> <p>Extracting information from simple timetables</p> <p>Lengths of times of journeys, films, etc.</p> <p>Air travel through time zones</p> <p>Rates of pay; overtime</p>	<p>What time is shown on these clocks? (a)  (b) </p> <p>Write the digital time for : (a) quarter past eight, (b) ten to twelve.</p> <p>What is (a) 3.15 pm, (b) 7.05 am, in 24 hour clock time? What is (a) 13.20, (b) 04.50, in am/pm time?</p> <p>How many hours in a week?</p> <p>October 28th is a Sunday. What is the date of the following Sunday? What day of the week is October 28th next year?</p> <table border="1" data-bbox="1227 823 1729 906"> <tr> <td>London KX</td> <td>06.15</td> <td>0700</td> <td>0730</td> <td>0800</td> </tr> <tr> <td>Peterborough</td> <td>0704</td> <td>↓</td> <td>↓</td> <td>0844</td> </tr> <tr> <td>York</td> <td>0831</td> <td>0854</td> <td>0927</td> <td>0953</td> </tr> </table> <p>(a) If you arrive at London KX at 0715, at what time could you expect to be at YORK? (b) If you arrive at Peterborough at 0815, at what time could you expect to be at YORK?</p> <p>Using timetable above, (a) how long does the 0730 train take from London KX to York, (b) which is the quickest train to York?</p> <p>Plane leaves London (Heathrow) at 1000 and arrives Budapest at 1330. If Budapest is one hour ahead of London, (a) how long does the journey take, (b) at what time does the 1445 departure from Budapest reach London?</p> <p>Singapore time is 8 hours ahead of UK time. (a) If the time is 0800 hours in Singapore, what time is it in the UK? (b) If the time is 2200 hours in the UK, what time is it in Singapore?</p> <p>How much do you earn for 8 hours work at £4.50 per hour? You work from 8000 hours to 1400 hours at the basic rate of £4.00 per hour and from 1400 hours to 1700 hours at the overtime rate of £4.50 per hour. How much do you earn?</p>	London KX	06.15	0700	0730	0800	Peterborough	0704	↓	↓	0844	York	0831	0854	0927	0953
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Peterborough	0704	↓	↓	0844													
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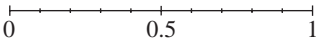


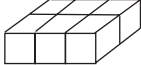
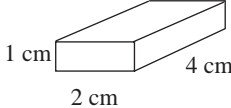
Unit	Notes	Examples												
<p><b>17 ARITHMETIC: DECIMALS, FRACTIONS AND PERCENTAGES</b></p> <p>17.1 Conversion: Decimals into Fractions</p> <p>17.2 Conversion: Fractions into Decimals</p> <p>17.3 Introduction to Percentages</p> <p>17.4 Decimals, Fractions and Percentages</p>	<p>Place value with reference to decimals, using tenths, hundredths and thousandths as column headings</p> <p>Ordering decimals</p> <p>Writing decimals as fractions</p> <p>Recognise simple fractions in decimal form</p> <p>Changing fractions into decimal form</p> <p>Recap: division with decimal numbers</p> <p>Concept</p> <p>Complementary percentages</p> <p>Conversion of (a) % to fractions (b) % to decimals (c) fractions to % (b) decimals to %</p>	<p>What is the value of 5 in (a) 6.254, (b) 4.005 ?</p> <p>Put in increasing order: 0.4, 0.29, 0.91, 0.199, 0.52</p> <p>Write as fractions: (a) 0.1, (b) 0.3, (c) 0.34, (d) 0.07</p> <p>Write as decimals: (a) <math>\frac{3}{10}</math>, (b) <math>\frac{13}{100}</math></p> <p>Write as decimals: (a) <math>\frac{1}{5}</math>, (b) <math>\frac{3}{25}</math>, (c) <math>\frac{7}{20}</math></p> <p><math>18 \div 5 = ?</math>    <math>5 \div 8 = ?</math></p> <p>(a) Colour in 10% of  (b) What % is shaded? </p> <p>Find (a) 5% of 100 kg (b) 20% of 4 m</p> <p>70% passed a test. What % failed?.</p> <p>What fraction is (a) 10%, (b) 25%, (c) 1% ? What decimal is (a) 5%, (b) 30%, (c) 3% ? What % is (a) <math>\frac{1}{5}</math>, (b) <math>\frac{1}{2}</math>, (c) <math>\frac{1}{50}</math> What % is (a) 0.3, (b) 0.75, (c) 0.02 ?</p> <p>Complete the table:</p> <table border="1" data-bbox="1464 1305 1753 1473"> <thead> <tr> <th><i>Fraction</i></th> <th><i>Decimal</i></th> <th><i>%</i></th> </tr> </thead> <tbody> <tr> <td>?</td> <td>0.01</td> <td>?</td> </tr> <tr> <td><math>\frac{1}{20}</math></td> <td>?</td> <td>?</td> </tr> <tr> <td>?</td> <td>?</td> <td>10</td> </tr> </tbody> </table>	<i>Fraction</i>	<i>Decimal</i>	<i>%</i>	?	0.01	?	$\frac{1}{20}$	?	?	?	?	10
<i>Fraction</i>	<i>Decimal</i>	<i>%</i>												
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?	?	10												

Unit	Notes	Examples																									
<p><b>18 <u>DISCRETE QUANTITATIVE DATA</u></b></p> <p>18.1 Data Presentation</p> <p>18.2 Measures of Central Tendency</p> <p>18.3 Measures of Dispersion</p> <p>18.4 Comparing Data</p> <p>18.5 Trends</p>	<p>Vertical line diagrams</p> <p>Mean, median and mode</p> <p>Interpretation and applicability of measures</p> <p>Range</p> <p>Appropriate use of measures of central tendency and dispersion</p> <p>Underlying trends in data – using 4 or 12 point moving averages for seasonal variations.</p>	<p>Draw a vertical line diagram to illustrate these six throws by a competitor in a javelin competition:</p> <p style="text-align: center;">67 m, 59 m, 75 m, 58 m, 55 m, 63 m</p> <p>Find the mean, median and mode of these data sets:</p> <p>(a) 4, 1, 6, 2, 1, 0, 1, 1, 2</p> <p>(b) 5, 7, 3, 3, 8, 6, 3, 5</p> <p>Eight people work in a shop. They are paid hourly rates of £3, £15, £6, £5, £4, £5, £4, £4.</p> <p>What average would you use if you wanted to claim that the staff were (a) well paid, (b) badly paid ?</p> <p>What is the range for the data sets above?</p> <p>Compare these data sets: (a) 5, 10, 0, 1, 9, 5 (b) 5, 6, 4, 3, 7, 5</p> <p>Which measure highlights the differences?</p> <p>The fuel used in a school in the 4 seasons is shown in the table below (in 1000s of litres).</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>Spring</th> <th>Summer</th> <th>Autumn</th> <th>Winter</th> </tr> </thead> <tbody> <tr> <td>1995</td> <td>5.3</td> <td>4.4</td> <td>5.4</td> <td>7.3</td> </tr> <tr> <td>1996</td> <td>6.1</td> <td>4.9</td> <td>5.8</td> <td>8.5</td> </tr> <tr> <td>1997</td> <td>6.6</td> <td>5.3</td> <td>6.0</td> <td>8.7</td> </tr> <tr> <td>1998</td> <td>6.9</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Estimate the missing three entries, using a 4 point moving average.</p>		Spring	Summer	Autumn	Winter	1995	5.3	4.4	5.4	7.3	1996	6.1	4.9	5.8	8.5	1997	6.6	5.3	6.0	8.7	1998	6.9			
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Unit	Notes	Examples
<p><b>19 SCALE DRAWING</b></p> <p>19.1 Measuring Lengths</p> <p>19.2 Plans</p> <p>19.3 Maps</p>	<p>Appropriate use of metric measurements</p> <p>Estimating lengths</p> <p>Accuracy in measurements: upper and lower bounds</p> <p>Significance of errors</p> <p>Recap measuring angles</p> <p>House plans – lengths of rooms, doors, etc. from plans, with scale given in form of ratio (introduce : notation)</p> <p>Design plan of flat or housing estate</p> <p>Using map with given scale to find actual distance</p> <p>Finding distances on map, with given scale</p>	<p>What unit of length (km, m, cm, mm) is appropriate for:</p> <p>(a) distances between 2 towns,            (b) length of a football field,            (c) width of a television screen?</p> <p>Estimate:</p> <p>(a) the dimensions of the classroom,            (b) the width of your thumbnail,            (c) your height.</p> <p>What are the upper and lower bounds of a length measured as 5 cm?</p> <p>Is 1 cm error in (a) 10 m, (b) 1 cm, significant?</p> <p>On a plan of scale 1 cm representing 1 m, the living room measures 3 cm by 4.5 cm. What are its actual dimensions?</p> <p>Using a scale of 1 cm to represent 2 m, draw a plan of your classroom.</p> <p>The distance between two places is 5 cm on a map with scale 1 : 100 000. What is the actual distance in km?</p> <p>Two towns are 12 km apart. On a map with scale 1 : 200 000, what is the distance between the towns?</p>

Unit	Notes	Examples
<b>20 ARITHMETIC: FRACTIONS</b>		
20.1 Revision: Whole Numbers and Decimals	Addition, subtraction, multiplication and division	
20.2 Addition and Subtraction	<p>Same denominators</p> <p>Different denominators</p> <p>Mixed numbers</p> <p>Problems in context</p>	$\frac{1}{5} + \frac{2}{5} = ?, \quad \frac{5}{6} - \frac{1}{6} = ?$ $\frac{1}{2} + \frac{1}{3} = ?, \quad \frac{1}{10} + \frac{2}{5} = ?, \quad \frac{1}{2} - \frac{1}{5} = ?, \quad \frac{4}{5} - \frac{1}{3} = ?$ $1\frac{1}{2} + \frac{3}{4} = ?, \quad 2\frac{3}{4} + 1\frac{1}{8} = ?, \quad 2\frac{3}{4} - 1\frac{1}{8} = ?$ <p>A garden has an area of <math>\frac{2}{5}</math> hectares. The owner buys an extra <math>\frac{1}{3}</math> hectare of land. What is the size of the garden now?</p> <p>A computing officer has filled <math>\frac{3}{5}</math> of the memory on the hard disc of his computer. He wants to keep <math>\frac{1}{4}</math> of the memory free from extra software. What fraction of the memory is left for extra software?</p>
20.3 Multiplying Fractions	<p>Integer <math>\times</math> fraction</p> <p>Fraction <math>\times</math> fraction</p> <p>Mixed number <math>\times</math> mixed number</p> <p>Problems in context</p>	$8 \times \frac{1}{4} = ?, \quad 4 \times \frac{1}{3} = ?,$ $\frac{1}{2} \times \frac{1}{3} = ?, \quad \frac{2}{5} \times \frac{1}{2} = ?, \quad \frac{3}{5} \times \frac{3}{4} = ?$ $1\frac{1}{2} \times \frac{1}{3} = ?, \quad 2\frac{1}{2} \times 1\frac{1}{3} = ?$ <p>A petrol tank can hold <math>5\frac{1}{2}</math> litres when full. How much petrol is in the tank if it is <math>\frac{3}{4}</math> full?</p>
20.4 Dividing Fractions	<p>Fraction <math>\div</math> integer</p> <p>Integer <math>\div</math> fraction</p> <p>Fraction <math>\div</math> fraction</p> <p>Problems in context</p>	$\frac{1}{4} \div 2 = ?, \quad \frac{3}{8} \div 6 = ?$ $4 \div \frac{1}{3} = ?, \quad 9 \div \frac{2}{3} = ?$ $\frac{2}{5} \div \frac{1}{2} = ?, \quad \frac{4}{9} \div \frac{2}{3} = ?$ <p>A recipe requires <math>\frac{1}{4}</math> kg of sugar for a cake. How many cakes could be made with <math>2\frac{3}{4}</math> kg of sugar?</p>

Unit	Notes	Examples
<p><b>21 <u>PROBABILITY OF ONE EVENT</u></b></p> <p>21.1 Introduction to Probability</p> <p>21.2 Calculating the Probability of Single Event</p> <p>21.3 Relative Frequency</p> <p>21.4 Complementary Events</p> <p>21.5 Estimating Number of Outcomes</p> <p>21.6 Addition Law for Mutually Exclusive Events</p> <p>21.7 General Addition Law</p>	<p>Concept of chance: likely, unlikely, certain and possible</p> <p>Estimation of probability in words</p> <p>Estimation of probability on 0 - 1 number scale</p> <p>Concept of impossible (<math>p=0</math>), even chance (<math>p = \frac{1}{2}</math>), certain (<math>p=1</math>)</p> <p>Equally likely outcome, <math>p = \frac{1}{n}</math></p> <p>Listing outcomes</p> <p>Probability of event = <math>\frac{\text{no. of successful outcomes}}{\text{total no. of outcomes}}</math></p> <p>Experimental probability</p> <p><math>p(A') = 1 - p(A)</math></p> <p>Probability of success <math>\times</math> total no. of outcomes</p> <p><math>p(A \text{ or } B) = p(A) + p(B)</math></p> <p><math>p(A \text{ or } B) = p(A) + p(B) - p(A \text{ and } B)</math></p>	<p>Which of 'certain, likely, unlikely, impossible' best describes the events:</p> <p>(a) it will snow tomorrow,            (b) Arsenal will win the Premier League title next year,            (c) you will have a birthday tomorrow.</p> <p>On the probability scale, mark your estimate of the probabilities of each of the events above.</p>  <p>For one throw of a fair dice, what is the probability of obtaining 3?</p> <p>For one throw of a fair dice, what is the probability of obtaining 3 or more?</p> <p>Estimate the probability of a drawing pin landing bottom up.</p> <p>If the probability of it raining tomorrow is <math>\frac{1}{3}</math>, what is the probability of it not raining?</p> <p>Venn diagram to illustrate</p> <p>A fair dice is thrown 12 times. How many 6s would you expect to be obtained?</p> <p>A ball is chosen at random from a bag containing 20 balls, of which 5 are white, 10 are red and 5 are blue. What is the probability of:</p> <p>(a) obtaining a red ball,            (b) obtaining a red or a white ball?</p>

Unit	Notes	Examples
<p><b>22 VOLUME</b></p> <p>22.1 Concept of Volume</p> <p>22.2 Volume of a cube</p> <p>22.3 Volume of a cuboid</p> <p>22.4 Capacity</p> <p>22.5 Density</p> <p>22.6 Volume of Triangular Prism</p>	<p>Volume by counting 1 cm cubes</p> <p><math>V = a^3</math></p> <p>Units of volume; converting between <math>\text{cm}^3</math> and <math>\text{m}^3</math></p> <p><math>V = abc</math></p> <p>1 litre = 1000 <math>\text{cm}^3</math>, 1 <math>\text{m}^3</math> = 1000 litres</p> <p>Density = <math>\frac{\text{Mass}}{\text{Volume}}</math></p> <p>Density of water = 1 <math>\text{gram}/\text{cm}^3</math></p> <p>Volume = (area of cross-section) <math>\times</math> length</p>	<p> What is the total volume if each cube is 1 <math>\text{cm}^3</math> ?</p> <p>Find the volume of cube of side 2 m. What is its volume in <math>\text{cm}^3</math> ?</p> <p> Find the volume of cuboid shape.</p> <p>What is the capacity, in litres, of a tank 1 m <math>\times</math> 2 m <math>\times</math> 3 m ?</p> <p>A rectangular block of metal, 5 cm by 8 cm by 10 cm, weighs 500 grams. Find its density in (a) <math>\text{g}/\text{cm}^3</math>, (b) <math>\text{kg}/\text{m}^3</math></p> <p>The drinks carton shown contains liquid of density 1 <math>\text{g}/\text{cm}^3</math>. What is the mass of the liquid if the carton is full?</p> <p>Find the volume of the box shown.</p> 