**Year 10 Enhanced Standard: Assessment 1 Revision**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Topic 1** | **/20** | **Topic 2** | **/20** | **Topic 3** | **/20** | **Topic 4** | **/20** |

|  |  |  |
| --- | --- | --- |
|  | **Topic 1: Recurring decimals and bounds** | **Mark** |
| **1.** | Write  as a recurring decimal. | **1** |
| **2.** | Convert into a fraction | **2** |
| **3.** | Convert    to a fraction in its lowest terms. | **2** |
| **4.** | a)    Show that    is equivalent to .    b) Using part (a), or otherwise, write   as a fraction. | **1**  **2** |
| **5.** | a) The length of a side of a regular hexagon is 3.6 cm correct to the nearest  millimetre.  Calculate the upper bound for the perimeter of the regular hexagon.  b) Correct to 1 significant figure, the area of a rectangle is 80 cm2  Correct to 2 significant figures, the length of the rectangle is 12 cm.  Calculate the upper bound for the perimeter of the rectangle.  Show your working clearly. | **1**  **3** |
| **6.** | a = 3 correct to 1 significant figure  b = 8.37 correct to 3 significant figures  c = 5.3 correct to 1 decimal place  Calculate the upper bound of *a*(*b* – *c*)  Show your working clearly. | **3** |
| **7.** | Here is a solid bar made of metal.  The bar is in the shape of a cuboid.  The height of the bar is *h* cm.  The base of the bar is a square of side *d* cm.  The mass of the bar is *M* kg.  *d* = 8.3 correct to 1 decimal place.  *M* = 13.91 correct to 2 decimal places.  *h* = 84 correct to the nearest whole number.  Find the value of the density of the metal to an appropriate degree of accuracy.  Give your answer in g/cm3.  You must explain why your answer is to an appropriate degree of accuracy. | **5** |

|  |  |  |
| --- | --- | --- |
|  | **Topic 2: Quadratics** | **Mark** |
| **1.** | a) Solve *x*2 – 4*x* – 12 = 0  Show clear algebraic working.  b) Hence sketch the graph of *y = x*2 – 4*x* – 12  showing the intercepts on the *x* and *y* axes. | **3**  **2** |
| **2.** | Solve 5*x*2 + 22*x* + 8= 0  Show clear algebraic working. | **3** |
| **3.** | a) Solve 2*x*2 + 5*x* –12 = 0  Show clear algebraic working.  b) Hence sketch the graph of *y =* 2*x*2 +5*x* – 12  showing the intercepts on the *x* and *y* axes. | **3**  **2** |
| **4.** | Solve 3*x*2 +8 = 10*x*  Show clear algebraic working. | **3** |
| **5.** | a) Write *x*2 + 2*x* − 8 in the form (*x* + *m*)2 + *n* where *m* and *n* are integers.  b) Hence sketch the graph of *y = x*2 + 2*x* – 8  showing the minimum point and y intercept. | **2**  **2** |

|  |  |  |
| --- | --- | --- |
|  | **Topic 3: Data display** | **Mark** |
| **1.** | |  |  |  | | --- | --- | --- | | Show this data on a box plot. | Maximum | 58 | |  | Upper quartile | 50 | |  | Median | 38 | |  | Interquartile range | 26 | |  | Range | 52 | | **3** |
| **2.** | The box plot shows the number of behaviour points for each of the pupils in a form.  If 18 pupils had less than 6 behaviour points, how many pupils are in in the form?  0 2 4 6 8 10 12 14 16 | **1** |
| **3.** | Compare the heights of the girls and the boys.  Boys  cm    Girls | **2** |
| **4.** | The grouped frequency table gives information about the lengths of time 160 students exercised one day.  a)  Copy and complete the cumulative frequency table.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Time (t minutes) | Frequency |  | Time (t minutes) | Cumulative Frequency | | 0 < t ≤ 40 | 20 |  | 0 < t ≤ 40 |  | | 40 < t ≤ 80 | 35 |  | 0 < t ≤ 80 |  | | 80 < t ≤ 120 | 60 |  | 0 < t ≤ 120 |  | | 120 < t ≤ 160 | 33 |  | 0 < t ≤ 160 |  | | 160 < t ≤ 200 | 7 |  | 0 < t ≤ 200 |  | | 200 < t ≤ 240 | 5 |  | 0 < t ≤ 240 |  |   b)  On graph paper, draw a cumulative frequency graph for your table.  Time (min)  Cumulative  frequency  c)  Use your graph to find the length of time that over 25% of students  exercised for.  d) Use your graph to estimate how many students exercised for less than 60  minutes. | **1**  **3**  **2**  **1** |
| **5.** | The table gives information about the speeds, in km/h, of 81 cars.   |  |  |  | | --- | --- | --- | | On graph paper, draw a histogram for | Speed ( s km/h) | Frequency | | this data | 90 < s ≤ 100 | 13 | |  | 100 < s ≤ 105 | 16 | |  | 105 < s ≤ 110 | 18 | |  | 110 < s ≤ 120 | 22 | |  | 120 < s ≤ 140 | 12 | | **3** |
| **6.** | The histogram shows information about the times taken by a telephone call centre to answer incoming calls.  Work out an estimate for the percentage of calls that are answered in less than 40 seconds. | **4** |

|  |  |  |
| --- | --- | --- |
|  | **Topic 4: Indices and surds** | **Mark** |
| **1.** | Write down the value of  (i)  *p* (ii)  *q* (iii)  *r* | **3** |
| **2.** | Write down the value of 125 | **1** |
| **3.** | a)  Find the value of      b)  Find the value of       c)  Work out the value of *x* if | **1**  **2**  **1** |
| **4.** | Express in the form . | **2** |
| **5.** | a)  Expand and simplify  Show your working clearly.  b) Rationalise the denominator and simplify fully  Show your working clearly. | **2**  **2** |
| **6.** | Given that  where *x* and *y* are positive integers,  find the value of *x* and the value of *y*. | **3** |
| **7.** | A trapezium *ABCD* has an area of cm2.  *AB* = 4 cm.  *BC* = cm.  *DC* = *k* cm.  Calculate the value of *k*, giving your answer in the form  where *a*, *b* and *c* are positive integers.  Show each step in your working. | **3** |