**Year 11 Higher: Test 6 Revision homework**

|  |  |  |  |
| --- | --- | --- | --- |
| **Circles /10** | **Tangents /10** | **Similarity /17** | **Sampling /8** |

|  |  |  |
| --- | --- | --- |
|  | **Topic 1: Circles and Pythagoras** | **Mark** |
| **1.** | *O* is the centre of the circle.Work out the size of angle *a*. Give a reason for your answer.a = ………………………………………………………………………………………………………………………………………………………………………………………… | **2** |
| **2.** | Write down the size of angle *b*.Give a reason for your answer.b = ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | **2** |
| **3.** | *E, F* and *G* are points on a circle, centre *O*.. Calculate the size of angle w w = ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………… | **2** |
| **4.** | *PAQ* and *PB* are tangents to the circle.*AC* = *BC*Work out the size of angle *x*.You **must** show your working out.*x* = ……………… | **4** |
|  | Topic 2 : Tangents and Area | **Mark** |
| **1.** | The graph shows the speed of a train for 16 seconds.a)    For how many seconds is the train travelling at a speed of less than 8 m/s?……………… sec b)     Using 4 strips, calculate the distance the train travelled over the 16 seconds.…………… metres c)    Estimate of the average speed of the train during the 16 seconds…………… m/s  | **1****3****1** |
| **2.** | The graph shows the speed of a Skateboarder for 2 minutes.a)     Using 3 strips, estimate the distance travelled in the first 90 seconds. **5****4****3****2****1**…………………… metres b)     Work out the gradient of  the graph at  70 seconds.……………………c) What does this gradient represent? …………………………………………………………………………………………………………………………………………………… | **3****1****1** |
|  | **Topic 3: Similar shapes** | **Mark** |
| **1.** | The diagram shows two pieces of glass which are similar.The area of the smaller piece is 6000 cm2.Work out the area of the larger piece of glass  …………………… cm² | **3** |
| **2.** | https://app.doublestruck.eu/content/AG_MA/HTML/Q/Q13WLM2H21_files/img01.pnghttps://app.doublestruck.eu/content/AG_MA/HTML/Q/Q13WLM2H21_files/img01.pngThe small cylinder has a volume of 454 cm3.The cylinder has a height of 10 cm.A similar cylinder has a height of 15 cm. What is the volume of the larger cylinder?…………………… cm³ | **3** |
| **3.** | These two solid shapes are similar. The volume of *B* is 3125 cm3Work out the volume of *A*. …………………… cm³ | **3** |
|  | The diagram shows two mathematically similar vases, **A** and **B**.

|  |  |  |
| --- | --- | --- |
| Vase **A** has a surface area of 120 cm2Vase **B** has a surface area of 750 cm2 and a volume of 1600 cm3Work out the volume of vase **A**. | **A**  | **B** |

…………………… cm³ | **4** |
| **4.** | Cone **A** and cone **B** are mathematically similar. The ratio of the volume of cone **A** to the volume of cone **B** is 27 : 8The surface area of cone **A** is 297 cm2Calculate the surface area of cone **B**.…………………… cm² | **4** |
|  | **Topic 4: Sampling and Frequency Trees** | **Mark** |
| **1.** | There are 180 people who are members of a Gym. $\frac{4}{9}$ of the members are female. Of those female members, women attend more than 3 times a week in the ratio 3:5. 40% of people don’t attend the gym more than 3 times a week.1. Complete this frequency tree to display this information.

|  |
| --- |
| more than 3 timesMaleless than 3 timesmore than 3 timesFemaleless than 3 times |

b) A male is chosen at random. What is the probability that attends he attends the gym 3 or more times a week. …………………… | **3****2** |
| **2.** |  Garage A sold 4960 vehicles.The garage takes a sample of customers, stratified by type of vehicle sold.Some information about the sample is shown. Complete the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | **Car** | **People carrier** | **Van** | **Total** |
| **Number sold** | 2520 |   |   | 4960 |
| **Number in sample** | 126 | 44 |   |   |

 | **3** |