**YEAR 11 TEST 6 Review Homework Calculator Allowed HIGHER**

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| Circle theorems | /10 | Graphs | /10 | Similarity | /10 | Freq trees Sampling | /10 |

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|  | **Shape: Circle Theorems** |  |
| **1.**  **S** | *D*, *E*, *F*, *G* and *H* are points on a circle. Angle *EGH* = 67°  *a*) Find the size of angle *EFH*.  Give a reason for your answer.  ………………°  ………………………………………………………………………………………  *b*) Find the size of angle *EDH*  Give a reason for your answer.  ………………°  ……………………………………………………………………………………… | **(2)**  **(2)** |
| **2.**  **S** | **5.** *A*, *B*, *C* and *D* are four points on a circle, centre *O*. *AD* is a diameter of the circle. Angle *BAD* = 58°  a) Calculate the size of angle *ADB*.  Give a reason for your answer.  ………………°  ………………………………………………………………………………………  *b*) Calculate the size of angle *BCD*.  Give a reason for your answer.  ………………°  ……………………………………………………………………………………… | **(2)**  **(2)** |
| **3.**  **F** | **10.** *B*, *C* and *D* are points on the circumference of a circle, centre *O*.  *ABE* and *ADF* are tangents to the circle.  Angle *DAB* = 40°  Angle *CBE* = 75°  a) Work out the size of angle *OBC*.  ……………… °  a) Work out the size of angle *DCB*.  ……………… ° | **(2)** |
|  | **Algebra: Tangents and Area** |  |
| **1.**  **F** | 1. The graph shows how a car’s speed, in m/s, varies in the first 6 seconds after the car 2. moves from rest.   a) Find the acceleration of the car after 3 seconds.  ……………………  b) Using 3 strips, find the distance travelled by the car in the first 3 seconds.  0  1  2  3  4  5  30  20  10  Velocity (m/s)  6  Time (seconds)  …………………… | **(2)**  **(4)** |
| **2.**  **F** | The graph gives information about the variation in the temperature, in °C, of an amount  of water that is allowed to cool from 80 °C.  a) Work out the rate of decrease  of temperature at *t* = 400  …………………… degrees/sec  b) Work out the average rate of  decrease of the temperature of the water between  *t* = 0 and *t* = 800.  …………………… degrees/sec | **(2)**  **(2)** |
|  | **Shape: Congruency and Similarity** |  |
| **1.**  **S** | Here are two supermarket price tickets.  The two supermarket price tickets are mathematically similar.  The area of the smaller ticket is 7 cm2.  Calculate the area of the larger ticket.  …………………… cm² | **(2)** |
| **2.**  **F** | *A* and *B* are two similar solids.  A has a height of 10 cm.  B has a height of 12 cm.  The volume of *A* is 500 cm3.  Work out the volume of *B*.  …………………… cm³ | **(2)** |
| **3.**  **F** | **L** and **M** are two mathematically similar prisms. Prism **L** has length 8 cm.  Prism **M** has length 20 cm.  Prism **L** has height 3 cm.  Prism **M** has a volume of 1875 cm3  Work out the volume of prism **L**.  …………………… cm³ | **(3)** |
| **4.**  **F** | Two cones, P and Q, are similar. The total surface area of cone P is 24 cm². The total surface area of cone Q is 96 cm².. The height of cone P is 4 cm.  The volume of cone P is 12 cm³.  Work out the volume of cone Q.  …………………… cm³ | **(3)** |
|  | **Probability: Frequency trees and sampling** |  |
| **1.**  **F** | There are 150 pupils studying History.  60% of them are male.  of the male members are in year 10, the rest are in year 11.  The females students are in the ratio 5 : 7, for year 10 to year 11.  male  Year 10  Year 10  Year 11  Year 11  female  a) Complete this frequency tree.  b) What is the probability that a student chosen at random is in year 11.  …………………… | **(3)**  **(1)** |
| **2.**  **F** | Clive wants to estimate the number of bees in a beehive.  Clive catches 50 bees from the beehive.  He marks each bee with a dye.  He then lets the bees go. The next day, Clive catches 40 bees from the beehive.  8 of these bees have been marked with the dye.  a)  Work out an estimate for the number of bees in the beehive.  ……………………  b)  Write down one assumption you have made.  ………………………………………………………………………………………………………………………………………………………………… | **(2)**  **(1)** |
| **3.**  **M** | Visitors to Blackpool Sea-life centre are either children, adults or senior citizens.  The ratio of children to adult visitors is 3 : 4  The ratio of adults to senior citizen visitors is 8 : 1    A stratified sample of 90 is to be taken from all the visitors to the centre.  How many senior citizens should be in the sample?  …………………… | **(3)** |