**YEAR 10 TEST 2 Review Homework NON-CALCULATOR ENHANCED**

|  |  |  |  |  |  |  |  |
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| **Shape** | **/10** | **Proportion** | **/10** | **Sequences** | **/10** | **Probability** | **/13** |

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|  | **Shape 1 : Circle Theorems** |  |
| **1.**  **S** | *A*, *B*, *C* and *D* are points on the circumference of a circle,  centre *O*. *AC* is a diameter of the circle.  Angle *DAC* = 20º.   1. Find the size of angle *ACD*.   Give a reason for your answer.    b) Find the size of angle *DBC*.  Give a reason for your answer. | **(2)** |
| **2.**  **F** | *A*, *B* and *C* are points on a circle.  *PAQ* is a tangent to the circle.  Work out the size of angle *CAB*. | **(2)** |
| **3.**  **M** | *ABCD* is a cyclic quadrilateral.  Work out the values of *x* and *y*. | **(4)** |
| **4.**  **M** | *A*, *B* and *C* are points on a circle.  *BC* bisects angle *ABQ*.  *PBQ* is a tangent to the circle.  Angle *CBQ* = *x*  Prove that *AC* = *BC* | **(2)** |
|  | **TOTAL** | **/10** |
|  | **Number : Direct & Inverse Proportion** |  |
| **1.**  **S** | *A* is proportional to the square of *L*.  When *A* = 4, *L* = 4  Work out the value of *A* when *L* = 25 | **(3)** |
| **2.**  **F** | *y* is inversely proportional to *x*.  When *y* = 2, *x* = 5.  Work out an equation connecting *y* and *x*. | **(2)** |
| **3.**  **F** | *w* is directly proportional to *y*  *w* is inversely proportional to *x*2  a)      When *y* = 4, *w* = 14..  Work out the value of *w* when *y* = 9  b) When *x* = 2, *w* = 5. Work out the value of *w* when *x* = 10  c) Which graph shows the relationship between *y* and *x*?   |  |  |  |  | | --- | --- | --- | --- | | A | B | C | D | |  |  |  |  | | **(2)**  **(2)**  **(1)** |
|  | **TOTAL** | **/10** |
|  | **Sequences** |  |
| **1.**  **F** | The *n*th term of a sequence is    2*n* + 1.  The *n*th term of a different sequence is    3*n* – 1.  Work out the **three** numbers that are in **both** sequences **and** between 20 and 40 | **(3)** |
| **2.**  **S** | The *n*th term of a sequence is  *n*2 + 25  a)     Work out the first three terms of the sequence.  b)     How many terms in the sequence are less than 100? | **(2)**  **(1)** |
| **3.**  **F** | Find the nth term for this sequence  5, 9, 15, 23, 33 , …… | **(2)** |
| **4.**  **F** | Each term of a Fibonacci sequence is formed by adding the previous two terms.                               1, 1, 2, 3, 5, 8, 13, 21, ……  A Fibonacci sequence starts *a*, *b*, *a* + *b*, …  Work out the 5th term of this Fibonacci sequence. | **(2)** |
|  | **TOTAL** | **/10** |
|  | **Probability** |  |
| **1.**  **F** | Samples are taken from a production line. 500 items are checked in each sample.  The relative frequencies of the number of faulty items in 5 samples are shown.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Sample** | A | B | C | D | E | | **Relative frequency** | 0.032 | 0.04 | 0.026 | 0.016 | 0.028 |   Work out the range of the number of faulty items in the 5 samples. | **(3)** |
| **2.**  **S** | The dice is rolled twice.  a) Copy and complete the tree diagram.   |  |  | | --- | --- | | **First roll** | **Second roll** |     b) Work out the probability of rolling exactly one six. | **(2)**  **(2)** |
| **3.**  **S** | On Friday, Greg takes part in a long jump competition.  He has to jump at least 7.5 metres to qualify for the final on Saturday.  •     He has **up to** three jumps to qualify.  •     If he jumps at least 7.5 metres he does **not** jump again on Friday.  Each time Greg jumps, the probability he jumps at least 7.5 metres is 0.8.  Assume each jump is independent.    a)     Copy and complete the tree diagram.  b)     Work out the probability that he does **not** need the third jump to qualify. | **(2)**  **(2)** |
| **4**  **F** | Here is a Venn diagram. It shows information about the number of students who have a laptop or a TV.  Set L represents students with a laptop. Set T represents students with a TV.  There are 50 students altogether.    A student is chosen at random.  a)     Work out P( L ).  b)     Work out P( L ∩ T ).  c)     Copy and complete the following using set notation. P( \_\_\_\_\_\_\_\_ ) =  d)     Copy and complete the following using set notation. P( \_\_\_\_\_\_\_\_\_ ) = | **(4)** |
|  | **TOTAL** | **/15** |