**YEAR 10 TEST 2 Review Homework Calculator allowed Higher**

**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **Shape 1** | **/12** | **Proportion** | **/15** | **Sequences** | **/15** | **Probability** | **/10** |

10 cm

16 cm

11 cm

|  |  |  |
| --- | --- | --- |
|  | **Shape: Circles + Pythagoras** |  |
| **1.**  **F** | The diagram shows a trapezium and a semicircle.  Work out the shaded area.  Give your answer correct to  3 significant figures.  …………………… cm2 | **(3)** |
| **2.**  **F** | *OAB* is a sector of a circle, centre *O*. The radius of the circle is 15 cm. The angle of the sector is 30°.  Calculate the perimeter of sector *OAB*. Give your answer correct to 3 significant figures.  …………………… cm2 | **(3)** |
| **3.**  **F** | Work out the length of *PQ*. Give your answer to 3 significant figures.    **………………………… cm** | **(3)** |
| **4.**  **F** | *ABC* is a right-angled triangle.  *AC* = 6 cm *AB* = 13 cm  Work out the area of triangle ABC. Give your answer correct to 3 significant figures.  …………………… cm | **(3)** |
|  | **Algebra: Direct and Inverse Proportion** |  |
| **1.**  **S** | Peter goes for a walk.  He walks 15 miles in 2 hours 30 minutes.  Work out Peter's average speed in miles per hour.  …………………… m.p.h. | **(2)** |
| **2.**  **F** | A solid metal cylinder has a mass of 1180 g.  The cylinder has a radius of 5 cm and a height of 8 cm.  Find the density of the metal. Give your answer to 3 significant figures.  …………………… g/cm3 | **(2)** |
| **3.**  **S** | *y* is directly proportional to *x*.  When *x* = 10, *y* = 600.  Calculate the value of *y* when *x* = 540.        *y* = ………………………… | **(3)** |
| **4.**  **F** | *T* is inversely proportional to *d.*  *T* = 160 when *d* = 8.  Find the value of *d* when *T* = 2560.  d = ………………………… | **(3)** |
| **5.**  **M** | *y* is directly proportional to the square of *x.*  When *y* = 5, *x* = 4.  a) Find the formula connecting *y* and *x*.  ……………………  b)     Work out the value of *x* when *y* = 0.8.  *x* = …………………… | **(3)**  **(2)** |
|  | **Algebra: Sequences** |  |
| **1.**  **S** | Here is an arithmetric progression. 4 7 10 13 16 ……  a) Work out the *n*th term for this sequence.  …………………………………………  a) Work out the *50*th term for this sequence.  ………………………………………… | **(2)**  **(1)** |
| **2.**  **F** | Here is a sequence   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | ………… | 2 | 3 | 4.5 | 6.75 | ………… |   a) Work out the common ratio for this geometric sequence  ……………………  b) Work out the 6th term of the sequence  ……………………  c) Work out the 1st term of the sequence  …………………… | **(1)**  **(1)**  **(1)** |
| **3.**  **S** | The *n*th term of a sequence is 2*n*2 – 2n  Find the 5th term of this sequence.    ………………………… | **(1)** |
| **4.**  **F** | Here are the first five terms of a quadratic number sequence.  2 6 12 20 30 … … Write an expression, in terms of *n*, for the *n*th term of this sequence.           ………………………… | **(3)** |
| **5.**  **F** | Here are the first five terms of a quadratic number sequence.  99 96 91 84 75 … … Write an expression, in terms of *n*, for the *n*th term of this sequence.           ………………………… | **(3)** |
| **6.**  **M** | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | 1, | 1, | 2, | 3, | 5, | 8, … |   The sequence above is a Fibonacci sequence  Continue this algebraic Fibonacci sequence   |  |  |  |  |  | | --- | --- | --- | --- | --- | | 2a , | 5b, | 2a + 5b, | ………………………… | ………………………… | | **(2)** |
|  | **Probability** |  |
| **1.**  **S** | In a cafe, a customer orders one drink.  The probability that he orders tea is 0.52 The probability that he orders coffee is 0.2  Work out the probability that he orders **either** tea **or** coffee.  …………………… | **(1)** |
| **2.**  **S** | A shop sells red tulips and white tulips in the ratio 7 : 3  What is the probability that a tulip, sold at random, is red?  …………………… | **(1)** |
| **3.**  **F** | The probabilities of whether a student, picked at random from a school, is vegetarian or not are shown in this table.   |  |  |  |  | | --- | --- | --- | --- | |  |  | **Boys** | **Girls** | |  | **Vegetarian** | 0.08 | 0.15 | |  | **Non-vegetarian** | 0.45 | 0.32 |     a)     What is the probability that a student chosen at random is a female vegetarian?  ………………  b)     What is the probability that a student chosen at random from is vegetarian?  ………………  c)     There are 24 boys in the school who are vegetarian.  How many students are there in the school altogether?  ……………… | **(1)**  **(1)**  **(2)** |
| **4.**  **M** | A bag contains 7 mint sweets, 3 fruit sweets.  Sam chooses two sweets from the bag at random.  Calculate the probability that she chooses one mint sweet and one fruit sweet. | **(4)** |