Test 2 Revision Topics 5-8

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Topic 5 | Find ∠ACD.Give reasons for your answer. | Find ∠RPQ.Give reasons for your answer. | Find ∠BAT.Give reasons for your answer. | Find ∠DBC.Give reasons for your answer. |
| Topic 6 | *y* is directly proportional to $\sqrt{x}$Work out the value of *a*.

|  |  |  |
| --- | --- | --- |
| *x* | 36 | *a* |
| *y* | 2 | 5 |

 | $y$ is directly proportional to $\sqrt[3]{x}$ $y=1\frac{1}{6}$ when $x=8$Find the value of *y* when $x=64$ | *y* is directly proportional to $R^{2}$When *R* = 4, *y* = 24Work out the value of *R* when *y* = 1350 | *D* is directly proportional to the cube of *n*.Mary says that when *n* is doubled, the value of *D* is multiplied by 4Mary is wrong. Explain why. |
| Topic 7 | Here are the first five terms of a sequence.4 11 22 37 56Find an expression, in terms of *n*, for the *n*th term of this sequence. | Here are the first four terms of a quadratic sequence.3          8          15          24Find an expression, in terms of *n*, for the *n*th term of this sequence. | Here are the first 5 terms of a quadratic sequence.1           3            7           13           21Find an expression, in terms of *n*, for the *n*th term of this sequence. | Here are the first 6 terms of a quadratic sequence.3        6        11        18        27        38 Find an expression, in terms of *n*, for the *n*th term of this sequence. |
| Topic 7 | The first term of a geometric series is 120 and the common ratio, *r*, is  Find, to 2 decimal places, the difference between the 5th and 6th term.  | The first three terms of a Fibonacci sequence are*a         b         a + b*a)  Show that the 6th term of this sequence is 3*a* + 5*b*Given that the 3rd term is 7 and the 6th term is 29,b)  find the values of *a* and *b*. | S is a geometric sequence.a) Given that $\left(\sqrt{x}-1\right), 1, (\sqrt{x}+1)$ are the first three terms of S, find the value of $x$. Show all of your working.b)  Show that the 5th term of S is $7+5\sqrt{2}$  | The second and fifth terms of a geometric series are 9 and 1.125 respectively.For this series finda) the value of the common ratiob) the first term |
| Topic 8 | John puts some red counters and some blue counters into a box.The ratio of the number of red to blue counters is 1 : 4Linda takes at random 2 counters from the box.The probability that she takes 2 red counters is $\frac{6}{155}$ How many red counters did John put into the box? | There are 10 pens in a box.There are *x* red pens in the box. All the other pens are blue.Jack takes at random two pens from the box.Find an expression, in terms of *x*, for the probability that Jack takes one pen of each colour. Give your answer in its simplest form. |
| Topic 8 | A bag contains 10 counters. The counters are blue or red. A counter is taken out of the bag at random and not replaced.A second counter is taken out at random.The probability that at least one of the counters is blue is $\frac{48}{90}$  How many of the 10 counters are red? | There are *y* black socks and 5 white socks in a drawer.Joshua takes at random two socks from the drawer.The probability that Joshua takes one white and one black sock is $\frac{6}{11}$ a)  Show that 3*y*2 – 28*y* + 60 = 0b)  Find the probability that Joshua takes two black socks. |
| Topic 8 | The Venn diagram shows information about a coin collection.ξ = 120 coins in the collectionT = coins from the 20th centuryB = British coins A coin is chosen at random.It is British.Work out the probability that it is from the 20th century. | In this Venn diagramξ = 295 students in the collegeH = students who take HistoryE = students who take English One-half of the students who take History also take English.The number who take English is twice the number who take History.Work out the value of *x* |