Text

Description automatically generatedDiagram, engineering drawing

Description automatically generated

**Answer ALL TWENTY FIVE questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1** The table gives information about six plays written by William Shakespeare.

|  |  |  |
| --- | --- | --- |
| **Play** | **Number of words** | **Year written** |
| The Taming of the Shrew | 21 055 | 1592 |
| Henry V | 26 119 | 1599 |
| Hamlet | 30 557 | 1602 |
| Macbeth | 17 121 | 1606 |
| Julius Caesar | 19 703 | 1599 |
| King John | 20 772 | 1596 |

(*a*)Which of these six plays has the greatest number of words?

..................................................................................

**(1)**

Two of these six plays were written in the same year.

(*b*)Write down the name of each of these plays.

..........................................................................and......................................................................

**(1)**

The play Othello has 9329 more words in it than the play Macbeth.

(*c*)Work out the number of words in the play Othello.

..................................................................................

**(1)**

(*d*)Write the number 21 055 in words.

**(1)**

**(Total for Question 1 is 4 marks)**

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**2** Luca has 5 kg of chopped tomatoes.

He also has some empty tins.

When full, each tin holds 350 g of chopped tomatoes.

Luca fills as many tins as possible with the chopped tomatoes.

Work out the weight of the chopped tomatoes remaining after Luca has filled as many

tins as possible.

Give the units of your answer.

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**(Total for Question 2 is 4 marks)**

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**3** A sequence of patterns is made from squares.

Shape, square

Description automatically generated

(*a*)In the space below, draw Pattern number 4

**Pattern number 4**

**(1)**

(*b*)Complete the table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Pattern number** | 1 | 2 | 3 | 4 | 5 |
| **Number of squares** | 1 | 4 | 7 |  |  |

**(1)**

(*c*)Work out the number of squares in Pattern number 8

.......................................................

**(1)**

Angus says

“there are 42 squares in Pattern number 15”

Angus is incorrect.

(*d*)Explain why.

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**(1)**

**(Total for Question 3 is 4 marks)**

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**4** (*a*)Write 0.8 as a percentage.

....................................................... %

**(1)**

(*b*)Write down the value of the 3 in the number 4.7634

.......................................................

**(1)**

(*c*)Write these decimals in order of size.

Start with the smallest decimal.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 0.204 | 0.24 | 0.04 | 0.2 | 0.042 |

**(1)**

......................................................................................................................................................

(*d*)Write 25.786 21 correct to 2 decimal places.

.......................................................

**(1)**

(*e*)Find the square root of 1296

.......................................................

**(1)**

**(Total for Question 4 is 5 marks)**

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**5** Adam has 8 packets of noodles.

Here is the flavour of noodles in each packet.

A picture containing shape

Description automatically generated

Adam takes at random a packet of noodles.

(*a*)(i) On the probability scale, mark with a cross (×) the probability that Adam takes a

packet of Hot and Spicy noodles.

Chart, box and whisker chart

Description automatically generated

**(1)**

(ii) Circle the word that best describes the likelihood that Adam takes a packet of

Vegetarian noodles.

**(1)**

Belinda asks 20 people to name the type of rice that they each like the best.

Here are her results.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| arborio | jasmine | basmati | jasmine | basmati |
| basmati | arborio | wild | jasmine | jasmine |
| jasmine | jasmine | arborio | basmati | basmati |
| wild | basmati | jasmine | wild | arborio |

(*b*)Complete the frequency table for Belinda’s results.

|  |  |  |
| --- | --- | --- |
| **Type of rice** | **Tally** | **Frequency** |
| arborio |  |  |
| basmati |  |  |
| jasmine |  |  |
| wild |  |  |

**(2)**

**(Total for Question 5 is 4 marks)**

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**6** Sandeep sells 600 tickets for an event.

He receives a total of $7200 from selling the tickets.

 of the tickets sold are child tickets.

The rest of the tickets sold are adult tickets.

The cost of an adult ticket is $13.60

Work out the cost of a child ticket.

$ .......................................................

**(Total for Question 6 is 4 marks)**

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**7** (*a*)Simplify 5*p* × 9*k*

.......................................................

**(1)**

(*b*)Simplify 3*e* + 2*f* + 8*e* – 7*f*

.......................................................

**(2)**

(*c*)Solve 2*d* + 7 = 16

*d* = .......................................................

**(2)**

**(Total for Question 7 is 5 marks)**

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**8** Here is a scale drawing showing the positions of Paris and Bordeaux.

Map

Description automatically generated

Alain drives from Paris to Bordeaux.

The distance that he drives is 590 km.

This distance is greater than the actual straight line distance between

Paris and Bordeaux.

How much greater?

Show your working clearly.

....................................................... km

**(Total for Question 8 is 4 marks)**

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**9** Avner has two fair spinners.

A picture containing shape

Description automatically generated

Spinner **A** can land on 1, 2 or 3

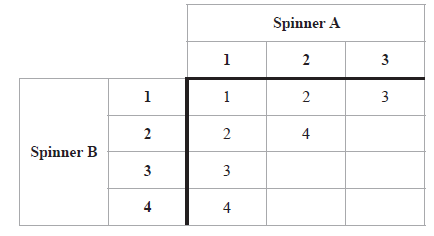
Spinner **B** can land on 1, 2, 3 or 4

Avner **multiplies** the number on which spinner **A** lands by the number on which

spinner **B** lands to find his score.

(*a*)Complete the table to show all possible scores.

Seven of the scores have been completed for you.

****

**(2)**

Avner spins spinner **A** once and spinner **B** once.

(*b*)Find the probability that his score is an odd number.

.......................................................

**(1)**

**(Total for Question 9 is 3 marks)**

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**10** Orange squash is made from orange juice and water.

Sean has two different cartons of orange squash, carton **P** and carton **Q**.

The table gives information about the two cartons.

|  |  |
| --- | --- |
| **Carton P** | **Carton Q** |
| Total volume of orange squash is  250 millilitres  30% of the total volume is **orange juice**  and  the remainder is water | Total volume of orange squash is  250 millilitres  160 millilitres of the total volume is **water**  and  the remainder is orange juice |

Work out the difference in the volume of orange juice in carton **P** and the volume of

orange juice in carton **Q**.

....................................................... millilitres

**(Total for Question 10 is 3 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**11** On the grid below, draw the graph of *y* = 1 – 2*x* for values of *x* from –2 to 3

**Chart, line chart

Description automatically generated**

**(Total for Question 11 is 3 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**12** (*a*)Show that 

**(2)**

(*b*)Find the highest common factor (HCF) of 130 and 208

Show your working clearly.

.......................................................

**(2)**

**(Total for Question 12 is 4 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**13** *p* = *t* – *ac*

*t* = 18

*a* = –3

*c* = 5

(*a*)Work out the value of *p*

*p* = .......................................................

**(2)**

(*b*)Make *x* the subject of the formula *d* = 3*x* + 10

.......................................................

**(2)**

**(Total for Question 13 is 4 marks)**

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**14**

Chart, line chart

Description automatically generated

(*a*)On the grid, rotate triangle **A** 90° anticlockwise about centre *O*

**(2)**

Chart, line chart

Description automatically generated

(*b*)Describe fully the single transformation that maps triangle **B** onto triangle **C**

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......................................................................................................................................................

......................................................................................................................................................**(2)**

**(Total for Question 14 is 4 marks)**

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**15** Here is a floor plan of a stage.

The plan is formed from a triangle and a rectangle.

Diagram

Description automatically generated

The stage manager is going to paint the floor.

One tin of paint covers an area of 1.8 m2

One tin of paint costs $16.40

Paint can only be bought in full tins.

The stage manager has $190 to spend.

Does the stage manager have enough money to buy enough tins to paint all of the floor?

Show your working clearly.

**(Total for Question 15 is 5 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**16** 80 students entered a dancing competition.

The table gives information about the length of time, in minutes, for which each student

spent dancing.

|  |  |
| --- | --- |
| **Time (*m*)** | **Frequency** |
| 0 < *m* ≤ 12 | 11 |
| 12 < *m* ≤ 24 | 25 |
| 24 < *m* ≤ 36 | 23 |
| 36 < *m* ≤ 48 | 15 |
| 48 < *m* ≤ 60 | 6 |

Work out an estimate for the mean length of time the students spent dancing.

...................................................... minutes

**(Total for Question 16 is 4 marks)**

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**17** Solve 3(2 – 4*x*) = 5 – 8*x*

Show clear algebraic working.

*x* = ......................................................

**(Total for Question 17 is 3 marks)**

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**18** Use ruler and compasses only to construct the perpendicular bisector of line *AB*

You must show all your construction lines.

*A picture containing shape

Description automatically generated*

**(Total for Question 18 is 2 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**19** The diagram shows a pentagon.

*Diagram

Description automatically generated*

Work out the value of *x*

*x* = ......................................................

**(Total for Question 19 is 3 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**20** In a box, there are only green sweets, orange sweets and yellow sweets.

There are 280 sweets in the box so that

the number of green sweets : the number of orange sweets = 2 : 3

and

the number of orange sweets : the number of yellow sweets = 1 : 5

Work out how many green sweets there are in the box.

......................................................

**(Total for Question 20 is 3 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**21** Shane bought a car.

The amount Shane paid for the car was $32 000

Theresa also bought a car.

To pay for this car, Theresa paid a deposit of $18 000 together with 14 monthly

payments of $1160

Theresa paid more for her car than Shane paid for his car.

(*a*)Work out how much more Theresa paid as a percentage of the amount Shane paid.

......................................................%

**(4)**

Kylie bought a van.

After 1 year, the value of the van was $39 865

During this year, the value of the van decreased by 15%

(*b*)Work out the value of the van when Kylie bought it.

$......................................................

**(3)**

**(Total for Question 21 is 7 marks)**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**22** Some members of a library were asked to name the type of book that they each liked to

read the best.

One of the members is chosen at random.

The table shows information about the probability of the type of book that this

member answered.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of book** | comedy | romance | mystery | thriller |
| **Probability** | 0.24 | 0.40 | 3*x* | *x* |

48 members answered comedy books.

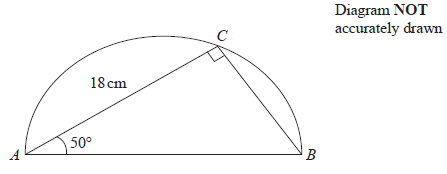
Work out how many of the members answered mystery books.

......................................................

**(Total for Question 22 is 4 marks)**

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**23** The diagram shows a triangle *ABC* inside a semicircle.

**

*A*, *B* and *C* are points on the semicircle.

*AB* is the diameter of the semicircle.

Angle *ACB* = 90°

Angle *BAC* = 50°

*AC* = 18 cm

Work out the perimeter of the semicircle.

Give your answer correct to 2 significant figures.

...................................................... cm

**(Total for Question 23 is 5 marks)**

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**24** (*a*)Write 6.25 × 10−4 as an ordinary number.

......................................................

**(1)**

(*b*)Work out (2.4 × 1012) ÷ (9.6 × 104)

Give your answer in standard form.

......................................................

**(2)**

**(Total for Question 24 is 3 marks)**

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**25** (*a*)Factorise *y*2 – 2*y* – 48

......................................................

**(2)**

(*b*)Write down the inequality shown on the number line

Chart, box and whisker chart

Description automatically generated

......................................................

**(1)**

(*c*)Solve the inequality 7*w* + 6 > 12*w* + 14

......................................................

**(3)**

**(Total for Question 25 is 6 marks)**

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**TOTAL FOR PAPER IS 100 MARKS**