EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate Of Secondary Education

CANDIDATE NAME

CENTRE NUMBER

CANDIDATE NUMBER

MATHEMATICS   **6880/02**
SPECIMEN PAPER 2 (Core) Structured   **For Examination from 2021-2023**
                                                                          2 hours

Additional materials: Scientific calculator
                        Geometrical instruments
                        Mathematical tables (optional)
                        Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on the spaces provided.
Write in dark blue or black pen in the spaces provided on the Question paper.
You may use pencil for any diagrams or graphs.
Do **not** use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions in this paper.

All working should be clearly shown below that question.
The number of marks is given in brackets [ ] at the end of each question and part question.

Scientific calculators may be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures.
Give answers in degrees to one decimal place.
For π, use 3.142 or the calculator value.

The total of the marks for this paper is 90.

For Examiner's Use	
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This paper consists of **15** printed pages and **1** blank page.

1 The first 4 terms of a sequence are $12, 7, 2, -3, \ldots$

(a) Write down the next two terms of the sequence.

Answer (a) ….…..… , ….….…. [2]

(b) State the rule for finding the next term of the sequence.

Answer(b).……………………………………..……………..……………...… [1]

(c) Write down all the steps to find term number 20.

Answer (c).……………………………………….[2]

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2 **(a)** Expand and simplify.

(**i**) $(x-5)(x+3)$

Answer (a)(i)……………………....…... [2]

(**ii**) $3(x-5) + 2(4x+1)$

Answer (a)(ii) ………..………..…… [2]

(b) Write as a **single** fraction.

$$\frac{x-2}{3} - \frac{x+1}{2}$$

Answer (b) ………....………..… [3]

3 **(a)** Given the formula $A = \dfrac{1}{2}(a + b)h$,

(i) work out the value of A when $a = 5.4$, $b = 2.2$ and $h = 4.7$.

Answer (a)(i)………………...……... [2]

(ii) make b the subject of the formula.

Answer (a)(ii)………..……..……... [2]

(b) Three people are given y bananas to share equally.

Write an expression, in terms of y, for the number of bananas each person receives.

Answer (b) ……………...……..…... [1]

(c) A spray can is used to paint a wall. The thickness of the paint on the wall is t cm.
The distance of the spray can from the wall is d cm.
It is given that t is inversely proportional to the square of d, and that $t = 0.4$ cm when $d = 5$ cm.
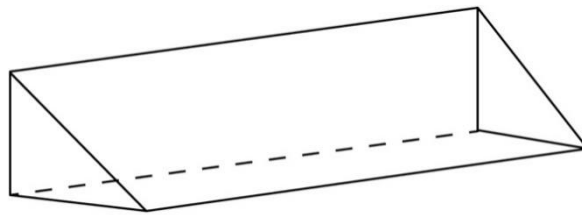
Find the value of t when $d = 46$ cm.

Answer (c) …………………..……[3]

4   (**a**)   A cone has radius 4 cm, height 3 cm and slant height 5 cm.

Calculate the total surface area of the cone.
[Curved surface area of a cone = $\pi r l$]

Answer (a) ……………………………..…..cm^2 [4]

(**b**)   The diagram below represents a solid.

   (**i**)   Write down the special name of the solid.

Answer (b)(i) …………….……………………………………...………… [1]

   (**ii**)   Draw a sketch of the net of the solid.

[2]

5   Sabelo counted the number of people in each car for 50 cars that passed through a traffic light one afternoon.

He recorded the first 40 results as shown in the table below:

| Number of people in a car	Tally marks	Number of cars
1	HHT HHT HHT	
2	HHT	
3	HHT I	
4	HHT IIII	
5	HHT	
6		

The remaining 10 results were 1, 3, 3, 3, 4, 5, 6, 6, 1, 6.

(a)   Use all the results to complete the frequency table above.   [3]

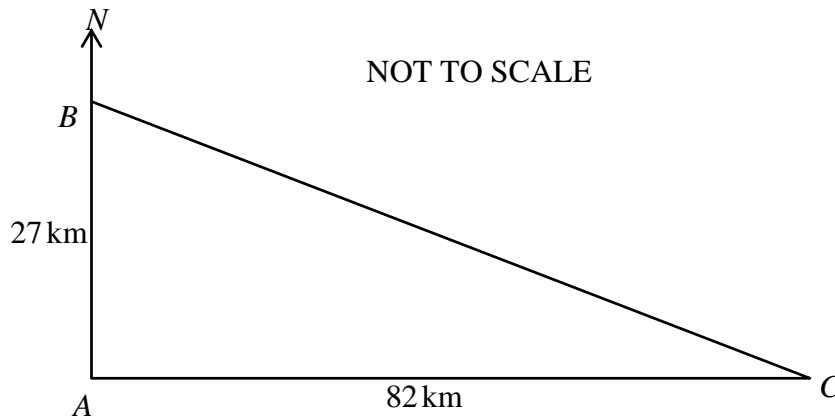**(b)**   Write down the **mode** and **median** of the distribution.

Answer (b) Mode ……..………..… [1]

Median ………………..… [1]

(c)   On the following grid, draw a bar chart to show the information for the 50 cars.

Number of cars (y-axis), Number of people in a car (x-axis)
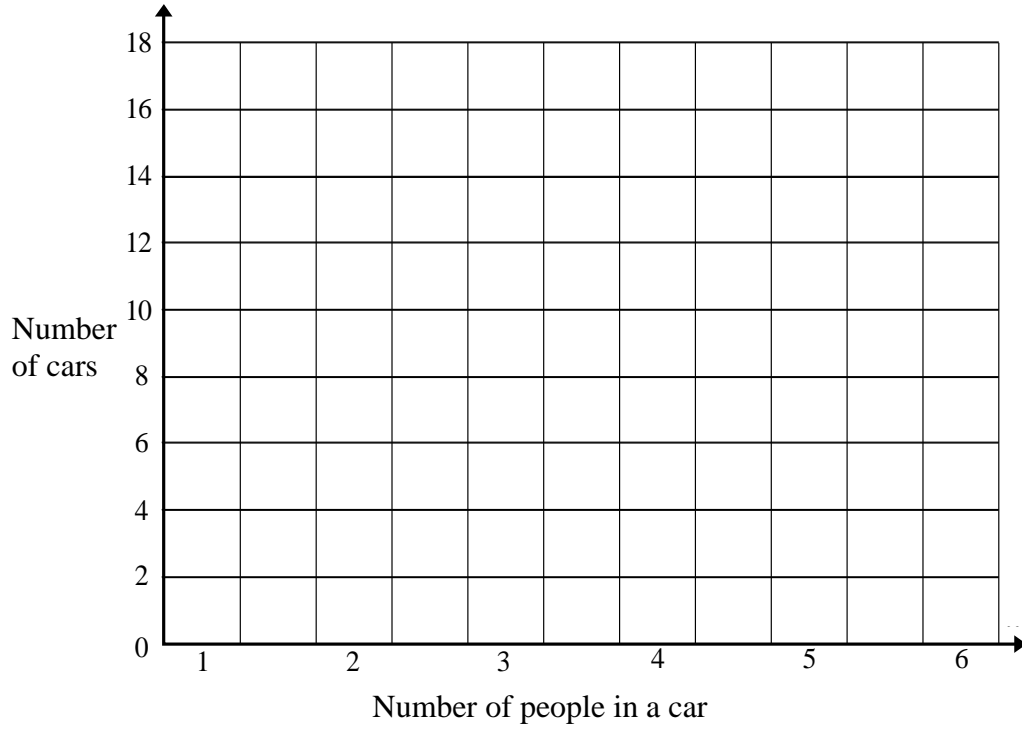
[2]

6   The diagram below shows the position of three towns *A*, *B* and *C*.
B is 27 km North of *A* and *C* is 82 km East of *A*.

(a)   Calculate distance *BC* to the nearest kilometre.

Answer (a) …….…..……...............km [2]

.

(b)   Write down the bearing of *C* from *A*.

Answer(b)…………………..………..° [1]

(c)   **(i)**   Calculate angle *ABC*.

Answer (c)(i) ..…......……………..° [2]

       (ii)   Find the bearing of *C* from *B*.

Answer (c)(ii) ..….…..…………… …..[1]

(d)   Calculate the area of triangle *ABC*.

Answer (d)……...……….………km² [2]

7 A boy participates in a 100 m race.
If the boy wins the first race, then the boy secures a place in the final race.
The probability that the boy wins the first race is $\frac{2}{3}$.

The probability that the boy wins in the final race is $\frac{2}{5}$.
Part of the information is shown in the tree diagram below.

First race   Final race
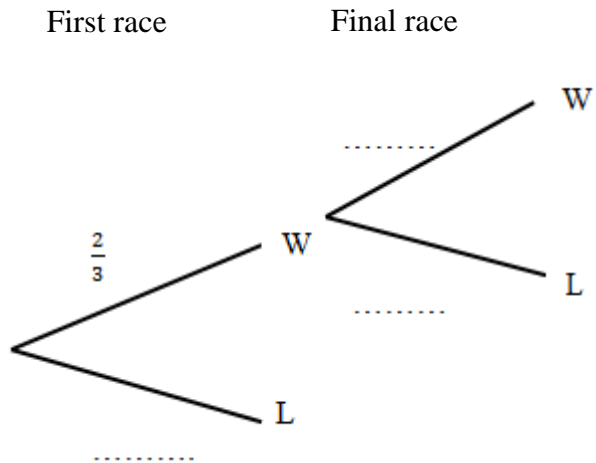
(a) Complete the tree diagram above. [3]

(b) Find the probability that the boy secures a place in the final race and wins the competition.

Answer (b)…………….……..…..[2]

8 **(a)** A piece of land measuring $6000\,m^2$ is divided up.
The land is given to Rose, Steven and Tania in the ratio 7: 5: 3 respectively.

(i) Show that Rose gets $2800\,m^2$ of land.

[2]

(ii) Find the area of the land that Steven gets.

Answer (a)(ii) …………….................m^2 [1]

(b) Steven builds a house on his land.
He borrows E50 000 from the bank at 8% per year simple interest.

Find the total amount of money he will have to pay at the end of 3 years.

Answer (b) E …………..…..………... [2]

(c) Tania sells her land for E120 000. She then invests her money for 3 years at
a compound interest rate of 6% per year.

Calculate the total amount of money she will have at the end of 3 years.
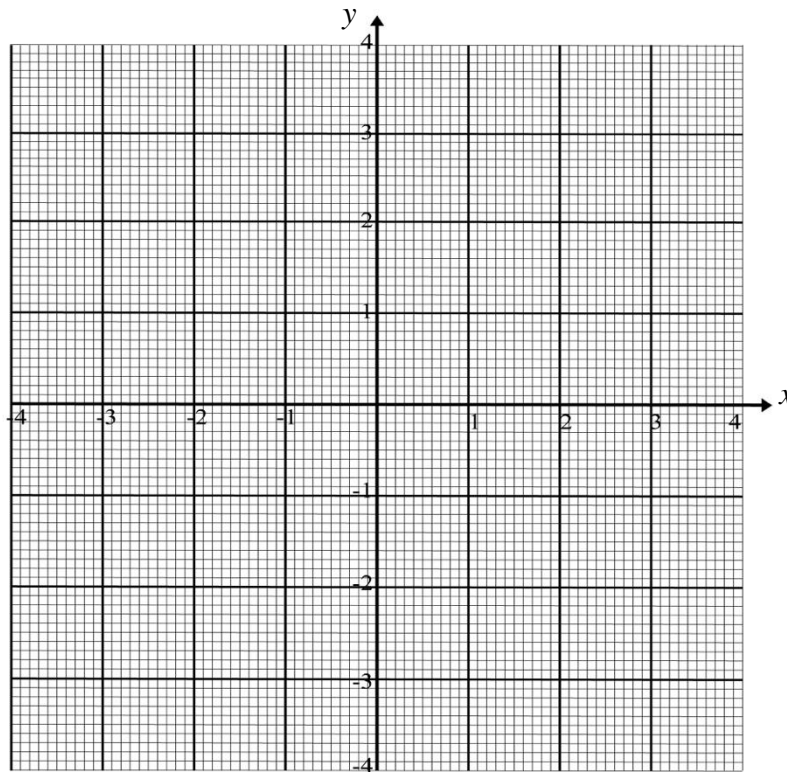Give your answer to the nearest Lilangeni.

Answer (c) E ……………….........…… [3]

9   **(a)**   Complete the table for values of the function $y = \dfrac{2}{x}, \ x \neq 0$.

x	-4	-2	-1.5	-1	-0.5		0.5	1	1.5	2	4
y	-0.5	-1			-4		4	2		1	0.5

[2]

(b)   On the grid below, draw the graph of $y = \dfrac{2}{x}$ for $-4 \leq x \leq -0.5$ and $0.5 \leq x \leq 4$.
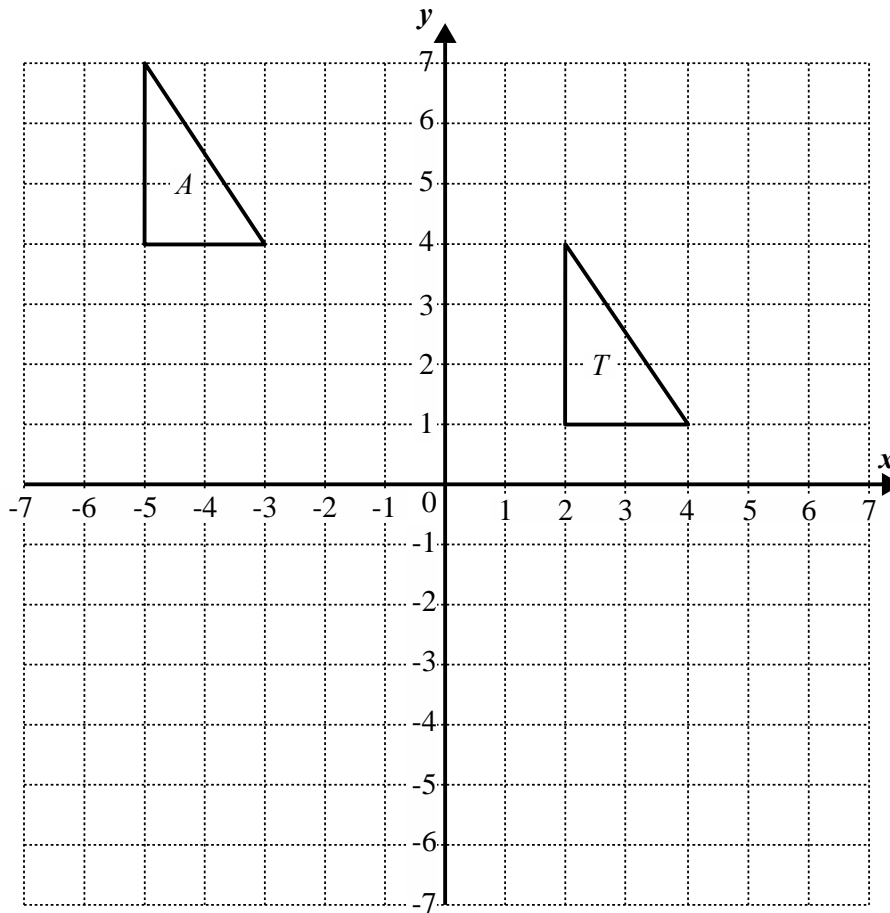

[4]

(c)   Write down the equation of the line of symmetry of the graph.

Answer (c)……..………………….…...[1]

10   The diagram shows transformations of Triangle *T*.

(a)   On the diagram above, draw

   (i)   triangle *P*, the image of triangle *T* after a reflection in the line *x* = 4,   [2]

   (ii)   triangle *Q*, the image of triangle *T* after a translation using vector $\begin{pmatrix} -5 \\ -4 \end{pmatrix}$,   [2]

   (iii)   Triangle *R*, the image of triangle *T* after a rotation, center (4, 1) through 180^0.
                                                                                                      [2]

(b)   Describe the **single** transformation that maps triangle *T* onto triangle *A*.

   Answer (b)…..………………………………………………………..…………………….[2]

11   **(a)**   Find two consecutive numbers with a sum of 25.

Answer (a)………….and……….…….[2]

(b)   Find the value of *a* given that $7^a = 1$.

Answer (b) a = ………………………[1]

(c)   Without using a calculator, find the value of

(i) $1.85 + 4 \times 8$,

Answer (c)(i)………..….….……...… [1]

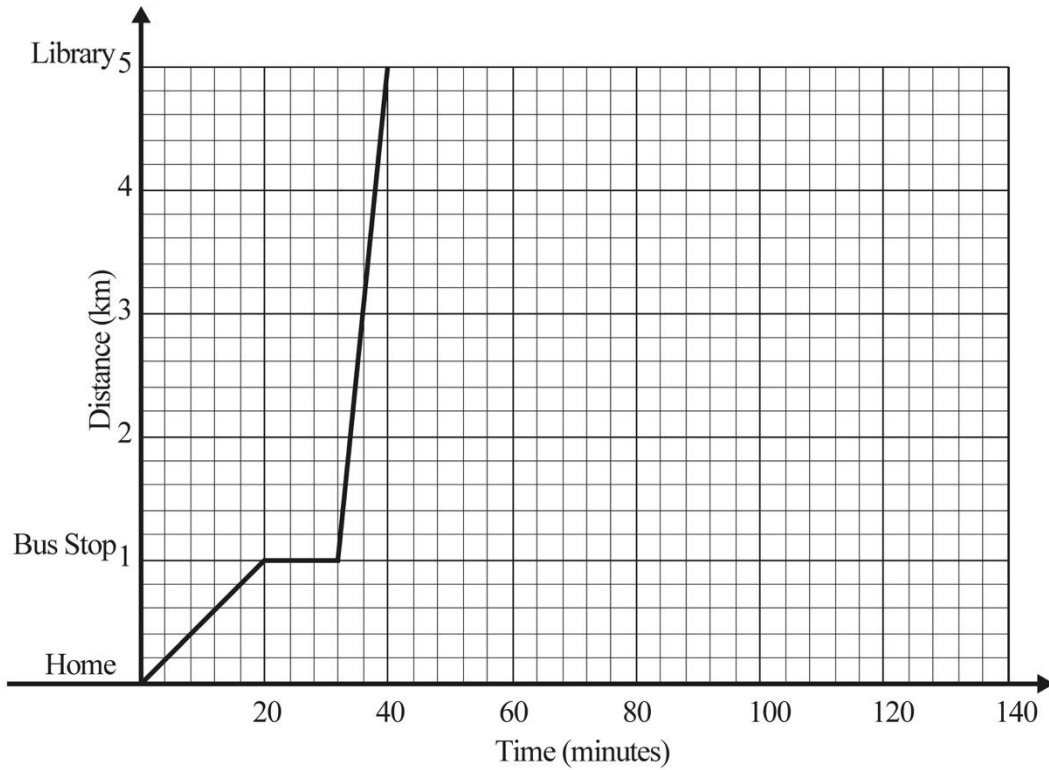**(ii)** $2.056 \times 10^4 - 1.003 \times 10^2$.

Answer (c)(ii) ……………….……….[2]

(d)   Solve.

$$\frac{y-4}{3} + \frac{y+4}{4} = -5$$

Answer (d) y =……………..……...…[3]

12 The graph below shows Sanele's journey from home to the library.

She walks to the bus stop and waits for the bus to take her to the library.

(a) Write down

(i) the distance to the bus stop,

Answer (a)(i) ………………………...km [1]

(ii) how long, in minutes, Sanele waits at the bus stop,

Answer (a)(ii) ………..……….…….minutes [1]

(iii) how long, in minutes, Sanele is on the bus.

Answer (a)(iii) ……...………….....…minutes [2]

(b) Calculate, giving your answer in kilometres per hour,

    (i) the speed at which Sanele walks,

Answer(b)(i)……………….………km/h [1]

    (ii) the speed of the bus,

Answer (b)(ii) …………………………. km/h [2]

    (iii) the average speed for Sanele's journey from home to the library.

Answer (c)(iii) …………………………..… km/h [2]

(c) Sanele stays in the library for one hour.
She then travels home by car at an average speed of 30 km/h.

Show this part of the journey on the diagram above. [2]

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