EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

MATHEMATICS **6880/02**

Paper 2 Calculator Structured Questions (Core) **October/November 2021**

2 hours

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Geometrical Instruments
Mathematical tables (optional)
Tracing paper (optional)

READ THESE INSTRUCTIONS FIRST

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

Answer **all** questions.

If working is needed for any question it must be shown below that question.

Electronic calculators should 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 either your calculator value or 3.142.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 90.

For Examiner's Use	
1	
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Total	

This document consists of **16** printed pages.

1 **(a)** Write 86 as a product of its prime factors.

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

(b) Write as a single power 4.

$$4^5 \div 4^{-8}$$

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

(c) Evaluate.

$$16^{\frac{1}{2}} + 3 \times 3^2.$$

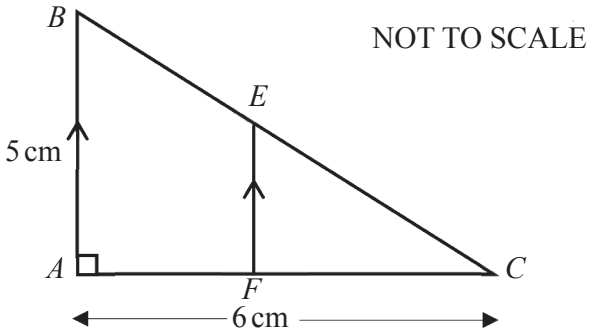
Answer (c) ..... [2]

(d) Express 1 in index form using base 5.

Answer (d) ..... [1]

2 Triangle *ABC* is a right-angled triangle.

Angle *BAC* is 90°.
AB is 5 cm, *AC* is 6 cm.
AB is parallel to *FE*.



Calculate the size of

(a) angle *ACB*,

Answer (a) angle *ACB* ..... ° [2]

(b) angle *FEC*.

Answer (b) angle *FEC* ..... ° [2]

3 **(a)** **(i)** Fill in the missing terms in the sequence.

51, 43, 35, ... , 19, ... , 3 [2]

(ii) State the term – term rule of the sequence in **(a)**.

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

(b) The rent of a house is increased from E2500 to E3650.

Find the percentage increase.

Answer (b) ..... % [3]

4 The area of a rectangle is 79.2 cm^2.
The length of the rectangle is 26.4 cm.

(a) Calculate

(i) the width of the rectangle,

Answer (a)(i) ..... cm [2]

(ii) the length of a diagonal of the rectangle.

Answer (a)(ii) ..... cm [3]

(b) Describe the symmetries of a rectangle.

Answer (b) .....

.....

.....

..... [2]

5 **(a)** Calculate the value of $\frac{9.3 \times 618.3}{11.4 + 89.56}$ correct to 2 decimal places.

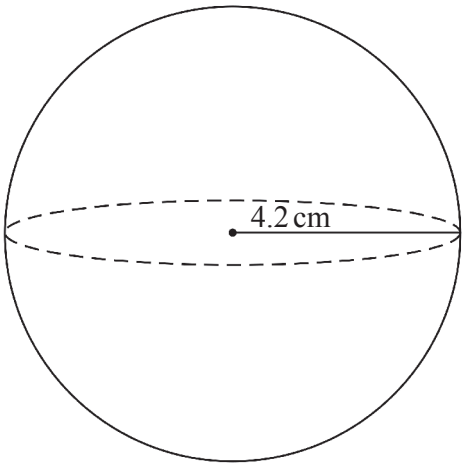
Answer (a) ..... [2]

(b) A family consumes $\frac{3}{5}$ of a loaf of bread each day.

Find the least number of loaves the family needs to buy in 7 days.

Answer (b) ..... [3]

6 Candle wax is moulded into a sphere of radius 4.2 cm as shown below.



[The volume, V of a sphere with radius r is $V = \frac{4}{3}\pi r^3$]
[The surface area, A, of a sphere with radius r is $A = 4\pi r^2$]

Calculate

(a) **(i)** the surface area of the sphere,

Answer (a)(i) ..... cm^2 [2]

(ii) the volume of the sphere.

Answer (a)(ii) ..... cm^3 [2]

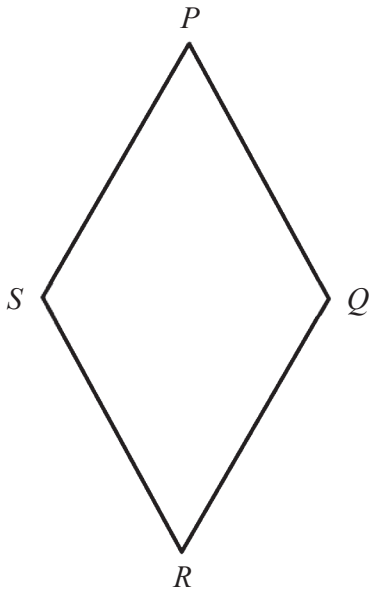
(b) The sphere is melted down.
Smaller spheres of volume 30 cm^3 are moulded from the wax.

Find the number of complete spheres that can be moulded from the wax.

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

[Turn over

7 Figure *PQRS* is a rhombus.



(a) Measure and write down the length of the diagonals *QS* and *PR*.

Answer (a) QS = ... cm *PR* = ... cm [2]

(b) Hence, find the area of the rhombus.

Answer (b) ..... cm^2 [2]

8 Jane bought x pens costing E19.60 each.
She bought y pencils costing E2.50 each.
She spent a total of E133 to buy the pens and pencils.

(a) Form an equation for the total cost of the pens and pencils that the girl bought.

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

(b) Jane bought a total of 19 pens and pencils.

Form an equation for the total number of pencils and pens that she bought.

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

(c) Solve the equations in **part (a)** and **part (b)** to find the number of pens and the number of pencils she bought. Show your working.

Answer (c) number of pens .....

number of pencils ..... [3]

9 **(a)** $R = \dfrac{2T}{3y}$.

Make T the subject of the formula.

Answer (a) $T =$ ..... [2]

(b) Calculate the value of T when $R = 52$ and $y = 44.8$.

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

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10 **(a)** Factorise $x^2 - 49$.

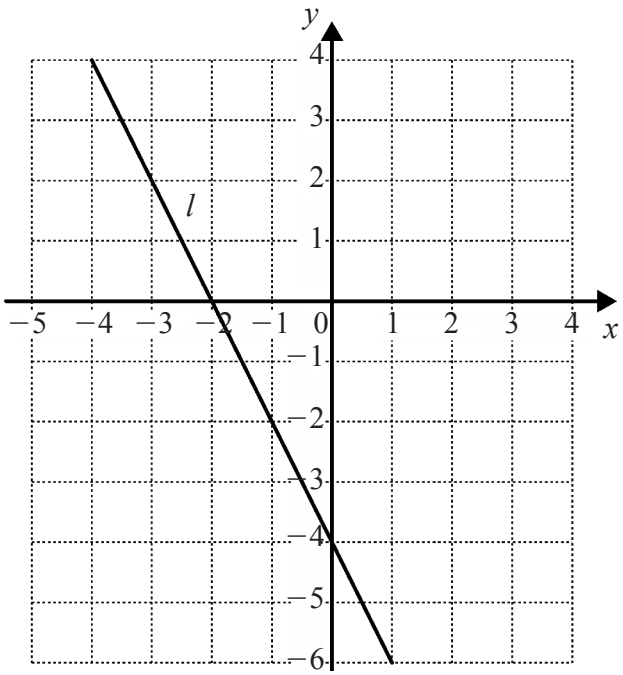
Answer (a) ..... [2]

(b) Solve the equation.

$$\frac{7d - 3}{4} - \frac{2d}{3} = 1$$

Answer (b) ..... [3]

(c) Line l is drawn in the diagram below.



(i) Find the gradient of the line.

Answer (c)(i) ..... [2]

(ii) State the y – intercept of the line.

Answer (c)(ii) ..... [1]

(iii) Write down the equation of the line.

Answer (c)(iii) ..... [1]

11 The marks obtained by a group of 25 students in a mathematics test are shown in the frequency table.

Marks	Number of students
34	3
40	4
45	7
60	8
70	2
76	1

(a) (i) State the mode.

Answer (a)(i) ..... [1]

(ii) Find the median.

Answer (a)(ii) ..... [2]

(iii) Calculate the mean.

Answer (a)(iii) ..... [3]

(b) A student is chosen at random from the group.

Find the probability that the student scored

(i) less than 60 marks in the test,

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

(ii) more than 60,

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

(iii) at least 60 marks.

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

(c) A pie chart is to be drawn to show the information from the frequency table.

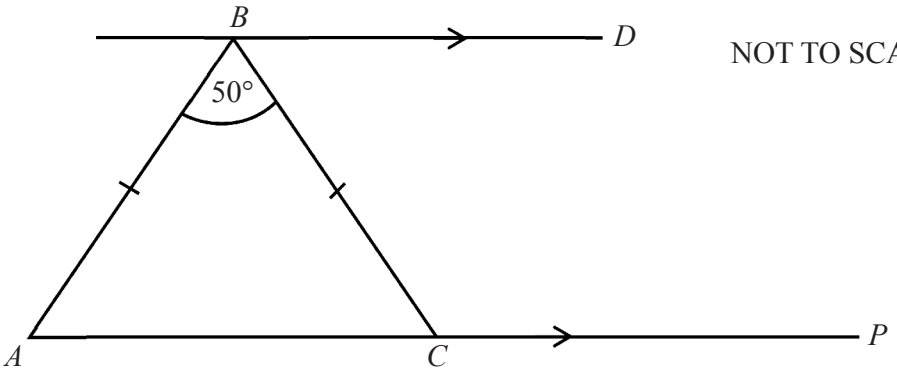
Calculate the sector angle for the number of students who obtained 45 marks.

Answer (c) ..... ° [2]

(d) If the pass mark was 50, calculate the percentage of the students who passed the test.

Answer (d) ..... % [3]

12 In the diagram, line AP is parallel to line BD.
Triangle ABC is isosceles.
Angle ABC is 50°.
P is a point on AC produced.



NOT TO SCALE

Find

(a) $B\widehat{A}C$,

Answer (a) ..... ° [2]

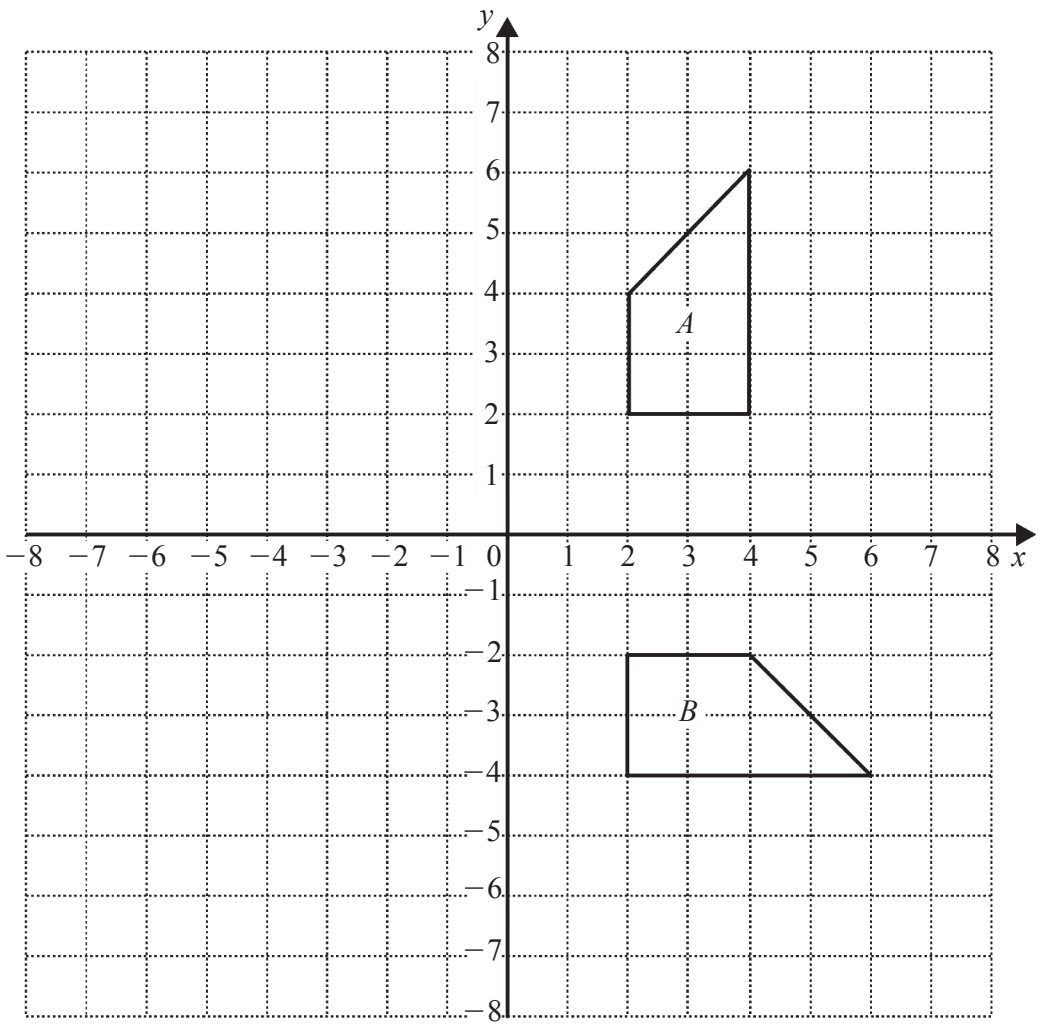
(b) $B\widehat{C}P$,

Answer (b) ..... ° [1]

(c) $C\widehat{B}D$.

Answer (c) ..... ° [1]

13 Shapes A and B are shown.



(a) Shape B is mapped onto shape C by a translation, vector $\begin{pmatrix} -8 \\ -3 \end{pmatrix}$.

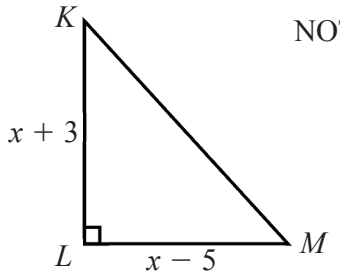
Draw and label shape C. [2]

(b) Shape A is mapped onto shape D by a reflection through $x = -1$.

Draw and label shape D. [2]

(c) Enlarge figure A by scale factor $-\frac{1}{2}$, centre (0, 0) and name the image E. [3]

14 Triangle KLM is a right-angled triangle.
Angle KLM is 90°.
$KL = (x + 3)$ cm and $LM = (x - 5)$ cm.



NOT TO SCALE

(a) Write an expression in terms of x for the area of the triangle.

Answer (a) ..... [1]

(b) The area of the triangle is 16.5 cm^2.

(i) Form an equation in terms of x for the area of the triangle and show that it reduces to

$$x^2 - 2x - 48 = 0.$$

[3]

(ii) Solve the equation $x^2 - 2x - 48 = 0$. Show your working.

Answer (b)(ii) $x =$ ..... or $x =$ ..... [3]

(iii) Find the length of KL.

Answer (b)(iii) ..... cm [1]