EXAMINATIONS COUNCIL OF ESWATINI
Eswatini General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

MATHEMATICS **6880/03**

Paper 3 Short-Answer Questions (Extended) **October/November 2022**

1 hour 30 minutes

Candidates answer on the Question Paper.
Additional Materials: Electronic Calculator
Geometric 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.
The number of marks is given in brackets [ ] at the end of each question **or** part 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 total of the marks for this paper is 80.

For Examiner's Use	
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This document consists of **13** printed pages and **3** blank pages.

1 Calculate 12.5% of 55 km.

Answer ..... km [2]

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2 Work out

$$\sqrt{0.4^{0.4} \times 1.3^{1.3}} + 2.17^{0.2}.$$

(a) Write your full calculator display.

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

(b) Write your answer to **part (a)** correct to 3 decimal places.

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

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3 Without using a calculator, work out $1\frac{4}{5} \div \frac{3}{7}$.

Show all working.

Give your answer as a mixed number in its simplest form.

Answer ..... [3]

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4 Solve $2^x = \dfrac{1}{8^x + 2}$.

Answer $x =$ ..... [4]

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5 $\underline{a} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$ and $\underline{b} = \begin{pmatrix} 7 \\ 4 \end{pmatrix}$.

Work out

(a) $5\underline{a}$,

Answer (*a*) [1]

(b) $\underline{a} - \underline{b}$.

Answer (b) [2]

[Turn over

6 **(a)** Factorise fully.

$$9p^2q - 12q^2p^3$$

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

(b) Simplify

$$3x - 4(5 - 9x).$$

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

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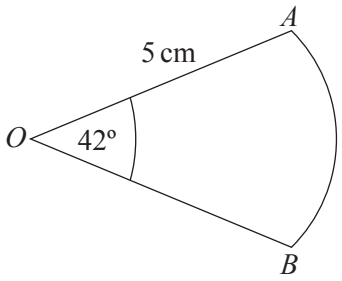
7 The diagram shows sector AOB of a circle with centre O and radius 5 cm.

The sector angle $AOB = 42°$.

DIAGRAM NOT ACCURATELY DRAWN



(a) Calculate the area of the sector AOB. Show your working.

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

(b) Calculator the perimeter of sector AOB.

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

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8 $P = 3t - 7s$.

Find P when $t = -2$ and $s = -4$.

Answer $P =$ ..... [2]

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9 Without using your calculator, work out $12 \div 4 - 2 - 3 \times 2 + 7$.

Show your working clearly.

Answer ..... [2]

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10 The length and width of a rectangle are 15 cm and 8 cm respectively.

These are each given to the nearest centimetre.

Calculate

(a) the upper bound of the difference between the length and the width,

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

(b) the lower bound for area of the rectangle.

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

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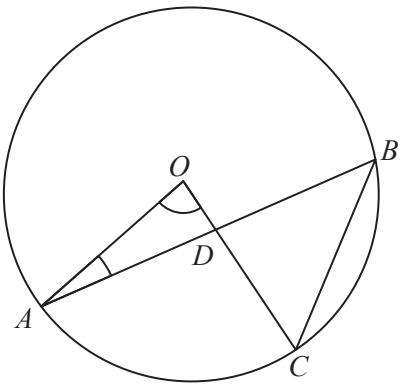
11 Points A, B and C lie on the circumference of the circle, centre O.

Line ADB is a straight line.

Angle $AOC = 88°$.

Angle $OAB = 35°$.

DIAGRAM NOT ACCURATELY DRAWN



Calculate angle OCB.

Answer .....° [3]

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12 Two jars are similar.

The smaller jar has a height of 8 cm and a base area of 34 cm^2.

The larger jar has a base area of 76.8 cm^2.

Calculate the height of the larger jar.

Answer ..... cm [3]

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13 The diagram shows triangle *EFG*.

HF is perpendicular to *EG*.

EF = 17 cm, *FH* = 13 cm and *GH* = 15 cm.

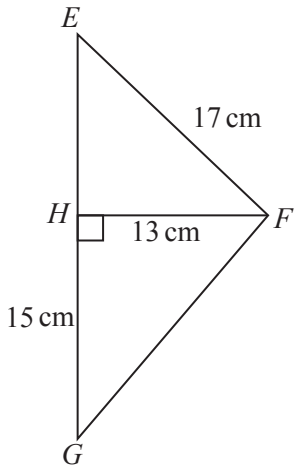

DIAGRAM NOT ACCURATELY DRAWN

Calculate

(a) the length of *EH*,

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

(b) Angle *HGF*.

Answer (b) .....° [2]

[Turn over

14 The table shows a frequency distribution for 16 numbers.

Number	10	12	14	x	20	22
Frequency	1	2	6	3	2	2

(a) Calculate the value of x when the mean is 16.

Answer (a) $x =$ ..... [3]

(b) A number is chosen at random from the 16 numbers.

(i) Find the probability that the number is 20.

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

(ii) Find the probability that the number is 14 or less.

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

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15 The gradient of line L is 2.

Line L passes through (5, 17).

Find the equation of line L.

Answer ..... [2]

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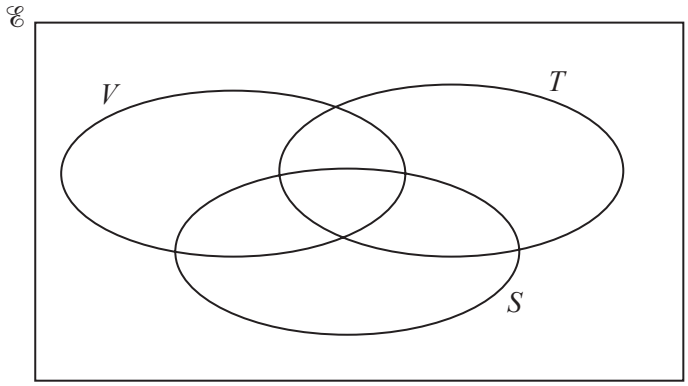
16 Shade the region $(V \cap S') \cup (T \cap V)$.



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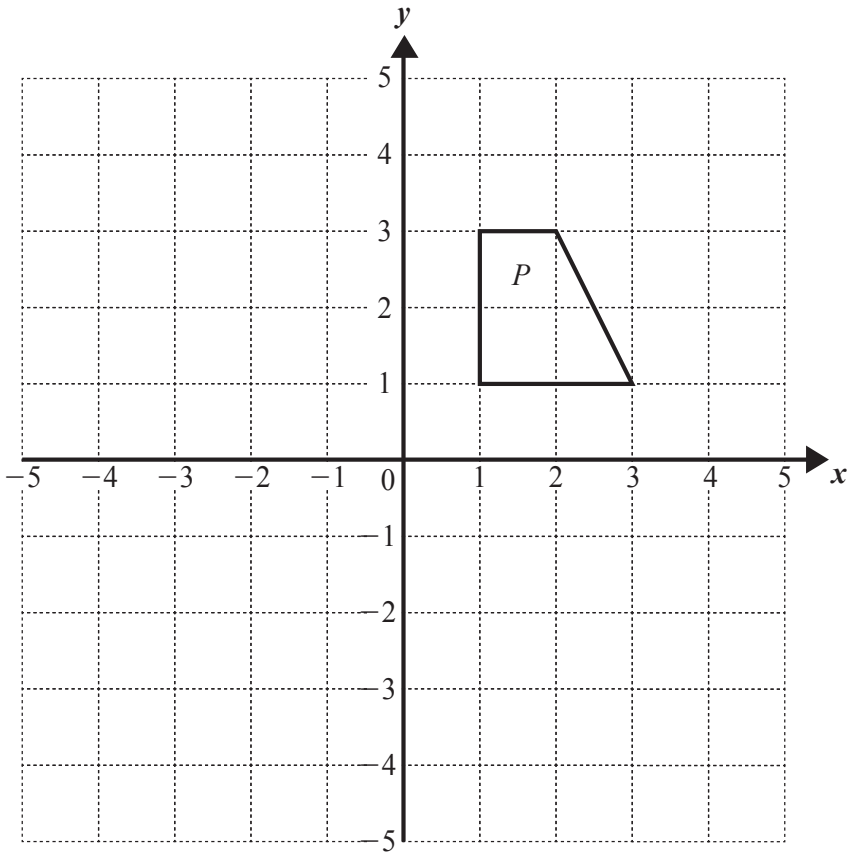
17 Figure P is mapped onto figure Q by matrix $\mathrm{M} = \begin{pmatrix} 0 & -1 \\ -1 & 0 \end{pmatrix}$.

(a) Draw and label figure Q. [3]



(b) Describe **fully** the transformation represented by matrix M.

Answer (b) .....

..... [2]

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18 9 2 5 2 1 7 3 2

For this list of numbers, find

(a) the mode,

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

(b) the range,

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

(c) the median,

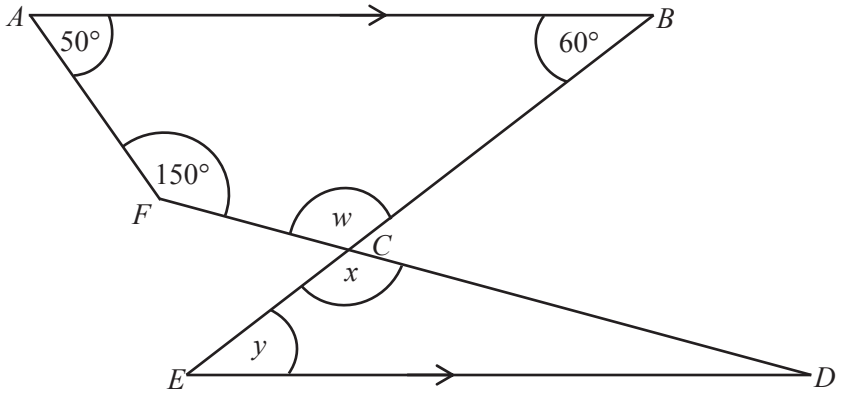
Answer (c) ..... [2]

(d) the mean.

Answer (d) ..... [2]

19 In the diagram, AB and DE are parallel.

DIAGRAM NOT ACCURATELY DRAWN



BCE and FCD are straight line segments.

$F\hat{A}B = 50°$, $A\hat{B}E = 60°$ and $A\hat{F}D = 150°$.

Calculate the following angles

(a) w,

Answer (a) $w =$ .....° [2]

(b) x,

Answer (b) $x =$ .....° [1]

(c) y.

Answer (c) $y =$ .....° [1]

20 **(a)** John bought 3 kg of peaches and 5 kg of mangoes for E50 from a fruit shop.

Let Ex be the price of 1 kg of peaches and Ey be the price of 1 kg of mangoes in Emalangeni.

Form an equation to represent the above information.

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

(b) Solve the simultaneous equations.

$2x + 3y = 31$

$5x - 3y = 14$

Answer (b) $x =$ ..... and $y =$ ..... [3]

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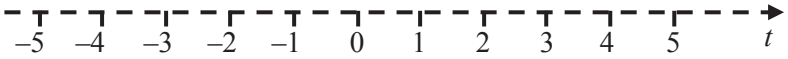
21 **(a)** Giving your answer in terms of x, find the inverse of $\begin{pmatrix} 3 & x \\ 4 & -1 \end{pmatrix}$.

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

(b) On the number line, show the inequality $-2 \geq t$.



[2]

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22 p varies inversely with q^2.

When $q = 3$, $p = 1$.

(a) Find an equation connecting p and q.

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

(b) Find the value of p when $q = 2$.

Answer (b) $p =$ ..... [2]

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