EXAMINATIONS COUNCIL OF SWAZILAND
Swaziland General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

MATHEMATICS **6880/02**

Paper 2 Calculator Structured Questions (Core and Extended) **October/November 2018**

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 on all the work you hand in.
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 90.

For Examiner's Use	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
Total	

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

1 **(a)** Write the number 40.0999 correct to

(i) the nearest tenth,

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

(ii) 3 decimal places.

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

(b) Work out;

(i) $3.473 \div 10^3$,

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

(ii) $\frac{3}{7} \times 84$.

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

(c) These are the four terms of a sequence.

4 12 36 108

(i) Find the next three terms of the sequence.

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

(ii) State the rule for generating the next term in the sequence.

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

2 The following is a weekly study timetable for Lola.

	17 30 h – 18 45 h	**19 30 h – 20 30 h**	**20 30 h – 21 45 h**
Monday	Science	Mathematics	Accounts
Tuesday	Mathematics	Geography	Literature
Wednesday	----------	Mathematics	Science
Thursday	Mathematics	Accounts	Geography
Friday	Science	Mathematics	Literature

(a) Which subject does Lola study most frequently?

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

(b) Which subject would Lola be studying at 20 00 h on a Thursday?

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

(c) How long does she spend studying Science on a Monday?

Answer (c) ..... h ..... minutes [1]

(d) Find the total time that Lola spends studying Maths in a week.

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

3 **(a)** The ratio of orange trees to lemon trees in an orchard is 4:3.
There are 28 orange trees in the orchard.

How many lemon trees are there?

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

(b) An item costs E540.00 before value added tax (VAT) is charged.
The VAT is 14%.

How much will a customer pay for the item?

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

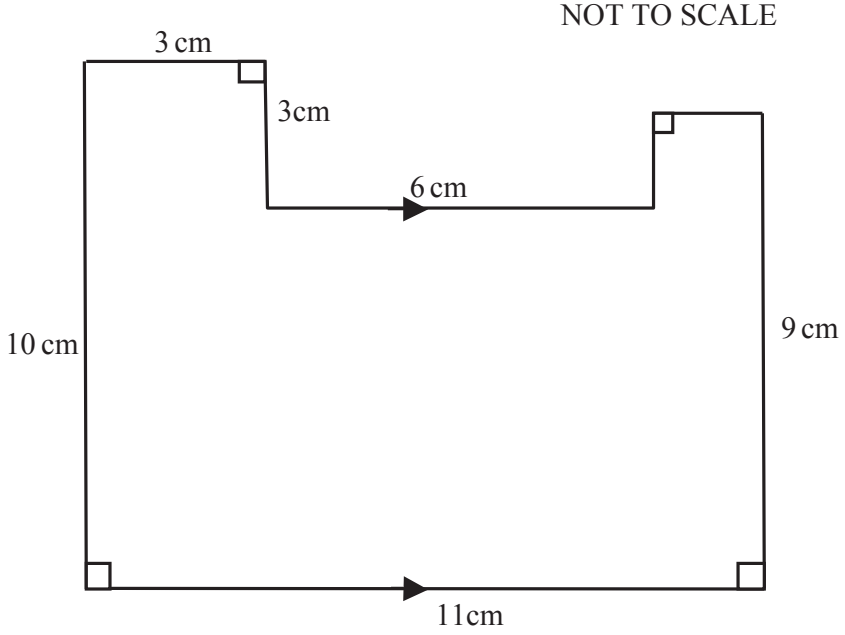
(c) Mr Dlamini bought a car for E75 000.
He later sold the car for E57 000.

Calculate his percentage loss.

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

4 **(a)** The diagram shows a polygon.
All the angles are right angles.

NOT TO SCALE



Calculate

(i) the perimeter of the polygon,

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

(ii) the area of the polygon.

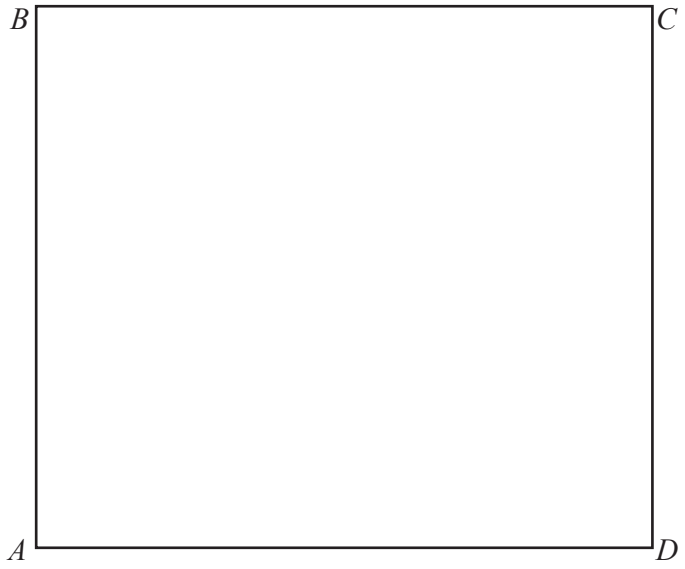
Answer (a)(ii) ..... cm^2 [3]

(b) Given that $\mathbf{a} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$, $\mathbf{b} = \begin{pmatrix} 2 \\ 1 \end{pmatrix}$ and $\mathbf{c} = \begin{pmatrix} 12 \\ -1 \end{pmatrix}$.

Work out $3\mathbf{a} + 2\mathbf{b} - \mathbf{c}$.

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

5 **(a)** Use the diagram below to answer the following questions.



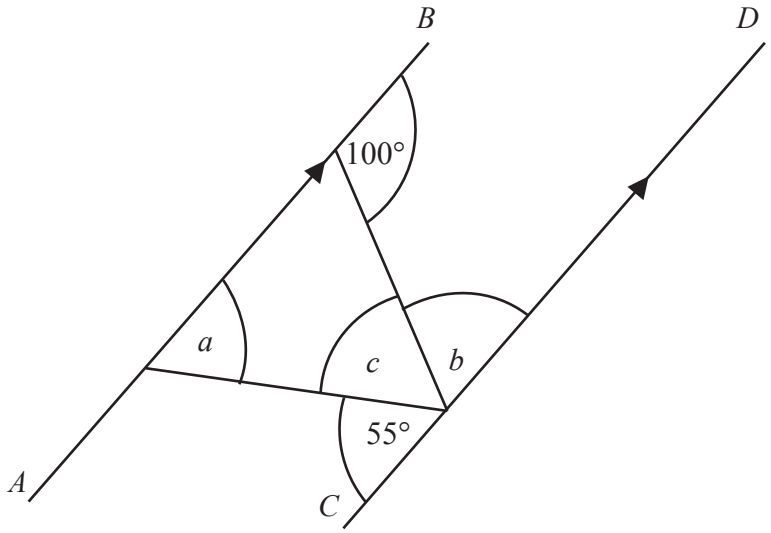
(i) Draw the locus of points which are 3 cm from A inside the diagram. [2]

(ii) Draw the locus of points which are equidistant from AB and AD inside the figure. [2]

(iii) Label the point Q where the two loci meet. [1]

(b) In the diagram below, lines AB and CD are parallel.

Find the sizes of the angles marked with letters.

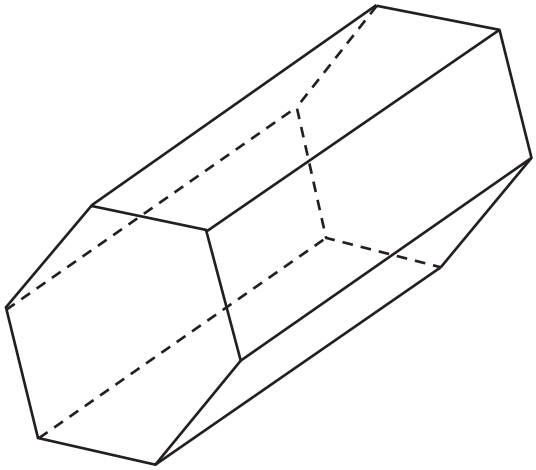


Answer (b) $a =$ ..... ° [1]

$b =$ ..... ° [1]

$c =$ ..... ° [1]

6 Use the solid to answer the questions below.
The two end faces are parallel and congruent.



(a) Write down the mathematical name for the solid.

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

(b) Find the number of

(i) faces,

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

(ii) edges,

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

(iii) vertices.

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

7 **(a)** Remove the brackets and simplify.

$$2(x - 2) + (x + 3)(2x - 5)$$

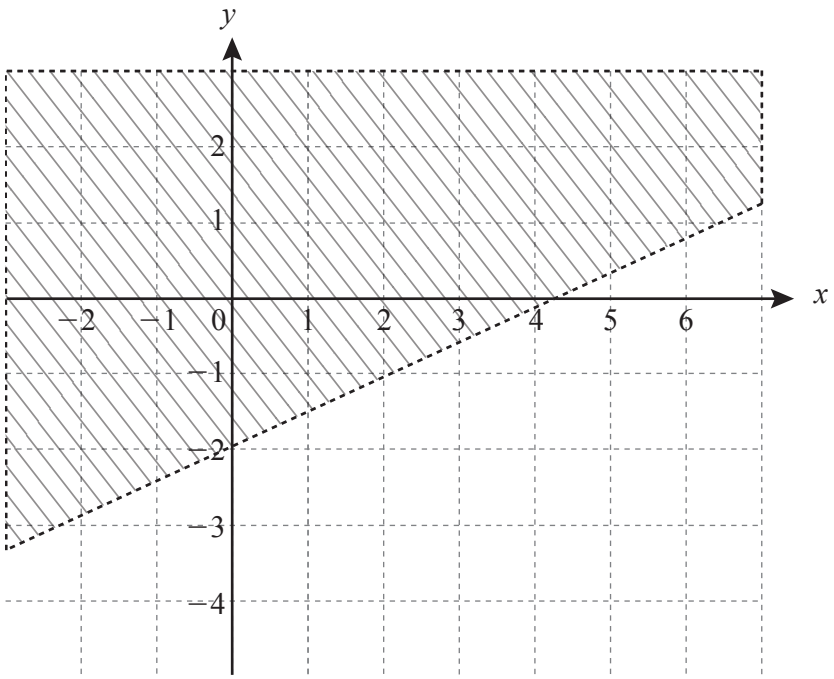
Answer (a) ..... [4]

(b) Factorise completely.

$$x^2 - q^2$$

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

(c) Find the inequality describing the shaded region.



Answer (c) ..... [3]

8 Below is a table showing water charges in Botswana in Pula (P).
The charge is per kilolitre (kl) of water used.
There is a minimum charge of P11.20 .

Consumption (kl)	Charge per kl (Pula)
First 5	2.00
Next 10	4.00
Next 10	9.00
Next 15	13.00
Above 40	18.00

(a) Work out the charge for 20 kl of water used.

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

(b) Ms Morothi's water consumption increased by 28%.
Her previous consumption was 25 kl.

Work out her new water bill.

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

9 **(a)** **(i)** Complete the tables for the functions $y = 4 - x$ and $y = 3x - 4$

x	-4	0	4
$y = 4 - x$		4	

[1]

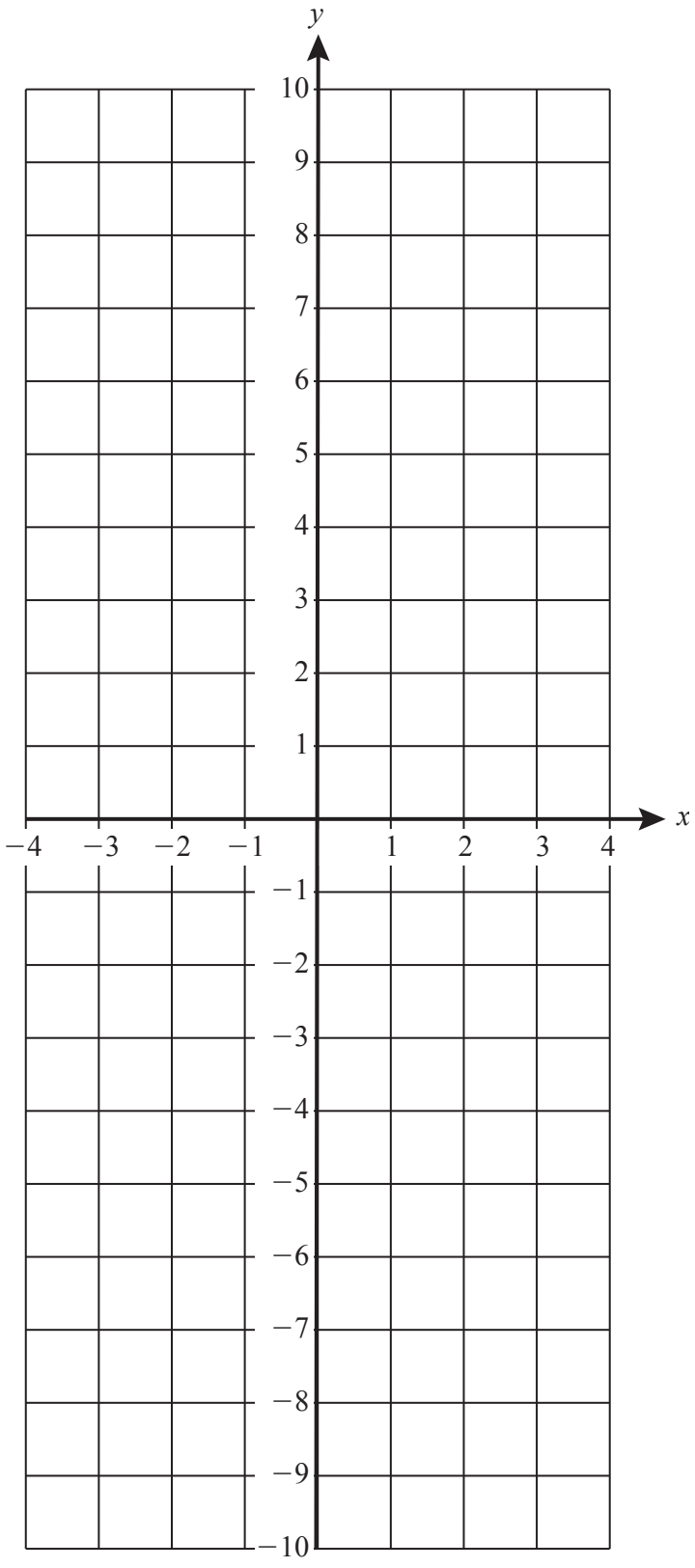
(ii)

x	-2	0	4
$y = 3x - 4$		-4	

[1]

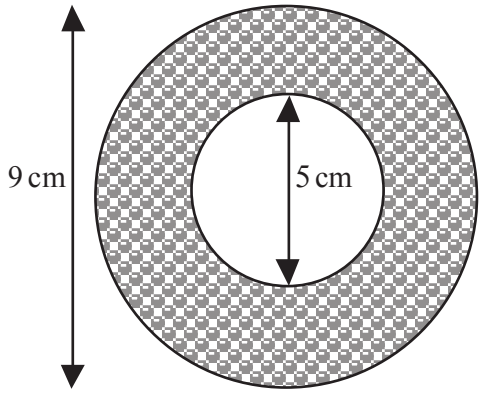
(b) Draw graphs to solve the simultaneous equations:

$y = 4 - x$ and $y = 3x - 4$



Answer (b) $x =$ ..... $y =$ ..... [4]

10 The diagram below shows the cross-section of a plastic pipe.
The external diameter is 9 cm and the internal diameter is 5 cm.



NOT TO SCALE

(a) Calculate the area of the shaded part.

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

(b) The length of the pipe is 20 cm.

Calculate the volume of the plastic used to make the pipe.

Answer (b) ..... cm^3 [2]

11 **(a)** The equation of a straight line is $3x + 3y - 9 = 0$.

(i) Write the equation in the form $y = mx + c$.

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

(ii) Hence write down the gradient of the line $3x + 3y - 9 = 0$.

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

(b) Seli had x books.
Muzi had y books.
Lami had twice as many books as Seli.

The total number of books for the three children was less than 12.

Form an inequality in x and y for this information.

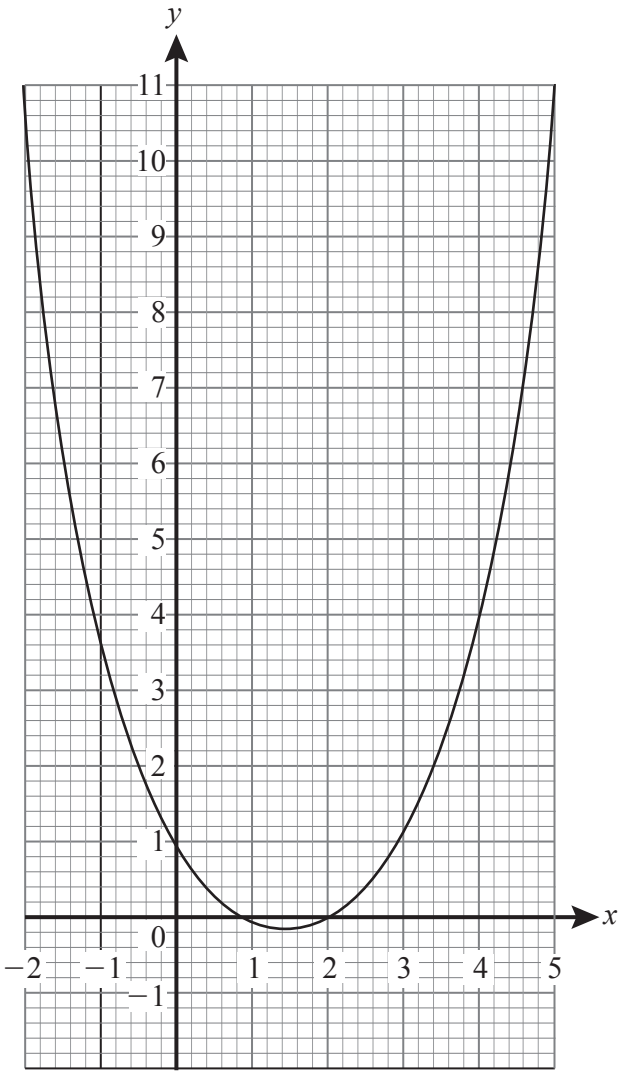
Answer (b) ..... [2]

(c) You are given the function $f(x) = \frac{-x - 4}{2}$.

Find the range for the domain $\{-5, -4, -2, 0\}$.

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

12 The graph below represents the function $f(x) = x^2 - 3x + 2$.



(a) Write down the equation of the line of symmetry for the graph of $f(x) = x^2 - 3x + 2$.

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

(b) Use this graph to solve the equation $x^2 - 3x + 2 = 0$.

Answer (b) $x =$ ..... or $x =$ ..... [2]

(c) **(i)** On the graph above, draw the line $y = 5 - x$ for $-2 \leqslant x \leqslant 5$. [2]

(ii) Hence solve the equation $x^2 - 3x + 2 = 5 - x$.

Answer (c)(ii) $x =$ ..... or $x =$ ..... [2]

13 (a) The distribution shows the marks scored by 40 Physics students in a test.

9	8	4	4	2	1	8	6
5	7	6	5	5	2	5	2
4	3	6	8	6	3	1	7
8	4	5	6	7	6	2	8
6	7	5	3	6	4	9	7

Complete the frequency table to show this information. [3]

Marks	Tally marks	Frequency
0 – 2		
3 – 4		
5 – 6		
7 – 8		
9 – 10		

(b) A Grade 3 class wrote a Mathematics test marked out of 10.
A summary of the test scores is given below.

Marks(x)	1	2	3	4	5	6	7	8	9	10
Frequency	0	5	3	4	4	7	2	5	0	0

(i) How many students wrote the test?

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

(ii) State the modal mark.

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

(iii) Find the median mark.

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

(iv) Find the mean mark.

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

(v) Find the probability that a learner got 7 marks or fewer in the test.

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

(vi) What is the probability that a learner got 11 marks in the test?

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