EXAMINATIONS COUNCIL OF SWAZILAND
Swaziland General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

MATHEMATICS **6880/01**

Paper 1 Non-Calculator Short-Answer Questions (Core and Extended) **October/November 2013**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical instruments
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 a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, glue or correction fluid.
You are not allowed to use a calculator.

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.
The total of the marks for this paper is 60.

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 Examiner's Use	
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This document consists of **12** printed pages.

[Turn over

1 You are given the following sequence $\frac{2}{3}$, 2, 6, – 54.

(a) Write down the missing number in the sequence.

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

(b) State the rule for generating the sequence.

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

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2 Using appropriate units, complete the statements to make each one of them reasonable.

(a) The mass of a boy is 60 ..... [1]

(b) The distance from Manzini to Nhlangano is 100 ..... [1]

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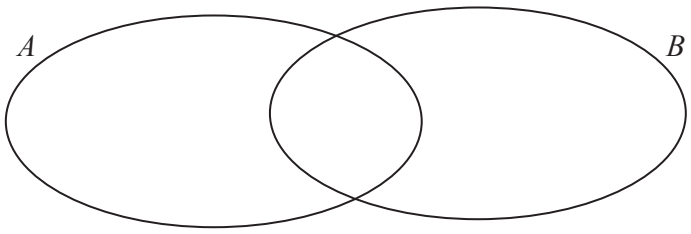
3 $A = \{1, 2, 3, 4\}$
$B = \{2, 4, 6, 8, 10\}$

(a) Find n*(B)*.

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

(b) Write down each element in the correct region in the Venn diagram. [3]



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4 You are given the following matrices.

$$A = \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix}, B = \begin{pmatrix} 1 & 3 \\ 7 & -4 \end{pmatrix} \text{and } C = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$$

Work out

(a) $A + B$,

Answer (*a*) ( ) [1]

(b) AB,

Answer (*b*) ( ) [1]

(c) CB.

Answer (*c*) ( ) [1]

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5 **(a)** Express 25% as a fraction in its simplest form.

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

(b) On a particular day the rate of exchange of the Lilangeni to the US dollar is E7 = US$1. Nompumelelo is going to America and has to change E4200 to US dollars.

How much money does she receive?

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

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6 **(a)** *S* and *Q* are points on the circumference of a circle.
PS and *PQ* are tangents to the circle at *S* and *Q* respectively.

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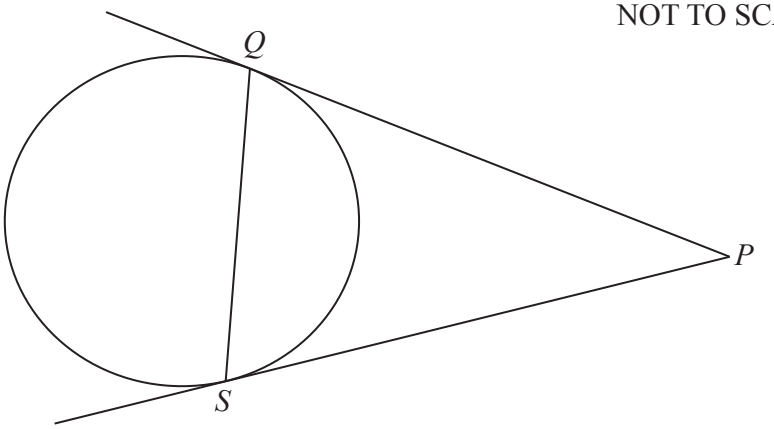

What kind of a triangle is *PQS*?

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

(b) *JKLM* is a circle with centre *O*.
JK and *LM* are chords such that *JK* = *LM*.
The distance of chord *JK* from the centre *O* is 4 cm.
The distance of chord *LM* from the centre *O* is *x* cm.

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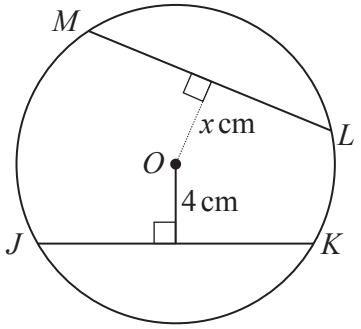

Write down the value of *x*.

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

7 Sipho invests E500 in a bank at the rate of 8% simple interest per annum.
Calculate the interest Sipho earns after 6 months.

Answer E .....[3]

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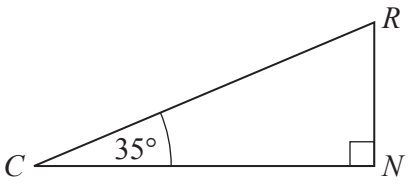
8 *CN* is a horizontal line and *NR* is a vertical line.
$N\hat{C}R = 35°$.



NOT TO SCALE

Find the angle of depression of *C* from *R*.

Answer .....° [2]

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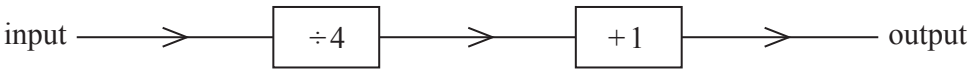
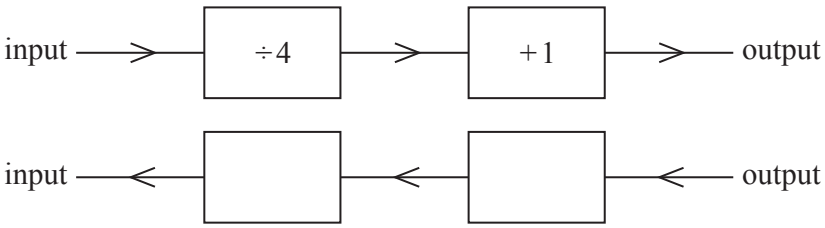
9 The following flow chart represents a function.



(a) Find the output when the input is 8.

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

(b) Complete the following flow chart to find the inverse of the function.



[2]

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10 Write the following statement as an algebraic expression.

Subtract twice the sum of x and 9 from m.

Answer ..... [2]

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11 Work out $6.2 \times 10^3 + 2.1 \times 10^2$, giving your answer in standard form.

Answer ..... [2]

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12 Themba carries out an experiment to find the probability of getting a head or tail using a coin.
He throws the coin 10 times.
The results are shown in the table below.

Number of tosses	Number of heads	Number of tails
10	7	3

(a) From his results in the table, estimate the probability of getting a head.

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

(b) To get more accurate results, what do you suggest Themba should do?

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

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13 **(a)** Remove brackets and simplify

$$(a - 5)(a + 4).$$

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

(b) Factorise completely

$$x^2 + x - 12.$$

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

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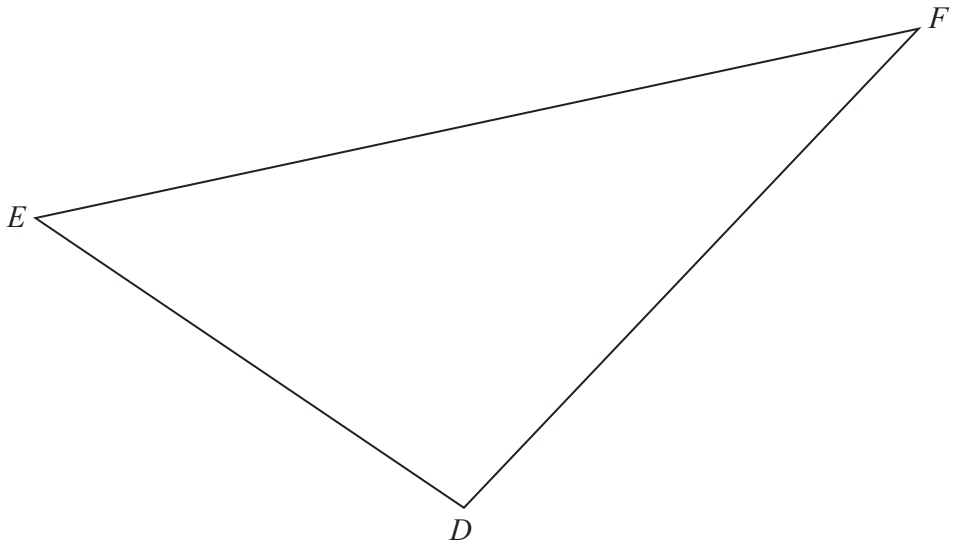
14 **(a)** *PQRS* is a regular four-sided polygon.

What special name is given to the polygon *PQRS*?

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

(b) *DEF* is a triangle.



(i) Draw a bisector of $D\hat{E}F$. [1]

(ii) Draw the locus of points equidistant from *D* and *F*. [1]

(iii) Draw the locus of points 4 cm from *D*. [1]

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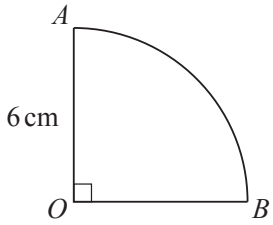
15 *OAB* is a sector.
The radius *OA* is 6 cm.
$A\hat{O}B = 90°$.



NOT TO SCALE

Calculate the length of arc *AB*. [Use $\pi = 3.14$]

Answer ..... cm [3]

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16 A model of a real ship is made to a scale of 1 : 10.

(a) The length of the model ship is 8 m.

Calculate the length of the real ship in metres.

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

(b) The real ship has 50 seats.

Write down the number of seats in the model ship.

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

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17 The table shows marks obtained by learners in a test.

Marks	Frequency
4	2
5	4
6	12
7	10
8	7

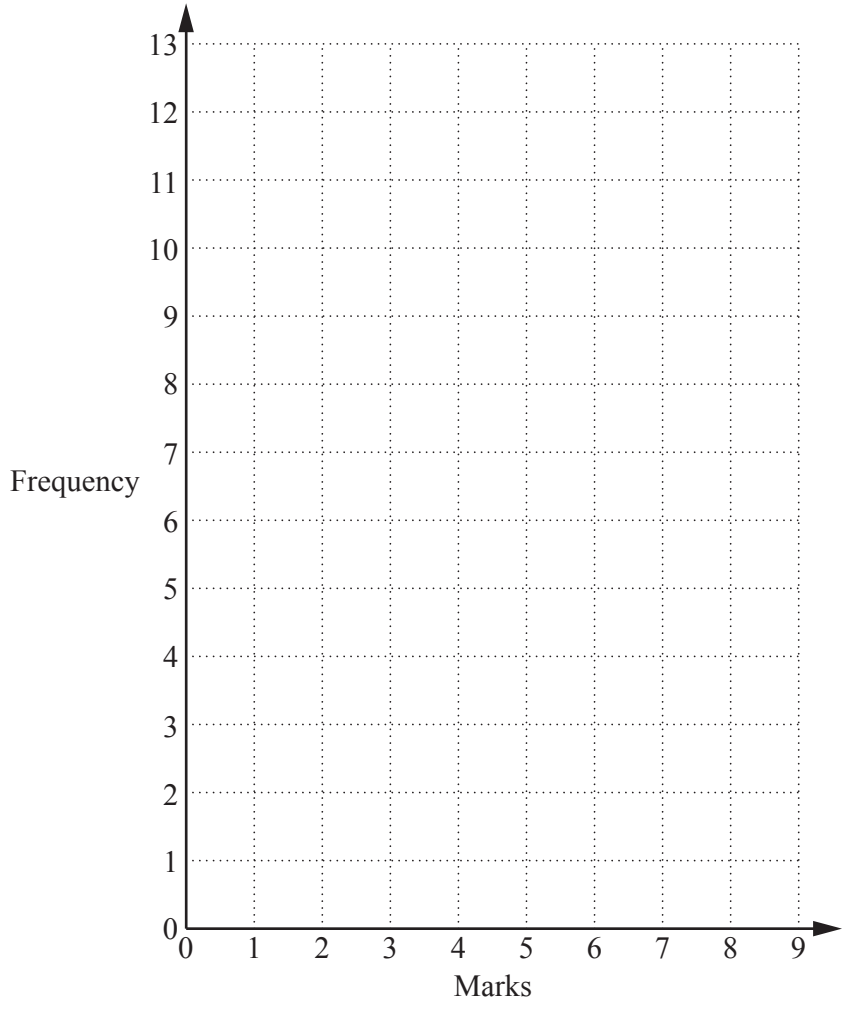
(a) How many learners got 7 marks?

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

(b) How many learners were there altogether?

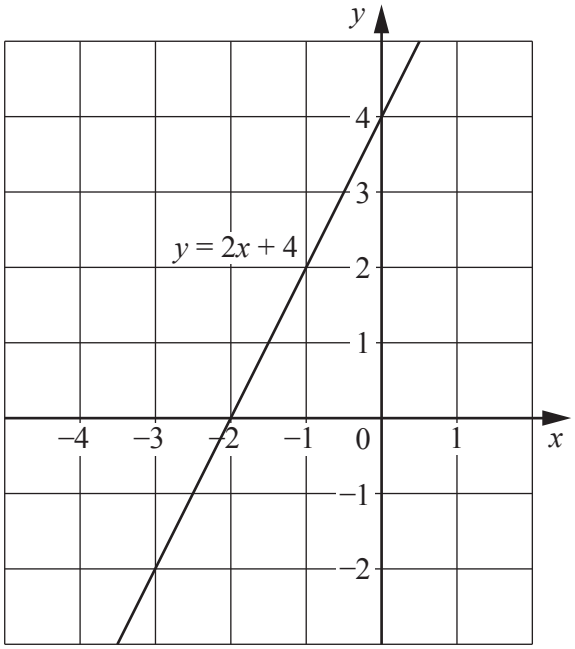
Answer (b) .....[1]

(c) On the grid, draw a frequency polygon to show this information.



[2]

18 The diagram below shows the graph of $y = 2x + 4$.



(a) The point $(-1, b)$ lies on the line.

Write down the value of b.

Answer (a) $b =$ .....[1]

(b) Write down the coordinates of the point where the line crosses the x-axis.

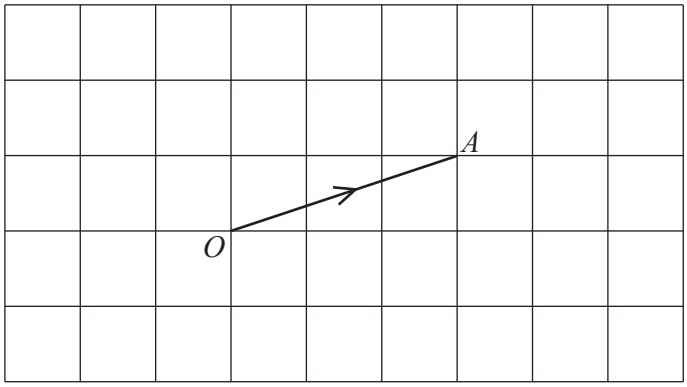
Answer (b) .....[1]

(c) On the axes above, draw the line $y = -2$. [1]

(d) Use your graph to solve the equation $2x + 4 = -2$.

Answer (d) $x =$ .....[1]

19 The diagram shows $\overrightarrow{OA}$.



(a) Express $\overrightarrow{OA}$ as a column vector.

Answer (a) $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) $\overrightarrow{OB} = \begin{pmatrix} -1 \\ 2 \end{pmatrix}$.

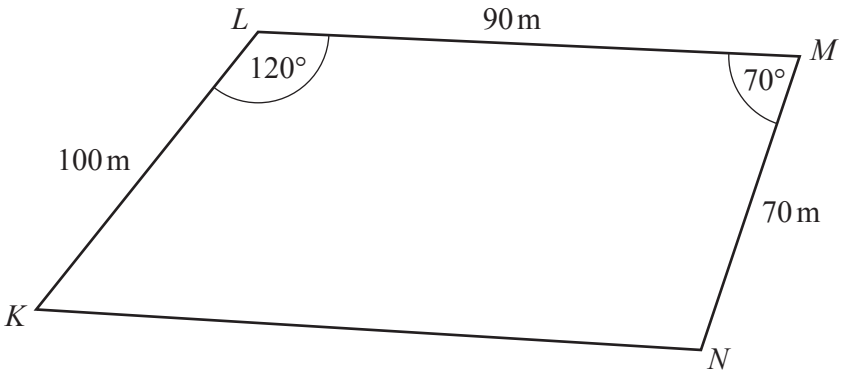
On the diagram, draw $\overrightarrow{OB}$. [1]

(c) Express $\overrightarrow{OB} - \overrightarrow{OA}$ as a column vector.

Answer (c) $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

Question 20 is printed on the next page

20 *KLMN* is a field such that $KL = 100\,\text{m}$, $LM = 90\,\text{m}$, $MN = 70\,\text{m}$, $K\hat{L}M = 120°$ and $L\hat{M}N = 70°$.



NOT TO SCALE

Using a scale of 1 cm to 10 m, make an accurate scale drawing of the field *KLMN*. [4]