EXAMINATIONS COUNCIL OF SWAZILAND

JUNIOR CERTIFICATE EXAMINATION

CANDIDATE NAME	

CANDIDATE NUMBER									

MATHEMATICS **309/01**

Paper 1

NOVEMBER 2013 **2 hours 30 minutes**

Candidates answer on the question paper

READ THESE INSTRUCTIONS FIRST

1. Write your name and candidate number on the dotted line at the top of each page.
2. This paper is in two sections:

   SECTION A :(52 MARKS): All answers in this section must be written in the answer spaces provided.

   SECTION B : (48 MARKS): All answers in this section must be shown on the GRID provided. Read the instructions on how to use the ANSWER GRID at the beginning of SECTION B.

   Answer **all** questions in this paper.
3. All necessary working must be done in the spaces below each question.

   SCRAP PAPER IS NOT ALLOWED. FAILURE TO SHOW NECESSARY WORKING WILL RESULT IN LOSS OF MARKS.
4. Graph paper and tracing paper will be provided when needed.
5. Calculators and tables are **not** allowed in this paper.
6. At the end of the examination, hand in the question paper, the Answer Grid and any other paper used. Do not remove any pages from the question paper.

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

7. **FAILURE TO FOLLOW THE ABOVE INSTRUCTIONS WILL RESULT IN LOSS OF MARKS.**

8. The total of the marks for this paper is 100.

1 **(a)** Here is a sequence of numbers.

48 42 36 ... 24 ....

Write down the two missing terms in the sequence.

(b) Here is another sequence of numbers.

240 120 60 30 ... .

Write down the next two numbers in the sequence.

(a).....(2)

(b).....(2)

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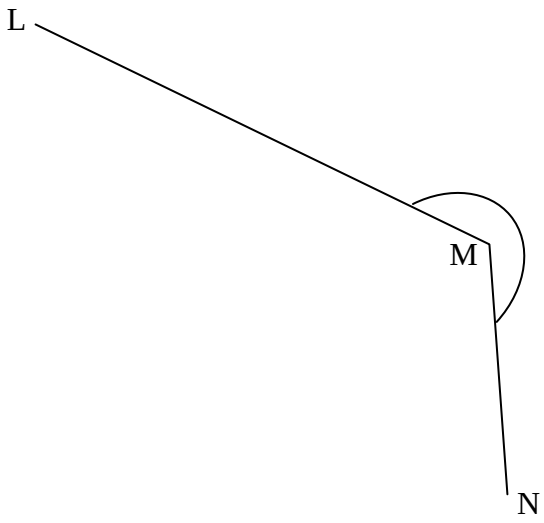
2 Angle LMN is marked in the diagram below.



(a) Measure and write down the size of the marked angle LMN.

(b) What kind of an angle is $L\hat{M}N$.

(a).....(1)

(b).....(1)

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3 **(a)** Express 0.4 as a fraction in its lowest terms.

(b) What fraction is 3 centimetres of 5 metres?

(c) Write down the highest common factor of 50 and 125.

(a).....(2)

(b).....(1)

(c).....(1)

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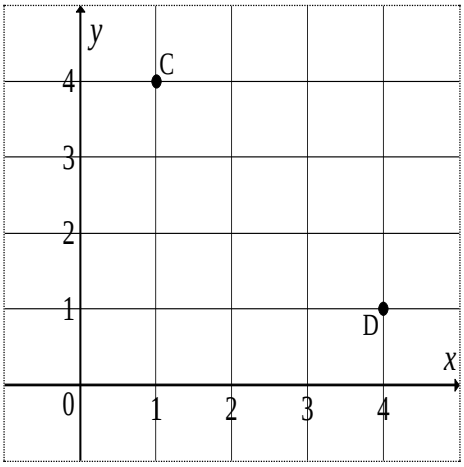
4 The diagram shows points C and D.



(a) Write down the coordinates of C.

(b) D is the image of C after a reflection.
On the diagram, draw the line of reflection. (1)

(a).....(1)

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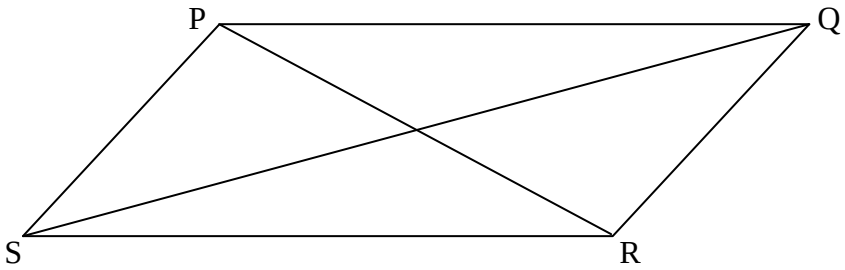
5 PQRS is a parallelogram. PR and QS are diagonals of the parallelogram.



Tick in the correct box to indicate whether each of the following statements is true or false.

	True	False
The diagonals are perpendicular.	☐	☐
The diagonals bisect each other.	☐	☐
The diagonals are lines of symmetry.	☐	☐

(2)

---

6 **(a)** Solve the equation

$$10x + 5 = 6 .$$

(b) x is an integer such that $-2 \leq x < 1$.

List all values of x.

(a).....(2)

(b).....(2)

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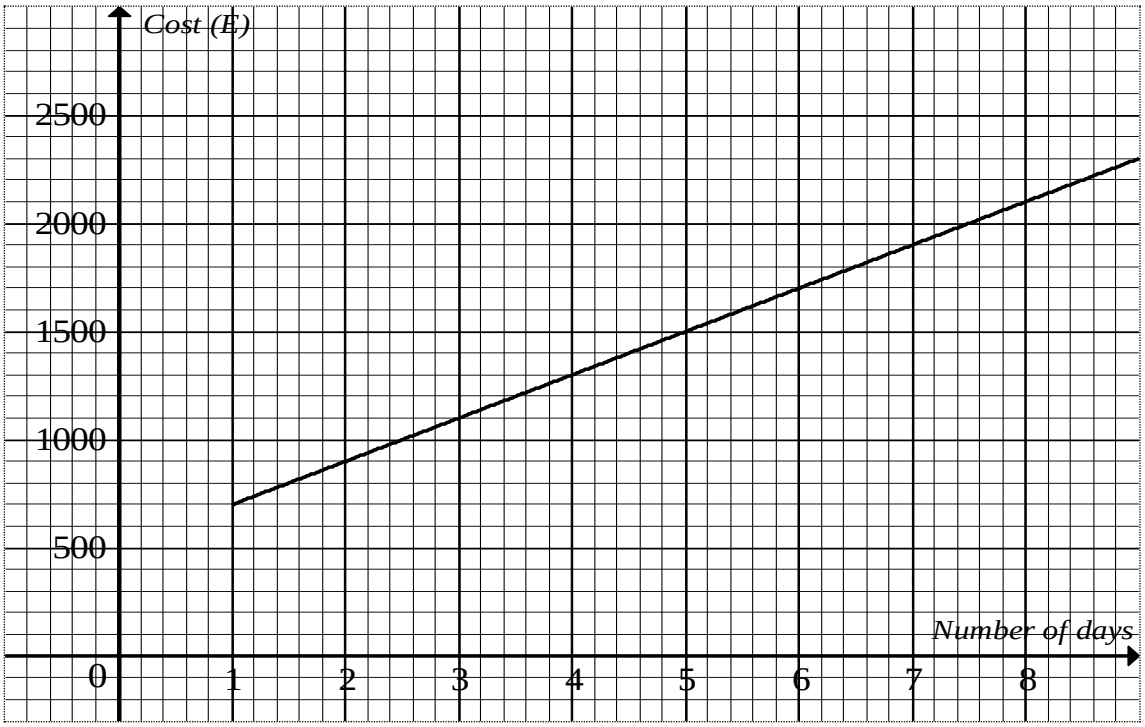
7 The graph below shows the cost, in Emalangeni, of hiring a car.



(a) Use the graph to find the cost of hiring a car for 3 days.
(b) Duma hired a car and paid E 1900.
For how many days did he hire the car?

(a).....(1)

(b).....(1)

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8 A bus travels a distance of 42 km at an average speed of 105 km/h.
Calculate the time taken by the bus.

.....(2)

9 **(a)** Express the following numbers in standard form.

(i) 274 000

(ii) 0.0039

(b) Work out

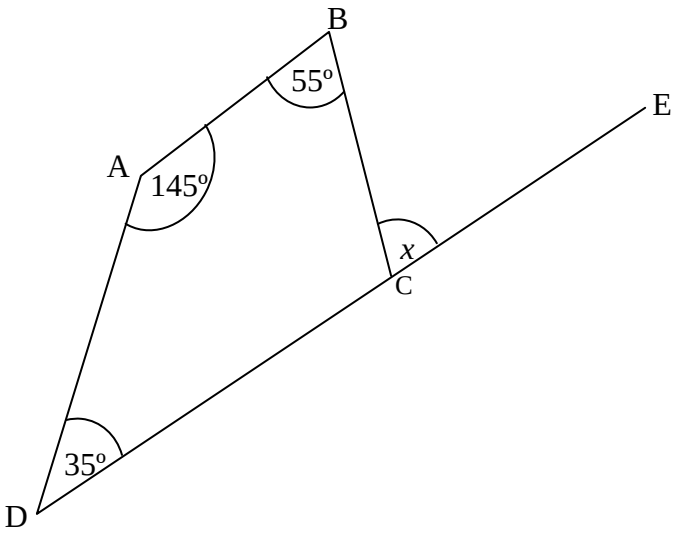
0.3×0.02

(a)(i).....(1)

(ii).....(1)

(b).....(1)

10 ABCD is a quadrilateral. DC is extended to E.

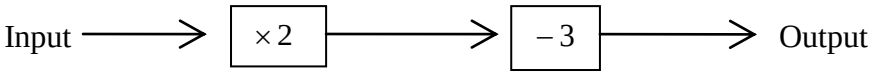


NOT TO SCALE

Calculate the value of x.

.....(2)

11 Below is a mapping diagram.



Use the mapping diagram to complete the table below.

Input	1	4	8		*n*
Output		5		23	

(4)

---

12 Here is a distribution of numbers.

1 7 50 4 5 3 7

(a) Find

(i) the median,

(ii) mean of the distribution.

(b) Which of the averages in part **(a)** best represents the distribution? Give a reason for your answer.

(a)(i).....(1)

(ii).....(2)

(b).....

.....

.....(2)

---

13 In the table below, *a*, *b*, *c* and *d* represent different numbers.
The total of each row is given in the last column of the table.

				Total
a	*a*	*a*	*a*	12
a	*b*	*b*	*b*	21
a	*b*	*b*	*c*	16
a	*b*	*c*	*d*	14

Find the values of *a*, *b*, *c* and *d*.

a = ...(1)

b = ...(1)

c = ...(1)

d = ...(1)

14 **(a)** Arrange the following fractions in order of size starting with the smallest.

$\frac{1}{3}$ $\frac{3}{5}$ $\frac{1}{4}$

(b) Work out each of the following and give your answer as a fraction in its simplest form.

(i) $\frac{2}{3} + \frac{1}{4}$

(ii) $1\frac{1}{2} - \frac{4}{5}$

(a).....(2)

(b)(i).....(2)

(ii).....(2)

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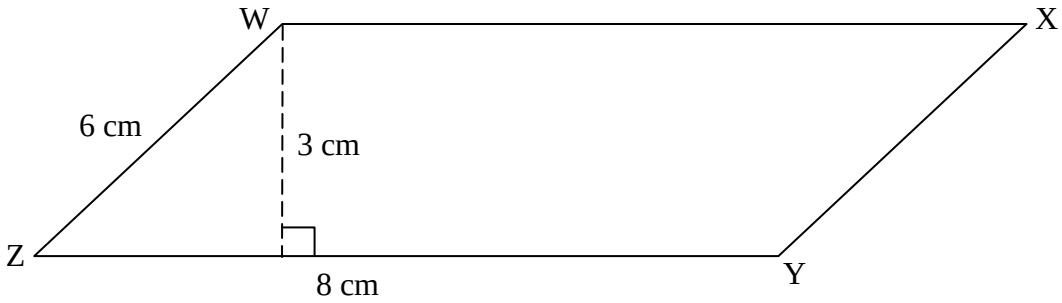
15 **(a)** WXYZ is a parallelogram WX = 5 cm and XY = 8 cm.

The height of the parallelogram is 3 cm.

NOT TO SCALE

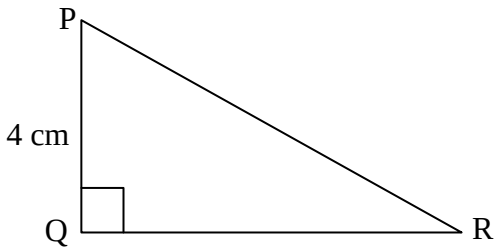


Calculate

(i) the area,

(ii) perimeter of the parallelogram.

(b) PQR is a right-angled triangle.
$P\hat{Q}R = 90°$ and PQ = 4 cm.
The area of triangle PQR is 20 cm^2.



Calculate the length of QR.

(a)(i).....(2)

(ii).....(2)

(b).....(2)

SECTION B

Answer **all** questions.

For each question, four possible answers are given.
Work out which one is correct and mark it on the answer grid provided.

Example

60 $5 - 3 =$

A 2 **B** 13 **C** 50 **D** 78

	A	**B**	**C**	**D**
60	X			

---

16 The image of the point (1, 0), after a rotation of 180° about the origin, is

A (–1, 0) **B** (0, –1) **C** (1, 0) **D** (0, 1)

17 $w = x^2 y$. When $x = -3$ and $y = 4$, then $w =$

A –36 **B** –24 **C** 24 **D** 36

18 A school sells 500 tickets for a raffle draw.
There is one prize to be won in the raffle draw.
Sikhumbuzo buys 39 tickets.
The probability that he wins the prize is

A 1 **B** $\frac{1}{500}$ **C** $\frac{39}{500}$ **D** 39

19 An equation of a straight line is $y = 7x - 2$.
The gradient of this line is

A –7 B –2 C 2 D 7

20 *p* is an odd number.
q is an even number.

Then $p + q$

A is an odd number.

B is an even number.

C could be either even or odd.

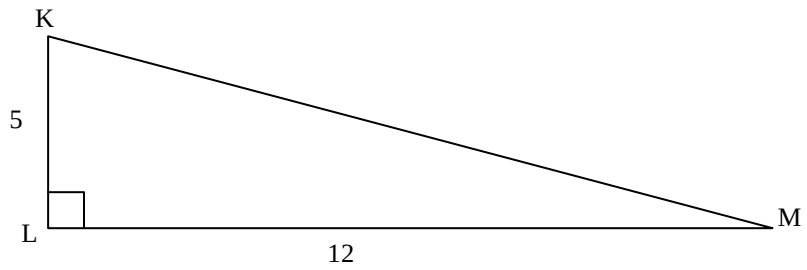
D is zero.

21 The mean of three numbers is 5.

When a fourth number is included, the mean is 8.
The fourth number is

A 3 **B** 5 **C** 8 **D** 17

22 KLM is a right-angled triangle. AB = 5 cm, BC = 12 cm and $A\hat{B}C = 90°$.



sin $K\hat{M}L$ =

A $\frac{5}{13}$ **B** $\frac{5}{12}$ C $\frac{12}{13}$ **D** $\frac{12}{5}$

23 The value of

$$\frac{204.59 \times 43.497}{4.8973}$$

estimated to 1 significant figure is

A 5 **B** 40 **C** 200 **D** 2000

24 x is an odd number. The next odd number after x is

A $x + 2$ **B** $x + 1$ **C** $x - 1$ **D** $x - 3$

25 Here are numbers.

0.45 $\frac{7}{12}$ 0.0450 $\frac{1}{2}$ 39%

The above numbers arranged in order of size, starting with the smallest, are

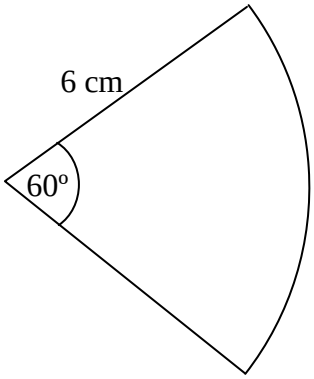
A 0.0450 39% 0.45 $\frac{1}{2}$ $\frac{7}{12}$

B $\frac{1}{2}$ $\frac{7}{12}$ 0.450 0.0450 39%

C 0.45 0.0450 $\frac{1}{2}$ $\frac{7}{12}$ 39%

D $\frac{7}{12}$ $\frac{1}{2}$ 39% 0.45 0.0450

26 A sector is shown below.



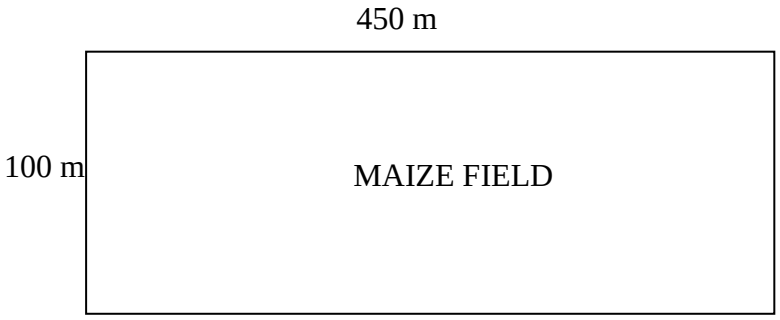
Using $\pi = 3.14$, the length of the arc of the sector is

A 37.68 **B** 18.84 **C** 6.28 **D** 3.14

27 $\frac{9}{5a} - \frac{3}{2a} =$

A $\frac{6}{3a}$ **B** $\frac{3}{10a}$ **C** $\frac{3a}{10}$ **D** 2

28 The dimensions of a maize field are 450 metres by 100 metres given to the nearest 10 metres.



The maximum possible perimeter of the field is

A 550 B 980 C 1100 D 1120

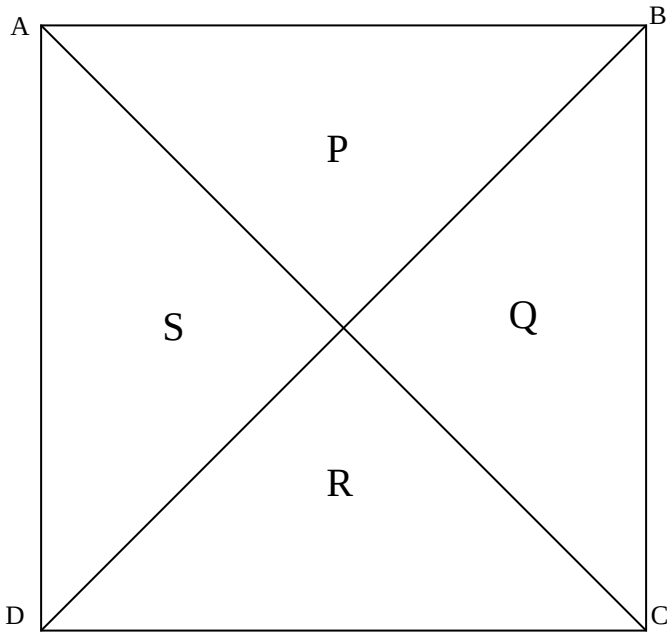
29 $4\frac{1}{5} \div 0.21$

A 200 B 20 C $\frac{1}{2}$ D $\frac{1}{20}$

30 Which of the following is **not** a polygon?

A Square **B** Rhombus **C** Triangle **D** Circle

31 ABCD is a square. AC and BD are diagonals of the square. P, Q, R and S are triangles inside the square as shown in the diagram below.



The transformation which maps triangle P onto triangle R is a

A Reflection in line AC

B Reflection in line BD

C Rotation, about centre of square, through 180º

D Translation, vector $\begin{pmatrix} 2 \\ 2 \end{pmatrix}$

	A	B	C	D
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