EXAMINATIONS COUNCIL OF SWAZILAND
Junior Certificate Examination

MATHEMATICS **309/02**

Paper 2 **October/November 2018**

2 hours 30 minutes

Additional materials: Answer Paper
Graph Paper (1 sheet)
Plain Paper (1 sheet)
Geometrical instruments
3 figures tables (optional)

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on each answer sheet used.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams or graphs.
Do **no**t use staples, paper clips, highlighters or correction fluid.
You are **not** allowed to use calculators.

Answer **all** questions.

Number each question and parts of a question clearly.
All working should be clearly shown. It should be done on the same sheet as the rest of the answer.
Failure to show necessary working will result in loss of marks.
If graph paper, plain paper or tracing paper is used, it must be handed in with your answer paper.

Use 3.14 for π.

The number of marks is given in brackets [ ] at the end of each question or part question.

At the end of the examination, hand in the Question Paper and any other paper used. Do not remove any pages from the question paper.
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The total marks for this paper is 100.

This document consists of **7** printed pages and **1** blank page.

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For Examiner's Use

1 **(a)** Simplify

(i) $\frac{2x}{5} - \frac{x+3}{6}$ [3]

(ii) $3t^2 - 5t(t^2 + 2t - 4)$ [3]

(b) Simplify

(iii) $3t - 4 < t + 10$ [2]

(iv) $\frac{2x}{3} - \frac{x}{5} = \frac{14}{15}$ [3]

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2 Mrs Masuku buys 4 bags of maize meal for E 500.00 each.
From these, she makes 60 small packets of maize meal.
She sells 40 of these at E 50.00 each and the remainder at E 30.00 each.

(a) Calculate the amount she get after selling all the packets. [3]

(b) Calculate her profit? [2]

(c) Calculate the percentage profit. [2]

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3 Work out

(a) $3^2 - 2^3 - 100^0$ [2]

(b) Evaluate leaving your answers in standard form.

(i) $2.3 \times 10^4 + 1.8 \times 10^2$ [3]

(ii) $8 \times 10^7 \div 4 \times 10^{-5}$ [3]

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4 **(a)** Write down the number of terms in the expression

$3x - \frac{3 - 7x}{4} + 5$ [1]

(b) Given that $P = \frac{nRT}{V}$

Find P when $n = 0.5$, $T = 75$ and $V = 15$. [3]

(c) Factorise completely

(i) $14a - 49$ [1]

(ii) $15x^3y - 20x^2y^2$ [2]

For Examiner's Use

5 A group of people were asked if they liked soccer (S) or wrestling (W).

31 liked soccer.

5 of those who like soccer also like wrestling.

7 liked wrestling only.

12 liked neither.

(a) Show this information in a venn diagram. [4]

(b) Find the number of people who were asked [2]

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6 **(a)** A wooden cuboid measures 10 cm by 15 cm by 4 cm.

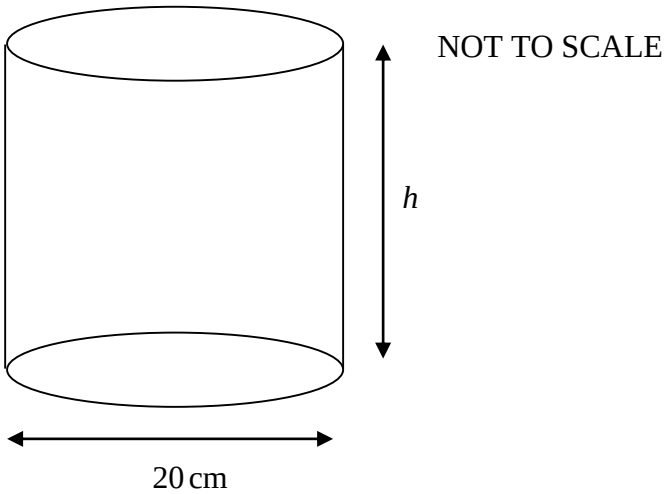
Calculate its

(i) volume [2]

(ii) total surface area [4]

(b) The diagram shows a sketch of a closed cylinder.

Take π to be 3.14 in this question.



(i) Given that its volume is 628 cm³, find the height, *h*. [3]

(ii) Given that its density is 0.75 g/cm³, find the mass of the cylinder. [2]

For Examiner's Use

7 **Answer the whole of this question on a sheet of plain paper.**

An aeroplane leaves a starting point *A* and flies for 500 km on a bearing of 065° to point *B*. It then changes direction and flies 300 km on a bearing of 130° to point *C*.

(a) Make a rough sketch of the plane's journey. [2]

(b) Using a scale of 1 cm to represent 50 km, draw an accurate diagram to show the plane's journey. [4]

(c) Find the direct distance from *A* to *C*. [2]

(d) Find the bearing of *A* from *C*. [2]

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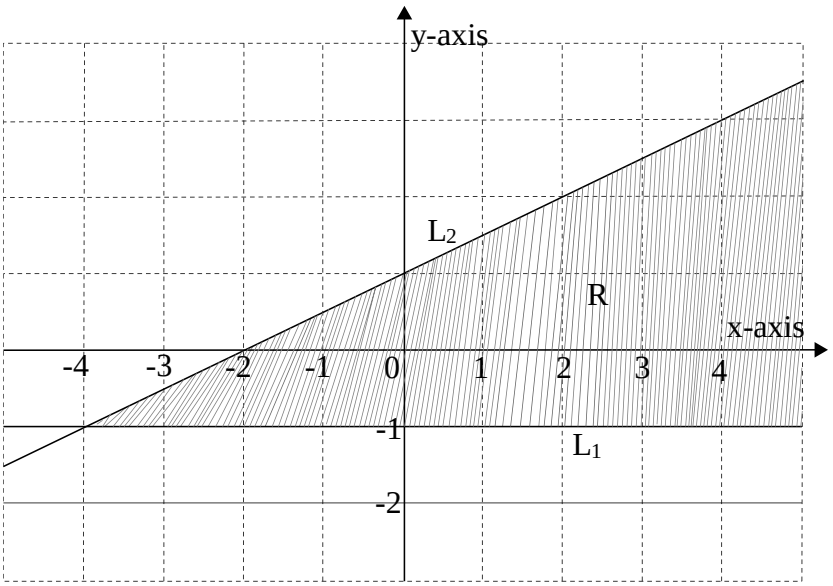
8 The diagram below shows two lines L_1 and L_2 and the shaded region R.



(a) Write down the equation of line L_1. [1]

(b) **(i)** Find the gradient of line L_2. [2]

(ii) Write down the equation of L_2. [3]

(c) Write down the two inequalities satisfied by the shaded region R. [3]

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9 Jane is 7 years older than Charles.

Charles is *y* years old.

Write down an expression in terms of *y* for:

(a) Jane's age in 3 years time, [2]

(b) the sum of their ages in five years time. [2]

10 Triangles *B*, *C*, *D* and *E* are images of triangle *A*.

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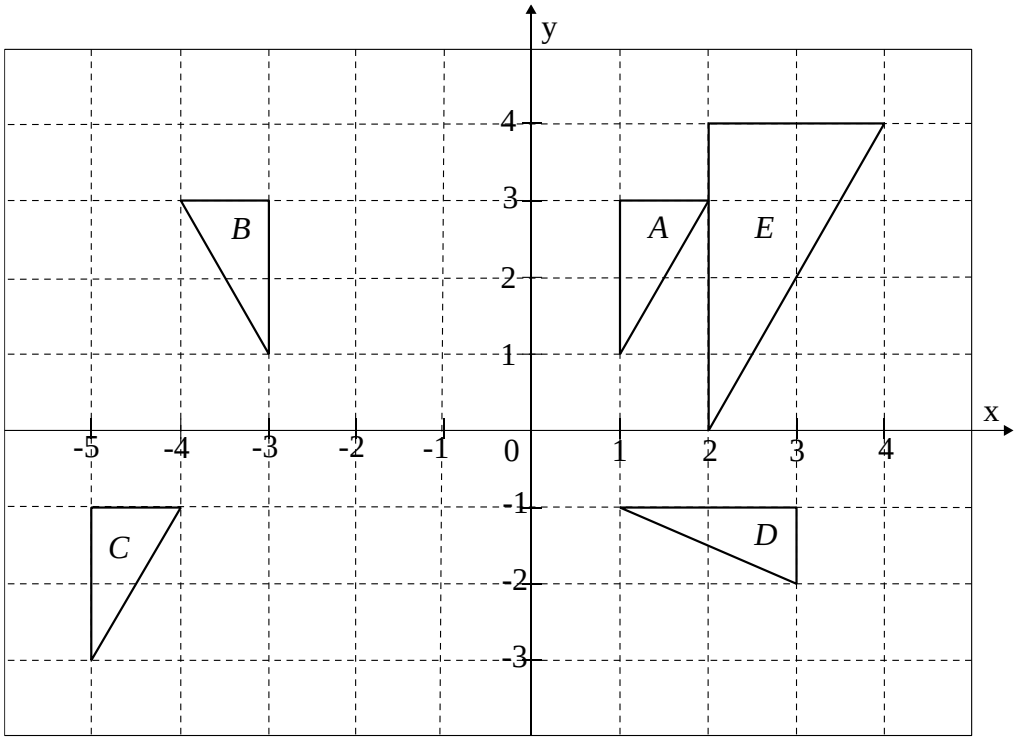

Describe fully the single transformation that maps

(a) A onto B [2]

(b) A onto C [2]

(c) A onto D [3]

(d) A onto E [3]

(e) E onto A [3]

11 The distribution of marks scored by pupils in a mathematics quiz is shown below.

For Examiner's Use

7	5	8	7	9
10	4	4	6	7
8	7	9	5	5
3	7	5	5	8

(a) Construct a frequency table to show this information [4]

(b) Find

(i) the modal mark , [2]

(ii) the median mark , [2]

(iii) the mean mark . [3]

(c) A pupil is chosen at random from this group.

Find the probability that the pupil chosen

(i) scored 8 marks, [1]

(ii) scored 2 marks, [1]

(iii) scored less than 6 marks. [2]

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