LIMPOPO
PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

SEKHUKHUNE SOUTH DISTRICT

MATHEMATICS

GRADE 11

TEST 4

OCT 2023

MARKS: 50

DURATION: 1 Hour

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

1. This question paper consists of **TWO** questions and **FIVE** pages including the cover page. Answer **ALL** the questions.
2. Clearly show all calculations, diagrams, graphs, et cetera, which you have used in arriving at your answers.
3. Answers only will not necessarily be awarded full marks.
4. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
5. If necessary, round off answers to **TWO** decimal places, unless stated otherwise.
6. Diagrams are not necessarily drawn to scale.
7. Number the answers correctly according to the numbering system used in this question paper.
8. Write legibly and present your work neatly.

QUESTION 1

1.1 Given the linear pattern: $3; -2; -7; ...$

1.1.1 Write down the next term of the pattern. (1)

1.1.2 Determine the general term, T_n, of the pattern. (2)

1.1.3 Determine T_{21} (2)

1.1.4 Which term in the pattern has a value of -162? (2)

1.2 $4; 3x + 1; 4x + 2$ are the first three terms of a linear pattern. (3)
Calculate x.

1.3 The quadratic number pattern: $1; x; 19; y; 34$ has a second constant difference of 4.

1.3.1 Show that $x = 8$ and $y = 34$ (4)

1.3.2 Determine the general term, T_n, of the quadratic pattern. (4)

1.3.3 Determine n if $T_n = 463$ (4)

1.3.4 Between which TWO consecutive terms of the pattern will the first difference be 203? (3)

1.3.5 Show that all the terms of the quadratic pattern are positive. (4)

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QUESTION 2

2.1 A 'square' house (a house with all four sides equal) is built with a pyramid as roof (**without a ceiling**) as shown below. The height (H) of the pyramid is 60 cm.

Each side of the house is 6,3 m long and the height (h) of the walls is 2,5 m.

Formulae: $V = \frac{1}{3} area\ of\ base \times H$;

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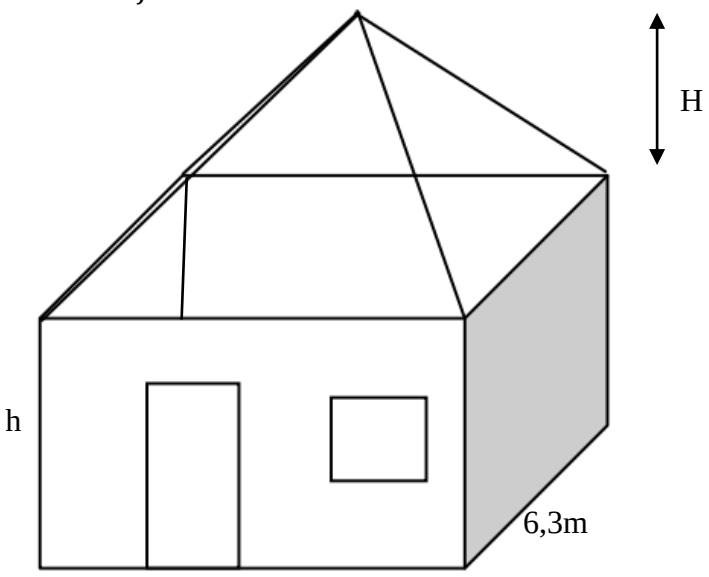
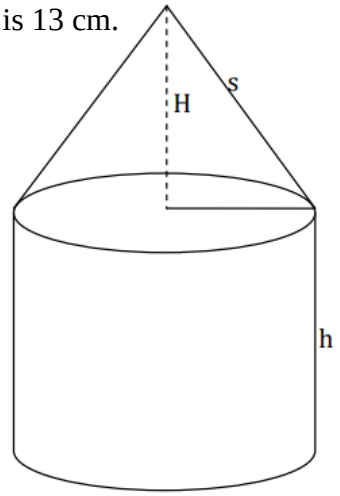


2.1.1 Calculate the volume of the roof (pyramid). (3)

2.1.2 Calculate the total volume of the house. (4)

2.1.3 Determine the surface area of the house (including the door, windows and floor) without the roof and ceiling. (3)

2.2 The diagram below shows a new container used for oil that is to be sold at garages. The container is made up of a cylinder and a cone. The height, h, of the cylinder is 15 cm and the slant height, s, of the cone is 13 cm.



$V = \pi r^2 h$

$V = \frac{1}{3}\pi r^2 h$

$SA = \pi r^2 + 2\pi rh$

$SA = \pi rs$

2.2.1 Determine the radius, r, if the volume of the cylinder is 5 000 m^3 . (3)

2.2.2 Calculate the perpendicular height, H, of the conical part of the container. (2)

2.2.3 Hence, determine the volume of the cone. (2)

2.2.4 Calculate the total surface area of the container. (4)

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Total : 50 Marks