



LIMPOPO

PROVINCIAL GOVERNMENT
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF EDUCATION

SEKHUKHUNE SOUTH

MATHEMATICS

GRADE 10

TEST

OCT 2023

MARKS: 50

DURATION: 1 Hour

INSTRUCTIONS

Read the following instructions carefully before answering the questions.

1. This question paper consists of **2** questions and **4** pages. 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 your answers correctly according to the numbering system used in this question paper.
8. Write legibly and present your work neatly.

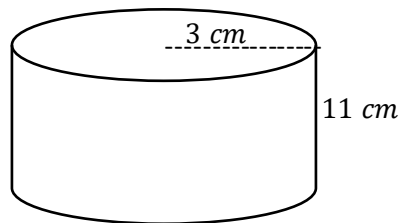
QUESTION 1

- 1.1 Given the linear pattern: $2a + 2$, $3a + 4$, $5a + 6$,
- 1.1.1 Calculate the numerical value of the fourth term, if $a = 0$ (2)
- 1.1.2 Write down a formula for the general term, T_n . (2)
- 1.1.3 Hence or otherwise, determine the 18th term of the sequence. (2)
- 1.1.4 Which term of the sequence has a value of 108? (3)
- 1.1.5 Determine the largest value of n for which $T_n < 166$ (3)
- 1.2 A church hall has 40 seats in the first row, 42 in the second row, 44 in the third row, etc.
- 1.2.1 Determine the formula to calculate the number of seats in the n th row. (3)
- 1.2.2 Hence or otherwise determine the number of seats in row 19. (3)
- 1.2.3 Determine which row will have enough seats for 64 people. (3)

[21]**QUESTION 2**

(Formulae: $V = \frac{1}{3} \text{area of base} \times H$, $V = \pi r^2 h$, $SA = \pi r^2 + 2\pi r h$, $SA = \pi r s$)
 $SA = \pi r(r + h)$

- 2.1 The height of a cylinder is 11 cm, and the radius is 3cm

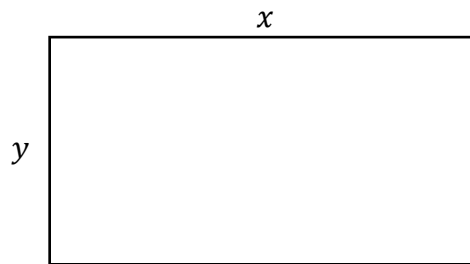


- 2.1.1 Calculate the volume of the cylinder in cm^3 . (3)
- 2.1.2 Calculate the total surface area of the cylinder (in cm^2), assuming that it is closed. (4)
- 2.1.3 Calculate the number of cylinders that can fit into a rectangular box with a length of 24cm, breadth of 18cm and a height of 22 cm. (4)

2.1.4 Manufacturers double the radius but keep the same height of the cylinder.

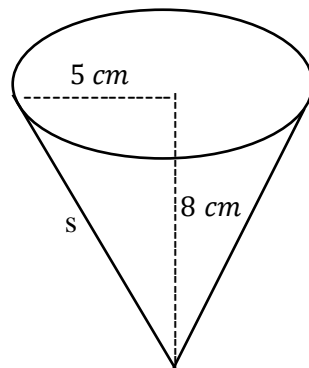
- (a) Determine the new volume of the cylinder. (3)
- (b) By what scale factor will the area of the top (cover) of the original cylinder increase when the radius is doubled? (2)
- (c) By what scale factor will the area of the curved surface of the original cylinder increase when the radius is doubled? (2)

2.2 A rectangle with a length x units and a width y units has a perimeter of 50 *cm*.



Show that the area of the rectangle is given by $A = 25x - x^2$, if the perimeter is $p = 2y + 2x$. (5)

2.3 A cone with a radius of 5 *cm* and a height of 8 *cm* is shown below.



- 2.3.1 Using the theorem of Pythagoras or otherwise, calculate the slant height, s , of the cone. (2)
- 2.3.2 Hence or otherwise determine the surface area of the cone. (2)
- 2.3.3 Calculate the volume of the cone. (2)

[29]

TOTAL:50