SEKHUKHUNE SOUTH DISTRICT

GRADE 10

MATHEMATICS
MARKING GUIDELINE
TEST 4
OCT 2023

MARKS: 50

These marking guidelines consist of 4 pages including the cover page

QUESTION 1

1.1	1.1.1	If $a = 0$, then $T_1 = 2$; $T_2 = 4$; $T_3 = 6$; $\therefore T_4 = 8$✓✓	✓✓ 8 (2)
	1.1.2	$T_n = 2n$ ✓✓	✓✓$T_n = 2n$ (2)
	1.1.3	$T_n = 2n$ $\therefore T_{18} = 2(18)$ ✓ $= 36$✓	✓Substitution ✓ Answer (2)
	1.1.4	$T_n = 2n$ $\therefore 108 = 2n$✓ $n = 54$✓ $\therefore The\ 54th\ term\ has\ the\ value\ of\ 108$ ✓ **Full marks for leaving answer at $n = 54$**	✓ Substitution ✓ $n = 54$ ✓ Conclusion (3)
	1.1.5	$T_n < 166$ $2n < 166$✓ $n < 83$✓ $n = 82$✓	✓Substitution ✓Simplification ✓Answer (3)
1.2		Given : 40; 42; 44; …	
	1.2.1	$T_n = 2(19 + n)$ or $T_n = 38 + 2n$ or $T_n = 40 + 2(n - 1)$ Consider other alternatives	✓✓✓Answer (3)
	1.2.2	$T_n = 38 + 2n$ $T_{19} = 38 + 2(19)$ ✓ $= 76$✓ $\therefore$ There are 76 seats in row 19 ✓ **Full marks for leaving answer at $T_{19} = 76$**	✓ Substitution ✓76 ✓Conclusion (3)
	1.2.3	$T_n = 38 + 2n$ $64 = 38 + 2n$✓ $26 = 2n$✓ $\therefore n = 13$✓	✓Substitution ✓Simplify ✓Answer (3)
			[21]
	QUESTION 2		
2.1	2.1.1	$V = \pi r^2 h$ $= \pi(3)^2$✓(11) ✓ $= 311.02\ cm^3$✓	✓$(3)^2$ ✓(11) ✓Answer (3)
	2.1.2	$SA = \pi r^2 + 2\pi rh$ (open) $SA = 2\pi r^2 + 2\pi rh$ ✓ (**closed**) $= 2\pi r(r + h)$ $= 2\pi(3)(3 + 11)$ ✓✓ $= 263,89\ cm^2$✓	✓ Formula ✓substitute r ✓substitute h ✓Answer (4)

	2.1.3	Diameter = 6 $\frac{24}{6} = 4$ ✓ [4 cylinders can fit into the length of 24 cm] $\frac{18}{6} = 3$ ✓ [3 cylinders can fit into the breadth of 18 cm] $\frac{22}{11} = 2$ ✓ [2 cylinders can fit onto the height of 22 cm] So the number of cylinders that can fit into the rectangular box are $4 \times 3 \times 2 = 24$✓	✓ 4 ✓ 3 ✓ 2 ✓ 24
	2.1.4	(a) $V = \pi r^2 h$ $\quad = \pi(2 \times 3)^2$✓$(11)$ ✓ $\quad = 1\,244{,}07\ cm^3$✓	✓$(2 \times 3)^2$ ✓(11) ✓Answer (3)
		(b) $A = \pi r^2$ $\quad = \pi(3)^2$ $\quad = 9\pi\ cm^2$✓ [Original cover] $A = \pi r^2$ $\quad = \pi(6)^2$ $\quad = 36\pi$ $\quad = 4(9\pi)\ cm^2$✓ [new cover] $\therefore$ Scale factor of 4 **Answer only : Full marks**	 ✓9π ✓$4(9\pi)$ (2)
		(c) $SA = 2\pi r h$ $\quad = 2\pi(3)(11)$ $\quad = 66\pi\ cm^2$✓ [Original] $SA = 2\pi r h$ $\quad = 2\pi(6)(11)$ $\quad = 2 \times (66\pi\ cm^2)$✓ [New] $\therefore$ Scale factor of 2 **Answer only : Full marks**	 ✓$66\pi\ cm^2$ ✓$2 \times (66\pi\ cm^2)$
2.2		$P = 2x + 2y$ $50 = 2x + 2y$✓ $25 = x + y$✓ $\therefore y = 25 - x$✓ $\quad A = xy$✓ $\quad\quad = x(25 - x)$ ✓ $\quad\quad = 25x - x^2$	✓Equation ✓Simplify ✓y subj of formu ✓Equation ✓Substitution (5)

2.3	2.3.1	$s^2 = 5^2 + 8^2$ ✓ $\quad = 89$ $\therefore s = \sqrt{89}$ $\quad = 9.43 \; cm$ ✓	✓Subst into correct formula ✓ Answer (2)
	2.3.2	$SA = \pi r(r + h)$ (assuming that the cone is closed) $\quad = \pi(5)(5 + 8)$ ✓ $\quad = 204{,}20 cm^2$ ✓ OR $SA = \pi r h$ (Assuming that the cone is open / empty) $\quad = \pi(5)(8)$ $\quad = 125{,}66 \; cm^2$	✓Substitution ✓ Answer (2)
	2.3.3	$V = \dfrac{1}{3}\pi r^2 h$ $\quad = \dfrac{1}{3}\pi(5)^2(8)$ ✓ $\quad = 209{,}44 \; cm^3$ ✓	✓Substitution ✓Answer (2)
			[29]
		TOTAL:50	