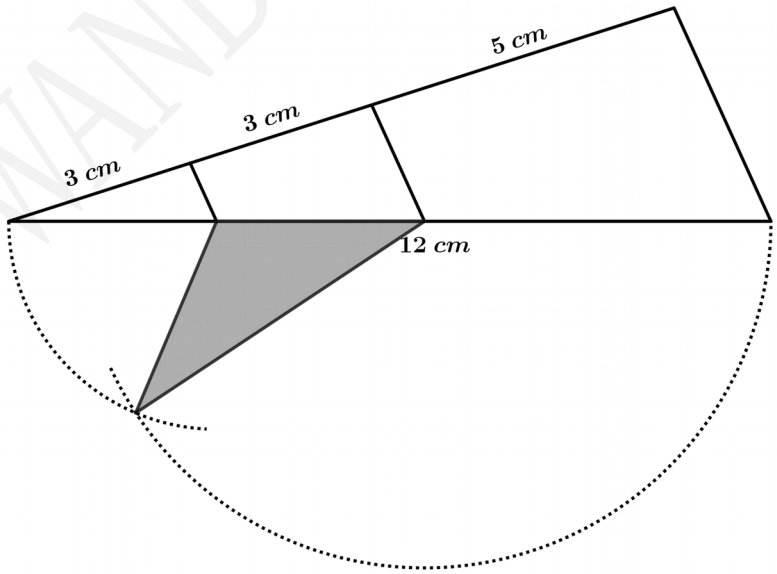
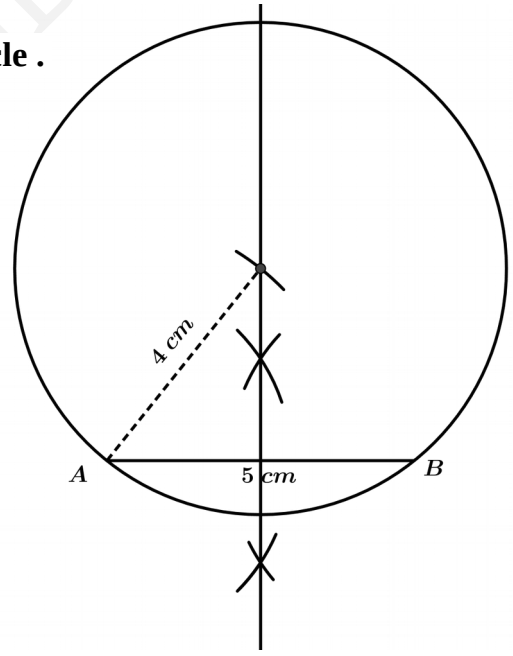
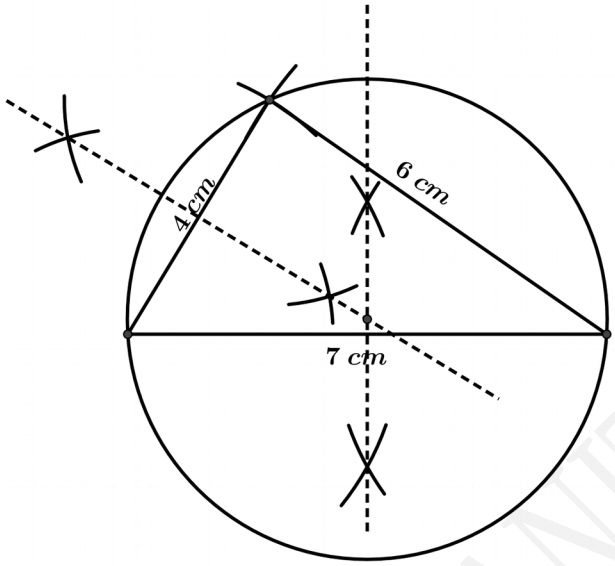
SECOND TERM EVALUATION 2022 - 2023

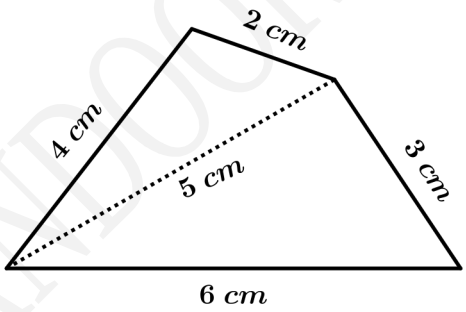
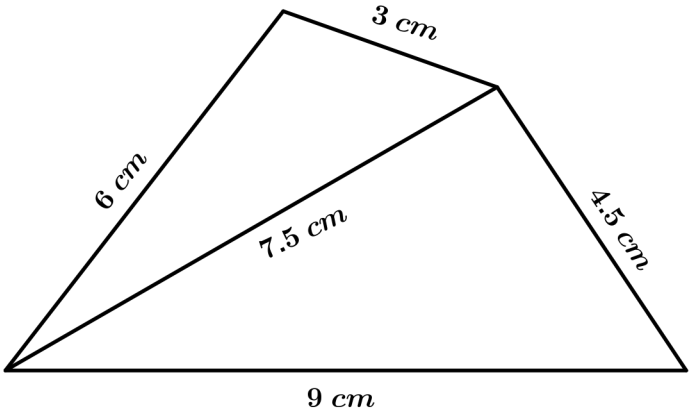
A | **MATHEMATICS – ANSWER KEY - EM** | **E 903**

Qn no.	Key	Score	
	Each questions from 1 to 4 carries 2 scores.		
1	a) $CD = 10\ cm$ b) $CN = 5\ cm$	1 1	2
2	$p(1) = 1^2 + 2 \times 1 + 5 = 8$ $p(0) = 0^2 + 2 \times 0 + 5 = 5$	1 1	2
3	a) $YZ = 2 \times 3 = 6\ cm$ b) $ZX = 2 \times 6 = 12\ cm$	2	2
4	a) $AP : AB = 4 : 12 = 1 : 3$ b) $AQ = 15 \times \frac{1}{3} = 5\ cm$	1 1	2
	Each questions from 5 to 10 carries 3 scores.		
5	For drawing a line of length 12 cm For dividing the line in the ratio 3 : 3 : 5 . For drawing triangle . 	1 1 1	3

6	**a)** $CP = \frac{24}{2} = 12\ cm$, $AP = \frac{20}{2} = 10\ cm$ $CA = CP - AP = 12 - 10 = 2\ cm$ **b)** $OC = \sqrt{12^2 + 5^2} = 13\ cm$	1 1 1	3
7	**a)** $QR = 2 \times 4 = 8\ cm$ **b)** $PQ = 2 \times BC$, $PR = 2 \times AB$ Perimeter of triangle PQR $= PQ + QR + PR$ $= 2(BC + AC + AB)$ $= 2 \times 16 = 32\ cm$	1 1 1	3
8	**a)** $P(2) = 4 \times 2 - 5 = 3$ **b)** $q(x) = 4x - 4$	1 2	3
9	**a) Length of the diagonal** $= 1\ cm$ **b) Length of a side** $= \frac{1}{\sqrt{2}}\ cm$ **Perimeter** $= 4 \times \frac{1}{\sqrt{2}}\ cm$	1 1 1	3
10	**For drawing a line AB of length 5 cm** **For drawing the perpendicular bisector of AB ..** **For drawing the circle .**  	1 1 1	3

Each questions from 11 to 21 carries 4 scores.			
11	a) $PA = 9 - 3 = 6\ cm$ b) $OQ : QB = 3 : 6 = 1 : 2$ c) OPQ and OAB are similar triangles . $AB = 3 \times 4 = 12\ cm$	1 1 1 1	4
12	a) $p(x) = ax^2 + bx + c$ $c = 0$, $a + b = 2$, $4a + 2b = 6$ b) $p(x) = x^2 + x$	1 2 1	4
13	a) $AB : BG = 3 : 1$ b) $BG = \frac{15}{3} = 5\ cm$ c) $BC : GF = 3 : 4$ $DC : EF = 3 : 4$ Ratio of the perimeters $= 3 : 4$	1 1 1 1 1	4
14	a) length $= 3x - 2\ cm$ b) $p(x) = 2(3x - 2) + 2x = 8x - 4\ cm$ c) $a(x) = (3x - 2) \times x = 3x^2 - 2x\ sq.cm$	1 1 2	4
15	a) $AC = \frac{10}{2} = 5\ cm.$ b) $OD = x + 1\ cm$ c) In right triangle ACO , $5^2 + x^2 = (x + 1)^2$ $x = 12$ ==> Radius $= 13\ cm$	1 1 1 1	4

16	**For drawing triangle .** **For drawing the perpendicular bisector of the sides .** **For drawing the circumcircle .**  	**1** **2** **1**	**4**
17	**a)** $AM = \frac{48}{2} = 24\ cm$ **b)** $OM = \sqrt{25^2 - 24^2} = 7\ cm$ $ON = \sqrt{25^2 - 20^2} = 15\ cm$ **c) Distance between the chords** $= OM + ON = 22\ cm$	**1** **1** **1** **1**	**4**
18	**a)** $2 : 2 : 1$ **b) Perimeter** $= 6 + 6 + 3 = 15\ cm$ **c) PAE and PQR are similar triangles .** $AE : QR = 2 : 5 \Rightarrow QR = 2.5\ cm$	**1** **1** **1**	**4**
19	**a)** $FD = 4\ cm$ **b)** $AE : EC = 2 : 4 = 1 : 2$ **c)** $AD : DB = 1 : 2$ $AB = 6 + 12 = 18\ cm$	**1** **1** **1** **1**	**4**

20	a) $BC = 6\ cm$ b) $AC = \sqrt{8^2 + 6^2} = 10\ cm$ $PB = \sqrt{4^2 + 3^2} = 5\ cm$ c) Yes . P is the midpoint of AC . $PA = PC = PB = 5\ cm$	1 1 1 1	4
21	a) $p(x) = 4x\ cm$ b) $4(x + 3) = 4x + 12\ cm$ c) $4(x - 3) = 4x - 12\ cm$ d) $24\ cm$	1 1 1 1	4
	Each questions from 22 to 29 carries 5 scores.		
22	For drawing the quadrilateral . For sides and diagonal of the quadrilateral scaled by $1\frac{1}{2}$ and drawing new quadrilateral   	2 3	5

23	a) $length + breadth = \frac{70}{2} = 35\ cm$ b) $length = 35 - x\ cm$ c) $a(x) = (35 - x) \times x = 35x - x^2\ sq.cm$ d) $a(10) = 35 \times 10 - 10^2 = 250\ sq.cm$	1 1 2 1	5
24	a) Length of the chord $= 2 \times \sqrt{10^2 - 6^2} = 16\ cm$ b) Distance $= \sqrt{10^2 - 6^2} = 8\ cm$ c) Distance $= 8\ 2\ 6 = 14\ cm$	2 2 1	5
25	a) $\angle C = 90^0 - x^0$ b) ADB and ADC are similar triangles . $\frac{h}{4} = \frac{3}{h}$ ==> $h^2 = 3 \times 4 = 12$ c) $AB = \sqrt{3^2 + 12} = \sqrt{21}\ cm$ $BC = \sqrt{4^2 + 12} = \sqrt{28}\ cm$	1 1 1 1 1	5
26	**Question is incomplete.**		
27	a) $Radius = \frac{26}{2} = 13\ cm$ b) $Distance = \sqrt{13^2 - 5^2} = 12\ cm$ c) Area of the quadrilateral $= \frac{1}{2} \times (26 + 10) \times 12$ $= 216\ sq.cm$	1 3 1	5
28	a) $AG : GD = 2 : 1$ b) $AG = 18 \times \frac{2}{3} = 12\ cm$ $GD = 18 \times \frac{1}{3} = 6\ cm$ c) $ED = XY = \frac{10}{2} = 5\ cm$	1 1 1 2	5

29	a) $1 + 3 + 5 + 7 + 9 = 25 = 5^2$ b) $10^2 = 100$ c) Number of odd numbers $= 50$ Sum $= 1 + 3 + \ldots + 99 = 50^2 = 2500$ d) $(n + 1)^2$	1 1 1 1 1	5