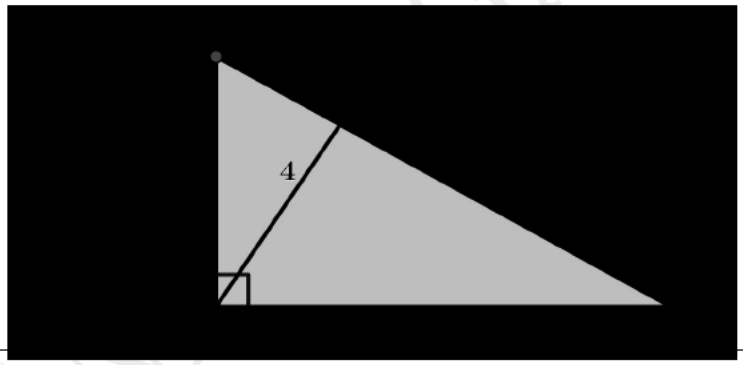
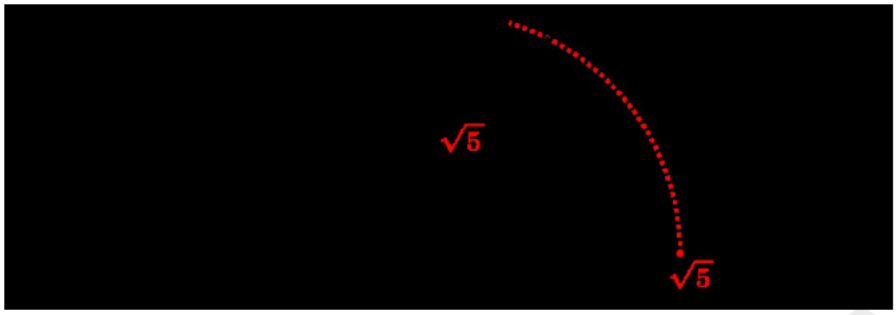
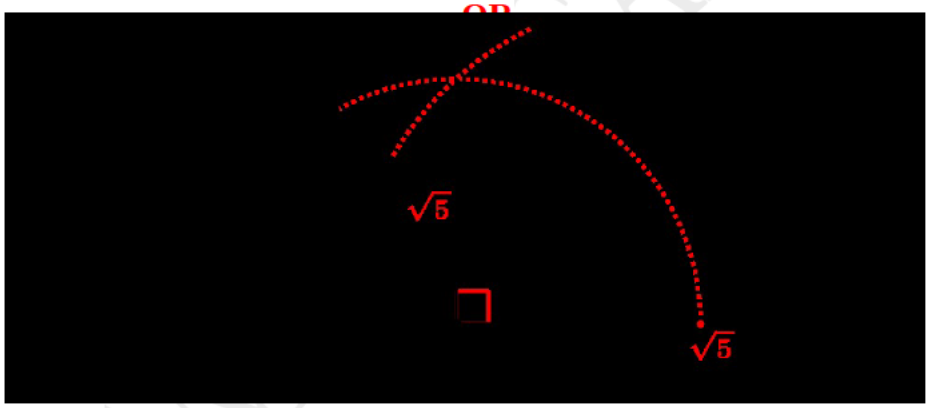
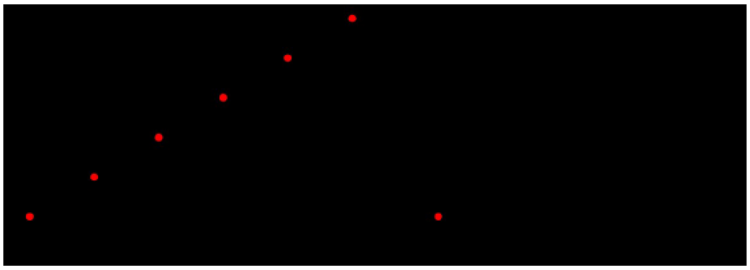
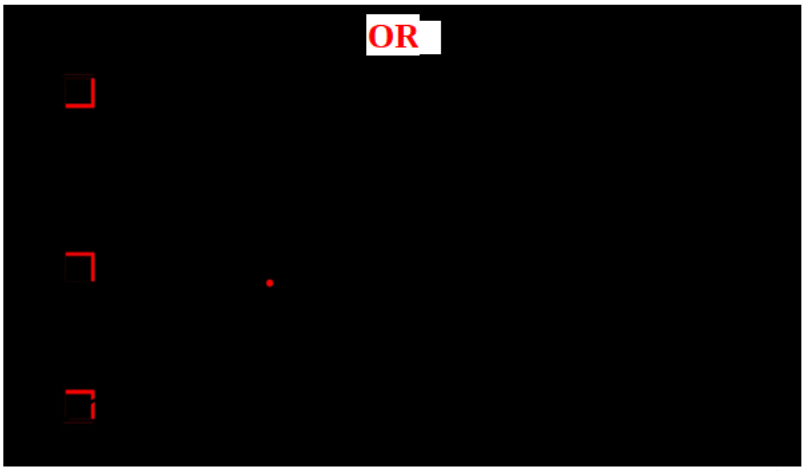
ANNUAL EVALUATION 2023 - 2024

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

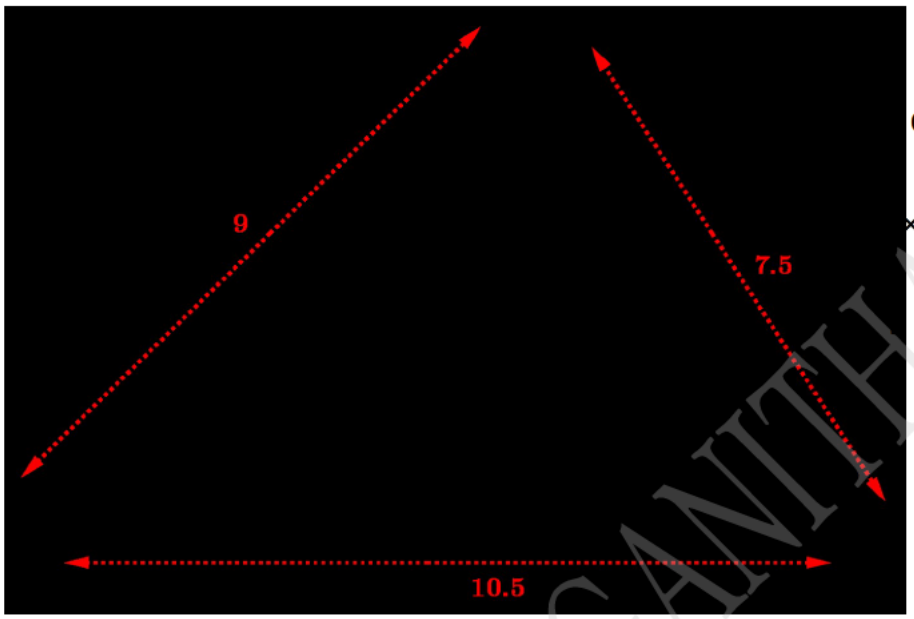
Qn no.	Key	Score	
	Each questions from 1 to 4 carries 2 scores.		
1	a) 3 b) $\lvert -1-6\rvert = 7$	1 1	2
2	a) 0.027 b) $\frac{39}{100}$	1 1	2
3	$\frac{16+14+18+x+15}{5} = 16$ $x = 17$	1 1	2
4	a) 6 b) 2	1 1	2
	Each questions from 5 to 10 carries 3 scores.		
5		3	3
6	$p(0) = 0^2 + 5\times 0 - 3 = -3$ $p(1) = 1^2 + 5\times 1 - 3 = 3$ $p(-1) = (-1)^2 + 5\times(-1) - 3 = -7$	1 1 1	3
7	a) $7 \times 7 = 49\ sq.cm$ b) $49 \times height = 588$ $height = \frac{588}{49} = 12\ cm$	1 1 1	3
8	a) $P = 2\pi r$ b) $3 : 6\pi = 1 : 2\pi$ c) 2π	1 1 1	3

WAYANADAN

9	a) $60 \times 5 = 300$ b) $\frac{300 - 20 + 30}{5} = 62$ OR $60 + \frac{10}{5} = 62$	1 2	3
10	 OR  [Hint : $\sqrt{1^2 + 2^2} = \sqrt{1 + 4} = \sqrt{5}$]  [Hint : $\sqrt{3^2 - 2^2} = \sqrt{9 - 4} = \sqrt{5}$]	3	3
	Each questions from 11 to 21 carries 4 scores.		
11	a) $AC : CE = PQ : QR$ OR $AC : CE = 3 : 2$ b) $PQ = \frac{3}{2} \times 3 = \frac{9}{2}$ *cm* c) 	1 1 2	4

	$AB = 9\ cm$, $AP : PB = 3 : 2$ OR 		
12	a) If we take the perpendicular sides as x and y $x + y = 17$, $x - y = 5$ b) $x = \frac{17 + 5}{2} = 11$, $y = \frac{17 - 5}{2} = 6$	2 2	4
13	a) $-4 + 6 = 2$, $-4 - 6 = -10$ b) $x = 3 + 5 = 8$, $x = 3 - 5 = -2$	2 2	4
14	a) Radius of small semicircle $= \frac{6}{2} = 3\ cm$ b) Area of small semicircle $= \frac{1}{2} \times \pi \times 3^2 = \frac{9\pi}{2}\ sq.cm$ c) Area of the shaded region = Area of large semicircle $- 2 \times$ Area of small semicircle $= \frac{1}{2} \times \pi \times 6^2 - 2 \times \frac{9\pi}{2} = 9\pi\ sq.cm$	1 1 2	4
15	a) Base perimeter $= 2 \times 4 + 2 \times 7 = 22\ cm$ b) Lateral surface area $= Base\ perimeter \times height = 22 \times 12 = 264\ sq.cm$ c) Total surface area $= 2 \times Base\ area + Lateral\ surface\ area$ $= 2 \times 4 \times 7 + 264 = 320\ sq.cm$	1 1 2	4
16	a) Ratio of investments $= 6000 : 9000 = 2 : 3$ b) Ratio of profit $= 1200 : 1800 = 2 : 3$ Yes (Profit proportional to the investments) Ratio of the investment are equal to the ratio of the profit .	1 1 1 1	4

MANJOOR GANITHAM

17	a) $3 \times 2 + 5 \times 7 + 4 \times 9 + 7 \times 10 + 2 \times 12 + 4 \times 13 + 3 \times 15 + 2 \times 16 = 300$ *litres* b) Average of milk $= \frac{\text{Total quantity of milk}}{\text{Number of days}} = \frac{300}{30} = 10$ *litres*	2 2	4
18	 $6 \times 1\frac{1}{2} = 9$ $\times 1\frac{1}{2} = 10.5$ $\times 1\frac{1}{2} = 7.5$	4	4
19	a) $\frac{3+11}{2} = 7$ b) $\lvert 7-3 \rvert = 4$ c) Perimeter $= 2 \times \pi \times 4 = 8\pi$ Area $= \pi \times 4^2 = 16\pi$	1 1 1 1	4
20	a) Base perimeter $= 6 \times 5 = 30$ *cm* b) Lateral surface area $=$ *Base perimeter* $\times$ *height* $= 30 \times 13 = 390$ *sq.cm* c) Lateral surface area of one equilateral triangular prism $= 3 \times 5 \times 13 = 195$ *sq.cm*	1 1 2	4
21	a) (i) $\frac{360}{10}$ (ii) $\frac{360}{n}$ b) Inverse proportion c) Constant of proportionality $= 360$	1 1 1 1	4

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Each questions from 22 to 29 carries 5 scores.

22 a) 40 — 1

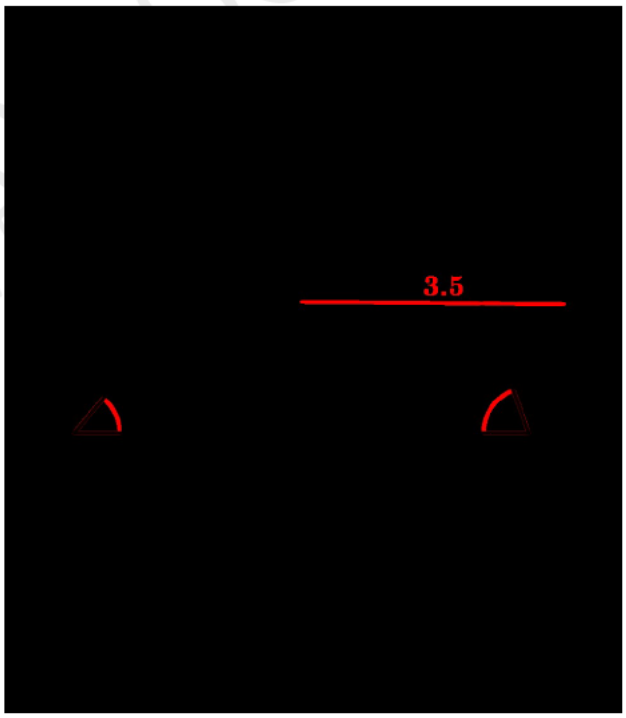
b)

Score	Number of children	Mid value of the class	Total score
0 − 10	5	$\frac{0+10}{2} = 5$	$5 \times 5 = 25$
10 − 20	7	$\frac{10+20}{2} = 15$	$7 \times 15 = 105$
20 − 30	3	$\frac{20+30}{2} = 25$	$3 \times 25 = 75$
30 − 40	6	$\frac{30+40}{2} = 35$	$6 \times 35 = 210$
40 − 50	7	$\frac{40+50}{2} = 45$	$7 \times 45 = 315$
50 − 60	4	$\frac{50+60}{2} = 55$	$4 \times 55 = 220$
60 − 70	5	$\frac{60+70}{2} = 65$	$5 \times 65 = 325$
70 − 80	3	$\frac{70+80}{2} = 75$	$3 \times 75 = 225$
ആകെ	40		1500

3 — 5

Mean score $= \frac{\textit{Total score}}{\textit{Number of children}} = \frac{1500}{40} = 37.5$ — 1

23



5 — 5

WAY TO GANITHAM

24	a) Base radius $= \frac{40}{2} = 20\ cm$ b) Curved surface area $= Base\ perimeter \times height = 2 \times \pi \times \frac{20}{100} \times 4 = \frac{8\pi}{5}\ sq.m$ c) Cost $= 15 \times \frac{8\pi}{5} \times 100 = 7536\ Rs$	1 2 2	5
25	a) $\frac{1}{2} \times 12 \times Perpendicular\ distance = 60$ $Perpendicular\ distance = \frac{60 \times 2}{12} = 10\ cm$ b) $\frac{1}{2} \times a\ side \times perpedicular\ distance\ to\ that\ side = 60$. OR $a\ side \times perpedicular\ distance\ to\ that\ side = 120$ OR $perpedicular\ distance\ to\ a\ side = \frac{120}{That\ side}$ c) No. In triangles having equal area , one side and the perpendicular distance to it are in inverse proportion . (In triangles having equal area , the the perpendicular distance form the opposite vertex to a side is proporti - onal to the reciprocal of that side)	1 1 1 1 1	5
26	a) Base radius $= \frac{24\pi}{2\pi} = 12\ cm$ b) $Volume = Base\ area \times height = \pi \times 12^2 \times 60 = 8640\pi\ cubic.cm$ c) Volume of the small cylinder $= \pi \times 3^2 \times 15 = 135\pi\ cubic.cm$ Number of small cylinders $= \frac{Volume\ of\ large\ cylinder}{Volume\ of\ small\ cylinder} = \frac{8640\pi}{135\pi} = 64$	1 1 1 1 1	5
27	a) $\angle AOB = 180^0 - 60^0 = 120^0$ b) $\frac{60}{360} \times 2\pi \times OD = 3\pi$	1 1	

WANDOOR GANITHAM

	$OD = 9\ cm$	1	
	c) $OA = 12 - 9 = 3\ cm$	1	5
	Area of the shaded sector $= \frac{120}{360} \times \pi \times 3^2 = 3\pi\ sq.cm$	1	
28	a) $x = \frac{4+6}{2} = 5$	1	
	b) $y = \frac{-1+(-5)}{2} = -3$	1	5
	c) $\lvert a-5\rvert = \lvert a+3\rvert$	1	
	$a = \frac{5+(-3)}{2} = 1$	2	
29	a) $1+2+3+4+5 = \frac{5(5+1)}{2} = 15$	1	
	b) $1+2+3+\ldots+n = \frac{n(n+1)}{2}$	1	5
	c) $10 + 15 = 25 = 5^2$	1	
	d) $11^2 = 121$	1	
	e) n^2	1	

WANDOOR GANITHAM