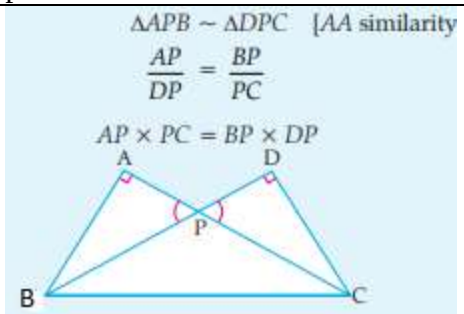
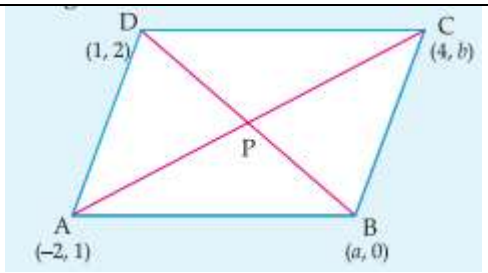
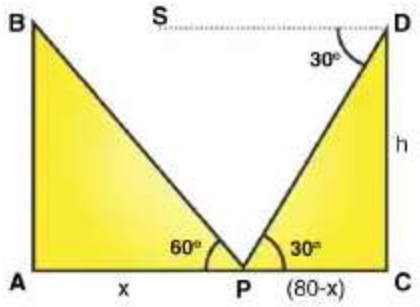
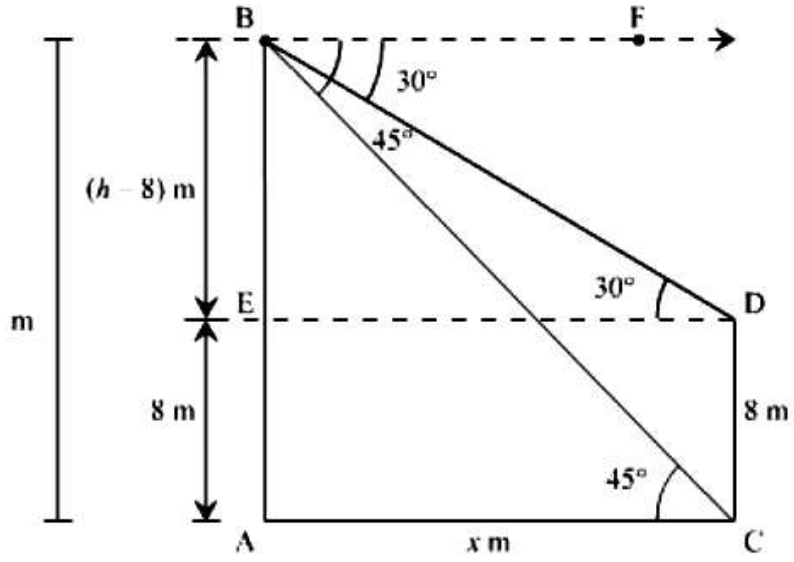
INDIAN SCHOOL MUSCAT
FINAL EXAMINATION 2022
MATHEMATICS BASIC (241)

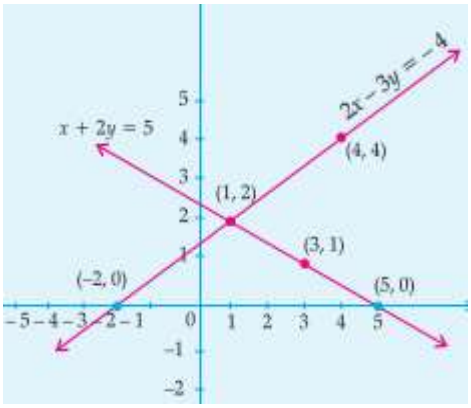
CLASS:X **Max.Marks: 80**

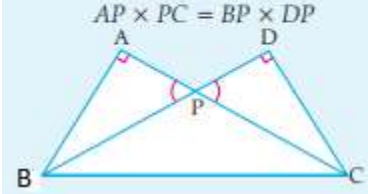
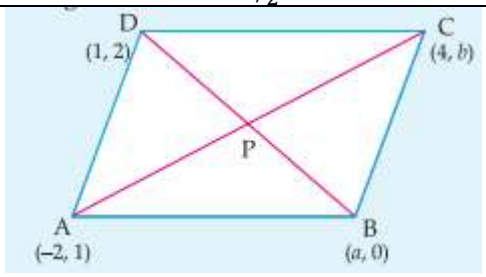
CLASS:X: **MARKING SCHEME**				
SET	**QN.**	**VALUE POINTS**		**MARKS**
		SET - A	**SET - B**	
	1	(c) 11th	$(c)\ \frac{13}{2}$	1
	2	(b) 2 points	(a) 22 cm	1
	3	(a) 60	(d) Assertion (A) is false but reason (R) is true.	1
	4	(a) $\frac{3}{26}$	(a) 7, 13	1
	5	(a) 3	c) $0 \leq P(A) \leq 1$	1
	6	(c) 12 cm	(b)5	1
	7	(c) 8 units	(b) 10th	1
	8	(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).	(d) 4 cm	1
	9	c) $0 \leq P(A) \leq 1$	(b) 2 points	1
	10	(b) 5	(a) $\frac{3}{26}$	1
	11	(d) 2	(c) 8 units	1
	12	(b)5	(c) 12 cm	1
	13	(a) 22 cm	(c) 6 Units	1
	14	(a) 7, 13	(c) $\frac{1}{2}$	1
	15	(d) 4 cm	(c) Assertion (A) is true but reason (R) is false.	1
	16	(b)No solution	(d) 2	1
	17	(c) Assertion (A) is true but reason (R) is false.	(a) 50	1
	18	(c) $\frac{1}{2}$	(b)No solution	1

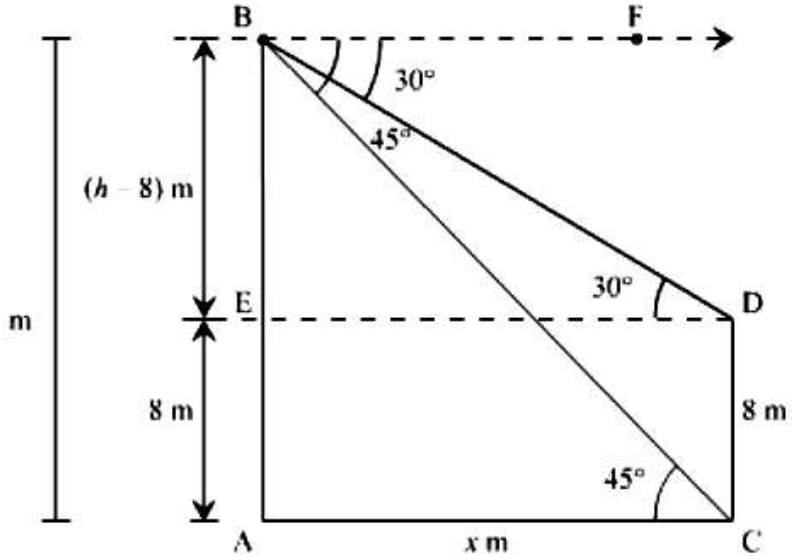
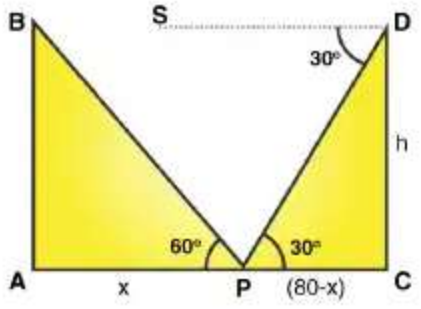
	19	(c) 6 Units	(a) 3		1
	20	$(c)\ \frac{13}{2}$	(b) 5		1
	36	(i) $\frac{1}{26}$ (1) (ii) $\frac{1}{52}$ (1) (iii) $\frac{2}{13}$ OR $\frac{1}{13}$ (2)	(i)L(-1,3),Sk(3,0), Sc((4,3),H(4,5) (2) (ii) Pulkit Reaches School first. (2) (Use distance formula)		
	37	(i)22 cm (1) (ii) $3n + 4$ (1) (iii) 11 OR 2.05m (2) (Show working)	(i) $\frac{1}{13}$ (1) (ii) $\frac{1}{52}$ (1) (iii) $\frac{2}{13}$ OR $\frac{2}{13}$ (2)		
	38	(i)L(-1,3),Sk(3,0), Sc((4,3),H(4,5) (2) (ii) Pulkit Reaches School first. (2) (Use distance formula)	(i)b) 25 cm (1) (ii) $3n + 4$ (1) (iii) 12 OR 2.42m (Show working) (2)		
SET- A					
	21	$\alpha \times \frac{1}{\alpha} = \frac{k}{3}$ Simplification $\Rightarrow$ k = 3			1 ½ ½
	22	Formula Substitution & Calculation Answer: 77 cm^2			½ 1 ½
	23	Formula Substitution Calculation Answer: 181			½ ½ 1
	24	$\frac{AD}{DB} = \frac{AE}{EC}$ DE || BC $\Rightarrow \angle ADE = \angle ABC = 48°$			1 ½ ½
		$\frac{AD}{DB} = \frac{AE}{EC}$ $\frac{x}{x+1} = \frac{x+3}{x+5}$ Simplification x=3			½ ½ ½ ½
	25	Formula Substitution			½ 1

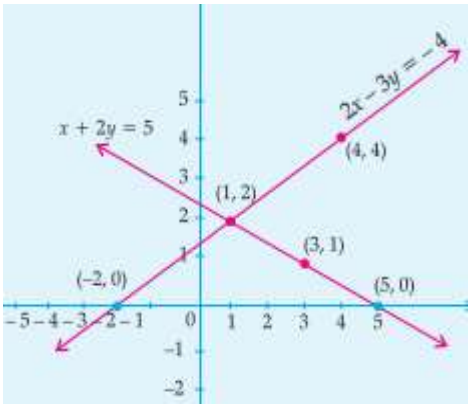
		Answer: $x^2 - 10x + 21$ OR	½
		Both are zeros	1+1
	26	A + B = 45 A – B = 30 $A = 37.5$ & $B = 7.5$	1 1 ½ + ½
		Squaring on both sides of first equation. We get $sin\theta\ cos\theta = \frac{1}{2}$ Simplifying $tan\theta + cot\theta$ we get $\frac{1}{sin\theta\ cos\theta} = \frac{1}{1/2} = 2$	½ 1 ½ 1
	27	Quadratic formula Substitution Simplification $x = a - 2\ or\ x = -(a + 3)$ OR	½ 1 1 ½
		Let two parts be x and 27 – x. Framing the equation Simplifying and getting equation $x^2 - 27x + 180 = 0$ Solving and getting 12 and 15	½ ½ 1 1
	28	Figure Given To prove proof	½ ½ 2
	29	 Figure Given & To prove Proof Conclusion	1 ½ 1 ½
	30	Assumption statement (Method of contradiction) Proof Conclusion statement	½ 2 ½
	31	 Mid point of AC = Mid point of BD	1 ½

		Calculation a= 1 & b=1	1 ½
	32	(i) $\frac{2}{5}$ (ii) Proof	2 3
	33	Figure Given To find Solution(working) r= 2 cm	1½ ½ 3
	34	 In $\Delta PAB,\ h = \sqrt{3}\,x\ -(i)$ In $\Delta PCD,\ h = \frac{80-x}{\sqrt{3}}\ -(ii)$ Therefore, $x = 20$ $Therefore\ h = 20\sqrt{3}\,)m\ and\ distances\ 20m$ & $60m$ OR	1 1 1 ½ 1½
		 In $\Delta ABC,\ x = h\ -(i)$ In $\Delta BDE,\ x = \sqrt{3}(h-8)\ -(ii)$ Therefore, $h = 12 + 4\sqrt{3}$ $Therefore\ Height\ and\ Distance = (12 + 4\sqrt{3}\,)m$	1 1 1½ 1 ½

	35	Table for first Equation Table for first Equation  Thus, the lines meet X-axis at (5, 0) and (– 2, 0) respectively. OR	1 1 2 ½+½
		Let the ten's and unit digit be y and x respectively. So, the number is 10y + x. The number, when its digits are reversed, becomes 10x + y. $So, 7(10y + x) = 4(10x + y)$ $So, 70y + 7x = 40x + 4y$ $So, 70y - 4y = 40x - 7x$ $So, 2y = x \ldots (i)$ $and\ x - y = 3 \ldots (ii)$ From (i) and (ii), we get y = 3 and x = 6 Hence, the number is 36.	½ ½ 1 1 ½ 1 ½
		SET- B	
	21	$\frac{AD}{DB} = \frac{AE}{EC}$ DE || BC ⇒ ∠ADE = ∠ABC = 48°	1 ½ ½
		$\frac{AD}{DB} = \frac{AE}{EC}$ $\frac{x}{x+1} = \frac{x+3}{x+5}$ Simplification x=3	½ ½ ½ ½
	22	Formula Substitution Answer: $x^2 - 11x + 24$ OR	½ 1 ½
		Both are zeros	1+1

	23	$\alpha \times \frac{1}{\alpha} = \frac{k}{3}$ Simplification $\Rightarrow$ k = 3	1 ½ ½
	24	Formula Substitution & Calculation Answer: 77 cm^2	½ 1 ½
	25	Formula Substitution Calculation Answer: 181	½ ½ 1
	26	Figure Given To prove proof	½ ½ 2
	27	$\Delta APB \sim \Delta DPC$ [AA similarity $\frac{AP}{DP} = \frac{BP}{PC}$ $AP \times PC = BP \times DP$  Figure Given & To prove Proof Conclusion	1 ½ 1 ½
	28	A + B = 45 A – B = 30 $A = 37.5$ & $B = 7.5$	1 1 ½ + ½
		Squaring on both sides of first equation. We get $sin\theta\ cos\theta = \frac{1}{2}$ Simplifying $tan\theta + cot\theta$ we get $\frac{1}{sin\theta\ cos\theta} = \frac{1}{1/2} = 2$	½ 1 ½ 1
	29	 Mid point of AC = Mid point of BD Calculation a= 1 & b=1	1 ½ 1 ½
	30	Assumption statement (Method of contradiction) Proof	½ 2

		Conclusion statement	½
	31	Quadratic formula Substitution Simplification $x = a - 2 \; or \; x = -(a + 3)$ OR	½ 1 1 ½
		Let two parts be x and 27 – x. Framing the equation Simplifying and getting equation $x^2 - 27x + 180 = 0$ Solving and getting 12 and 15	½ ½ 1 1
	32	 In $\Delta ABC, \; x = h \; -(i)$ In $\Delta BDE, \; x = \sqrt{3}(h-8) \; -(ii)$ Therefore, $h = 12 + 4\sqrt{3}$ $Therefore \; Height \; and \; Distance = (12 + 4\sqrt{3})m$ OR	1 1 1½ 1 ½
		 In $\Delta PAB, \; h = \sqrt{3}\,x \; -(i)$ In $\Delta PCD, \; h = \frac{80-x}{\sqrt{3}} \; -(ii)$	1 1 1

		Therefore, $x = 20$ $Therefore\ h = 20\sqrt{3}\ m\ and\ distances\ 20m\ \&\ 60m$	½ 1½
	33	Table for first Equation Table for first Equation  Thus, the lines meet X-axis at (5, 0) and (– 2, 0) respectively. OR	1 1 2 ½+½
		Let the ten's and unit digit be y and x respectively. So, the number is 10y + x. The number, when its digits are reversed, becomes 10x + y. $So, 7(10y + x) = 4(10x + y)$ $So, 70y + 7x = 40x + 4y$ $So, 70y - 4y = 40x - 7x$ $So, 2y = x \ldots (i)$ $and\ x - y = 3 \ldots (ii)$ From (i) and (ii), we get y = 3 and x = 6 Hence, the number is 36.	½ ½ 1 1 ½ 1 ½
	34	Figure Given To find Solution(working) (r=1 cm)	1½ ½ 3
	35	(i)$Sec\ A = \frac{1}{\sqrt{1-sin^2 A}}$, $Tan\ A = \frac{Sin\ A}{\sqrt{1-sin^2 A}}$ (ii) Proof	1+1 3