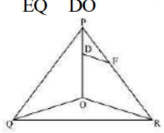
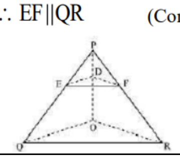
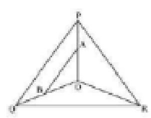
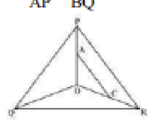
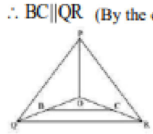
INDIAN SCHOOL MUSCAT

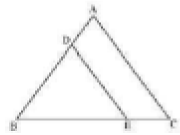
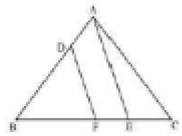
CLASS X

SECOND PERIODIC TEST 2022

Marking Scheme -MATHEMATICS

Q.NO.	Answers	Marks (With split up)
	SET A	
1.	(2k+3)/(k+1) K= -2	1+1
2.	X^2+13x+42	1+1
3.	Rahul is correct; all equilateral triangles are similar	1+1
4.	Median equally divides the opposite side. $\therefore BD = \frac{BC}{2}$ and $QM = \frac{QR}{2}$ Given that, $\frac{AB}{PQ} = \frac{BC}{QR} = \frac{AD}{PM}$ $\Rightarrow \frac{AB}{PQ} = \frac{\frac{1}{2}BC}{\frac{1}{2}QR} = \frac{AD}{PM}$ $\Rightarrow \frac{AB}{PQ} = \frac{BD}{QM} = \frac{AD}{PM}$ In ΔABD and ΔPQM, $\frac{AB}{PQ} = \frac{BD}{QM} = \frac{AD}{PM}$ (Proved above) $\therefore \Delta ABD \sim \Delta PQM$ (By SSS similarity criterion) $\Rightarrow \angle ABD = \angle PQM$ (Corresponding angles of similar triangles) In ΔABC and ΔPQR, $\angle ABD = \angle PQM$ (Proved above) $\frac{AB}{PQ} = \frac{BC}{QR}$ $\therefore \Delta ABC \sim \Delta PQR$ (By SAS similarity criterion)	1 1 1
5.	In ΔPOQ, $DE \parallel OQ$ $\therefore \frac{PE}{EQ} = \frac{PD}{DO}$ (basic proportionality theorem) (i)  In ΔPOR, $DF \parallel OR$ $\therefore \frac{PF}{FR} = \frac{PD}{DO}$ (basic proportionality theorem) (ii) From (i) and (ii), we obtain $\frac{PE}{EQ} = \frac{PF}{FR}$ $\therefore EF \parallel QR$ (Converse of basic proportionality theorem) 	1 1 1
6.	Zeroes are -3 and -1: verification	2+2
7.	a) h=12m b)x = 10.5m; similarity of triangles	2+2

	SET B	
1.	$6a/(a^2+9)=1$; a= 3	1+1
2.	X^2+3x+2	1+1
3.	X=7; AA	1+1
4.	$\Delta ABC \sim \Delta PQR$ $\frac{AB}{PQ}=\frac{BC}{QR}=\frac{CA}{RP}$ $\angle A=\angle P,\ \angle B=\angle Q$ and $\angle C=\angle R$ $\Delta AMC \sim \Delta PNR$ (SAS similarity) $\frac{CM}{RN}=\frac{CA}{RP}$	1 1 1
5.	 In ΔPOQ, $AB \parallel PQ$ $\therefore \frac{OA}{AP}=\frac{OB}{BQ}$ (Basic proportionality theorem) (i)  In ΔPOR, $AC \parallel PR$ $\therefore \frac{OA}{AP}=\frac{OC}{CR}$ (Basic proportionality theorem) (ii) From (i) and (ii), we obtain $\frac{OB}{BQ}=\frac{OC}{CR}$ $\therefore BC \parallel QR$ (By the converse of basic proportionality theorem) 	
6.	Zeroes are 2 and 1; verification	2+2
7.	a) H= 150m; h= 60m b)24m	2+2
	SET C	
1.	(-5-a)/(a-5) = 4; a= 3	2+2
2.	X^2+x-6	2+2
3.	$<A=100^0$; AA	2+2
4.	It is given that $\Delta ABC \sim \Delta PQR$ We know that the corresponding sides of similar triangles are in proportion. $\therefore \frac{AB}{PQ}=\frac{AC}{PR}=\frac{BC}{QR}$ … (1) Also, $\angle A=\angle P, \angle B=\angle Q, \angle C=\angle R$ … (2) Since AD and PM are medians, they will divide their opposite sides. $\therefore BD=\frac{BC}{2}$ and $QM=\frac{QR}{2}$ … (3) From equations (1) and (3), we obtain $\frac{AB}{PQ}=\frac{BD}{QM}$ … (4) In ΔABD and ΔPQM, $\angle B=\angle Q$ [Using equation (2)] $\frac{AB}{PQ}=\frac{BD}{QM}$ [Using equation (4)] $\therefore \Delta ABD \sim \Delta PQM$ (By SAS similarity criterion) $\Rightarrow \frac{AB}{PQ}=\frac{BD}{QM}=\frac{AD}{PM}$	1 1 1

5.	 In ΔABC, $DE \parallel AC$ $\therefore \frac{BD}{DA} = \frac{BE}{EC}$ (Basic proportionality Theorem) (i)  In ΔBAE, $DF \parallel AE$ $\therefore \frac{BD}{DA} = \frac{BE}{FE}$ (Basic proportionality Theorem) (ii) From (i) and (ii), we obtain $\frac{BE}{EC} = \frac{BF}{FE}$	1 1 1
6.	Zeroes are-4 and -3; verification	2+2
7.	a) H= 200m; h= 80m b) 12m	2+2