Model Question paper
Subject: Mathematics-2018-19

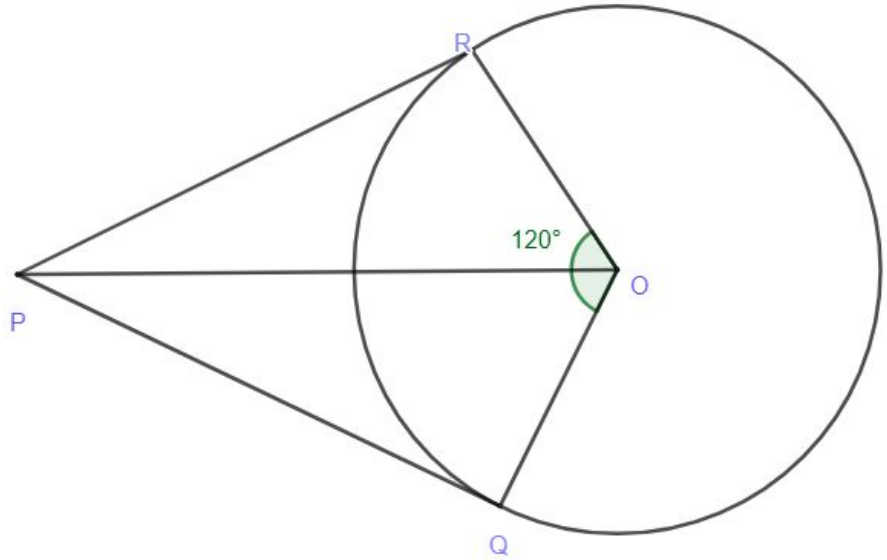
Model answers

Sl no	Answers	marks
1	C)(x1+x2)/2, (y1+y2)/2	1
2	C)3	1
3	C)0	1
4	A) ⅓ Pi h(r1^2+r2^2+r1r2)	1
5	(D) 16 : 81	1
6	B)p/ 360 X pi r^2	1
7	A)(mx2+nx1)/m+n , (my2+ny1)/m+n	1
8	A)Two distinct real	1
9	Equilateral	1
10	$OB^2 = +Bp^2 + Op^2$ $5^2 = BP^2 + 3^2$ BP^2 = 25-9 Bp^2 = 16 BP =4CM Length of chord= 4+4 =8cm	1

11	d = $\sqrt{(x2-x1)^2+(y2-y1)^2}$ **-5 7** **-1 3** **+ -** **----------** **-4 +4** d = $\sqrt{(-4)^2+(+4)^2}$ d = $\sqrt{16+16}$ d = $\sqrt{32}$ = d = $4\sqrt{2}$	**1**
12	7 x 11 x 13.	**1**
13	50 =5 x 2 x 5 = 5^2x 2^1 therefore ,35/50 has terminating decimal expansion	**1**
14	$t^2 - 25$ $t^2 = 25$ t=+5 , t=-5	**1** **1**

15	Numbers divisible by 3 between 0 to 99	

	3,6,9,----------99 a=12 d=3 an=99 an = a+ (n-1)d 99 = 12 + (n-1) 3 99 = 12 + 3n-3 99 = 9 + 3n 90/3 = n 30 = n So, there are 30 two-digit numbers divisible by 3.	½ ½ ½ ½
16	In the figure LM || CB By basic proportionality Theorem AM/MB = AL /LC----------(1) LN || CD By basic proportionality Theorem AN /AD = AL /LC ---------(2) By (1) and (2) We get AM/MB = AN /AD	½ ½ ½ ½
17	x + y = 14 and x – y = 4 x + y = 14 x – y = 4 - + - ---------- 2y = 10 y=10/2 =5 x + y = 14 X + 5 =14 X =14-5 X = 9	 ½ ½ ½ ½
18	Quadrant means centre angle 90 Circumference = 2 π r 22 =2 π r r =22 /2π Area of sector = 90 /360 X π X r^2	 ½ ½

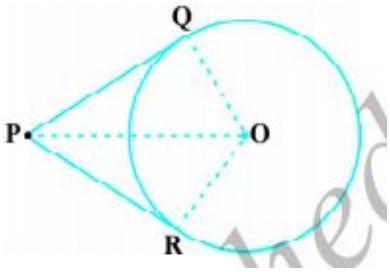
	=¼ X π X 22 X 22 /2 X 2 X π X π =¼ X 121 X 7/22 =154/3 cm^2	½ ½
19	 	½ ½ ½ ½
20	Area of triangle = ½ x1(y2-y3) + x2(y3-y1) +x3 (y1-y2) = ½ 2 (0+4) -1(-4-3) +2(3-0) = ½ 2(4) -1(-7) + 2(3) = ½ (8 +7 +6) = ½ 21 =21/2	½ ½ ½ ½
21	Contradictory method Let us assume that 3 + 2√5 is not a irrational number Then,3 + 2√5 is a rational number 3 + 2√5 = a/b Here a and b are co -prime . b≠0 After simplification 3 - a/b = 2√5 1/2(3 - a/b) =√5 3/2 -a/2b = √5 LHS is rational =(3/2 -a/2b) And RHS should be rational =√5 It gives rise to contradiction	½ ½ ½

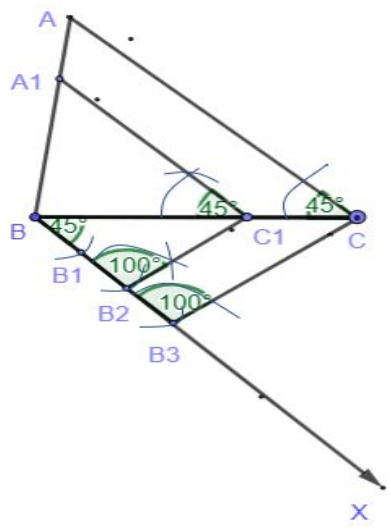
	So 3 + 2√5 irrational	½
22	sum of zeroes = – 2 + (–5) =b/a – (7) = -7/1 -7 =-7 Product of zeroes = c/a (-2) X (-5) = 10/1 10 = 10	**1** **1**
23	$2x^2 - 7x + 3 = 0$ a = 2 b = -7 c = 3 $X = \frac{-b \pm \sqrt{b\hat{}2 - 4ac}}{2a}$ $X = \frac{-(-7) \pm \sqrt{(-7)\hat{}2 - 4(2)(3)}}{2(2)}$ $X = \frac{7 \pm \sqrt{49 - 4(6)}}{4}$ $X = \frac{7 \pm \sqrt{49 - 24}}{4}$ $X = \frac{7 \pm \sqrt{25}}{4}$ $X = \frac{7+5}{4} = \frac{12}{4} = 3$ $X = \frac{7-5}{4} = \frac{2}{4} = \frac{1}{2}$	½ ½ ½ ½

24	$2\ tan^2\ 45 + cos^2\ 30 - sin^2\ 60$ = 2 X 1 X 1 + $\sqrt{3}$/2 X $\sqrt{3}$/2 - $\sqrt{3}$/2 X $\sqrt{3}$/2 = 2 +0 = 2	**1** ½ ½
25	From the figure, AB-height of the pole AC-length of the rope In ABC. Sin 30=AB/AC 1/2 = AB/20 On Cross multiplication. AB =(1 X 20)/2 AB = 10 m.	½ ½ ½ ½
26	Sample space {HH,HT,TH,TT} =4 At least= Towords more Event ={HH,HT,TH} Probabilty= $\frac{n(E)}{n(S)}$ = $\frac{3}{4}$	½ ½ ½ ½
27	Volume of the cube=64 a^3 =64 a = 4 side of the cube =4cm length of the resulting cuboid=4cm breadth of the resulting cuboid =4cm height of the resulting cuboid=8cm Surface area of the cuboid = 2(lb + bh +lh) =2(8 X 4 + 4 X 4 +4 X 8) = 2(32+16+32) =2(80) =160 cm^2	½ ½ ½ ½

28	$\frac{2}{x} + \frac{3}{y} = 13, \frac{5}{x} - \frac{4}{y} = -2$ Put 2/x =p 1/y = q 2p+3q =13 X 5 5p-4q =-2 X 2 ---------- 10p +15q = 65 10p -8q = -4 - + + ---------- 23q =69 q =69/23 q = 3 5p-4(3) =-2 5p -12 = -2 5p =10 P =10/5 =2 1/x =p =2 so x=½ 1/y =q =5 so y =⅕	 ½ ½ ½ ½
29	x^2 + 2x + 1) 3x^3 + x^2 + 2x +5(3x -5 3x^3 +6x^2 + 3x - - - ---------- -5x^2 -x +5 -5x^2 -10x -5 + + + ---------- 9x + 10	**1** **1**
30	Let AB be the height of the tower. In ABC, tan 30 =AB/BC $1/\sqrt{3}$ =AB/30	½

	AB =30 / $\sqrt{3}$ AB = 30 $\sqrt{3}$ / $\sqrt{3}$ X $\sqrt{3}$ AB = 30 $\sqrt{3}$ /3 AB = 10 / $\sqrt{3}$ miters	½ ½ ½

31	 Given: O is the circle , P is a point lying outside the circle, PQ and PR are two tangents on the circle from P . To prove : PQ = PR. Construction:we join OP, OQ and OR	½ ½ ½ ½
	statements Reasons	
	<OQP = <ORP = 90 angle between tangents and radius	
	In right angled triangle triangles OQPand ORPಗಳಲ್ಲಿ OQ = QR Radii of same circle OP = OP common side Therefore,, Δ OQP ≅ Δ ORP RHS	1
	PQ = PR CPCT	

32		**1** **+** **1** **+** **1**
33	2x^ 2 + x + 4 = 0 On dividing the equation by 2 x^2 +x/2 +4/2=0 x^2 +x/2 X 1/4 =-2 On adding ¼ both sides x^2 +x/2 X ¼ +(¼)^2 =-2 +(¼)^2 (x+¼)^2 =-2 + 1/16 (x+¼)^2 =-31/12 There are no real roots	**1** **1** **1**
34	A + B + C = 180 B + C = 180-A (B +C)/2 =(180-A)/2 (B +C)/2 =90-A/2 Sin (B +C)/2 =sin (90-A/2) Sin (B +C)/2 = cosA/2	**1** **1** **1**

35 **1+1 +1**

Cl	fi	xi	xifi	
0 - 2 2 - 4 4 - 6 6 - 8 8 -10 10 - 12 12 - 14	1 2 1 5 6 2 3	0 **1** 2 2 **3** 4 4 **5** 6 6 **7** 8 8 **9** 10 10 **11** 12 12 **13** 14	1 X 1 = 1 3 X 2 = 6 5 X 1 = 5 7 X 5 = 35 9 X 6 = 54 11 X 2 =22 13 X 3 = 39	$\bar{x} = \frac{\Sigma xifi}{\Sigma fi}$ $\bar{x} = \frac{162}{20}$ $\bar{x}$ =8.1
	$\Sigma fi =$		$\Sigma xifi = 162$	

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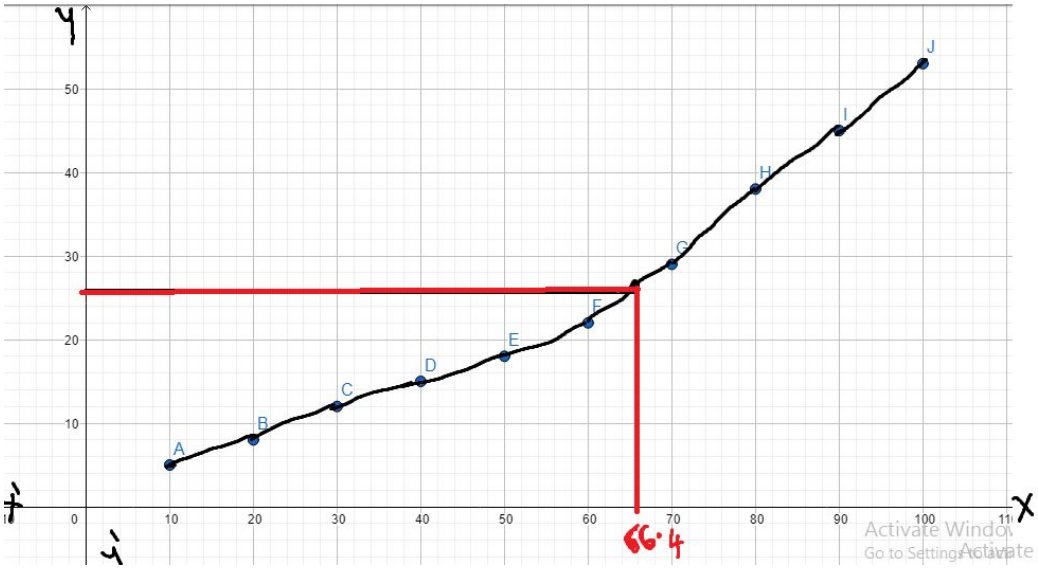
1)Less than method

Marks Cl	No of students f	cf
10	5	5
20	3	5 + 3 =8
30	4	8 + 4 =12
40	3	12 + 3 =15
50	3	15 + 3 = 18
60	4	18 + 4 = 22
70	7	22 + 7 = 29
80	9	29 + 9 = 38
90	7	38 + 7 = 45

100	8	45 + 8 =53



11/2

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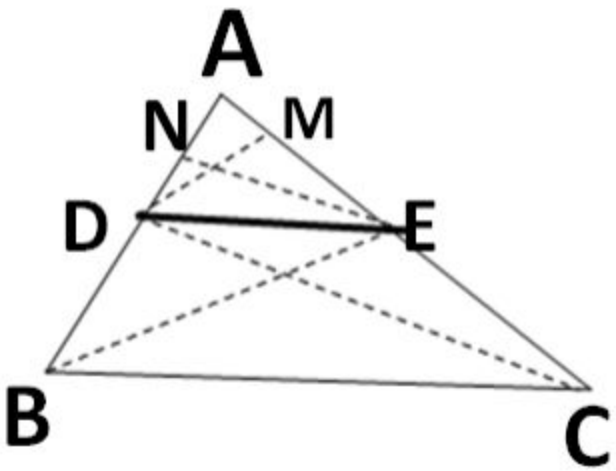
nth term an = a + (n-1)d
4th term. a4=a+3d
8th term a8 = a + 7d
a4 + a8 =24
a+3d+ a + 7d =24 **1**
2a + 10d =24----------(1)
6th term. a6=a+5d
10th term a10 = a + 9d
a6 + a10 =24
a+5d+ a + 9d =24 **1**
2a + 14d =44----------(2)

From (1) and (2)
2a + 10d =24
2a + 14d =44
- - -

-4d = - 20
d =-20/-4 =5 **1**
Put d =5 in (1)
2a + 10d =24----------(1)

	2a + 10 (5) =24 2a + 50 =24 2a = - 26 a = -13 –13, –8, –3	1
38	 Given:In Δ ABC, if the line DE is drawn parallel to side BC of Δ ABC to intersect the AB and AC sides at distinct points D and E. To prove: AD/DB =AE/EC Construction: Join BE, and CD then Draw DM $\perp$AC, and EN$\perp$ AB	1+ 1+ 1+ 1

Proof:

	STATEMENTS	REASONS
1	In ADE, Area of ADE =½ AD X EN	Area of Δ = ½ X Base X Height
	IN BDE, Area of BDE = ½ DB X EN	Area of Δ = ½ X Base X Height
	$\frac{\Delta ADE}{\Delta BDE} = \frac{½\ AD\ X\ EN}{½\ DB\ X\ EN}$ $= \frac{AD}{DB}$ **--------(1)**	

	Similarly, **In** ADE , Area of ADE = ½ AE X DM	Area of Δ = ½ X Base X Height
	In DEC Area of DEC = ½ EC X DM	Area of Δ =½ X Base X Height
	$\frac{\Delta ADE}{\Delta DEC} = \frac{½\ AE\ X\ DM}{½\ EC\ X\ DM}$ $= \frac{AE}{EC}$ **--------(2)**	
	Two triangles BDE And DEC are on the same base DE and between parallel lines BC and DE. **so,** **ar(BDE) = ar(DEC** **)----------**(3)	
	From (1) ,(2) AND (3) WE GET AD/DB = AE/EC	

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x	1	2	3
y	5/3=1.6	4/3 =1.3	1

1

x	1	2	3
y	-10/3=-3.3	-8/3=-2.6	-6/3 =-2

1

X+3y =6

3y =6-x

Y = $\frac{6-x}{3}$ Y = $\frac{6-x}{3}$ Y = $\frac{6-x}{3}$

= $\frac{6-1}{3}$ = $\frac{6-2}{3}$ = $\frac{6-3}{3}$

= $\frac{5}{3}$ = $\frac{4}{3}$ = $\frac{3}{3}$

2x -3y =12

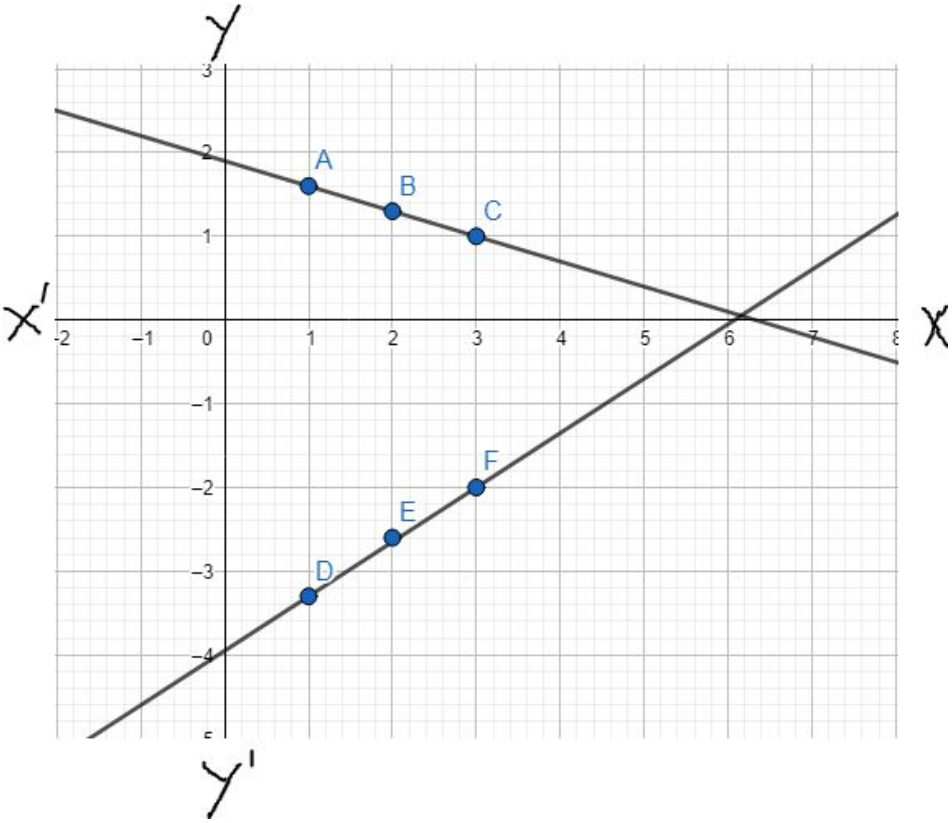
-3y =12-2x

Y = $\frac{12-2x}{-3}$ Y = $\frac{12-2x}{-3}$ Y = $\frac{12-2x}{-3}$

Y = $\frac{12-2(1)}{-3}$ Y = $\frac{12-2(2)}{-3}$ Y = $\frac{12-2(3)}{-3}$

Y = $\frac{12-2}{-3}$ Y = $\frac{12-4}{-3}$ Y = $\frac{12-6}{-3}$

Y = $\frac{10}{-3}$ Y = $\frac{8}{-3}$ Y = $\frac{6}{-3}$



2

40	Two hemispheres and one cylinder are given Diameter of the capsule=5mm Therefore radius =5/2 =2.5mm Length of the capsule=14mm Therefore length of the capsule =14mm Length of the cylinder =14-(2.5+2.5) Surface rea of the hemisphere=2 X 22/7 X2.5 X2.5=275/7mm^2 Surface area of the cylinder rh = 2 X 22/7 X 2.5 X 9 =22/7 X 45 =990/7 mm^2 Required surface area of medicine capsule = 2 X surface area of hemisphere +surface area of the cylinder = 2 X 275/7 X 990/7 = 550 /7 + 990/7 =1540/7 =220mm^2	**1** **1** **1** **1**