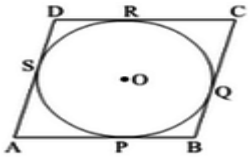
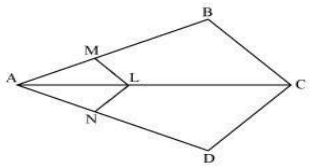
KENDRIYA VIDYALAYA SANGATHAN RO JAIPUR REGION
PRACTICE PAPER (2024) (SET-A)
CLASS: X MATHEMATICS (Basic) MARKING SCHEME

	SECTION – A **Questions 1 to 20 carry 1 mark each.**	
1.	(c) 20	1 mark
2.	(d) no solution	1 mark
3.	(b) $\frac{1}{2}$	1 mark
4.	(d) $5^2 \times 3^2$	1 mark
5.	(a) $x^2 - 4x + 3\sqrt{2} = 0$	1 mark
6.	(c) 10 units	1 mark
7.	(b) 55^0	1 mark
8.	(a) 4	1 mark
9.	(b) 2.5 cm	1 mark
10.	(c) 31	1 mark
11.	(c) 60^0	1 mark
12.	(b)2.4 cm	1 mark
13.	(b) $-\frac{3}{4}$	1 mark
14.	(b) – ½	1 mark
15.	(c) 94.5	1 mark
16.	(b) 77 cm^2	1 mark
17.	(b) $6\pi r^2$ cm^2	1 mark
18.	(d) 7000	1 mark
19.	(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1 mark
20.	(a)) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).	1 mark
	SECTION – B **Questions 21 to 25 carry 2 marks each.**	
21.	A + B= 60°, A – B= 30° A= 45° and B = 15°	1 mark 1mark
22.	$\frac{3}{6} \neq \frac{2}{-4}$ Hence, the pair of linear equations is consistent.	1 mark 1 mark
23.	Length of tangents from same external point are equal ∴TP = TQ AP = AR and BR = BQ TP = TQ ⇒ TA + AP = TB + BQ ⇒ TA + AR = TB + BR	1mark 1mark
24.	if ΔABC ~ ΔPQR, then AB/PQ = BC/QR = AC/PR 6/4.5 = 4/X x = 3 cm **(OR)** DE || OQ , Show that EF || QR PE/EQ = PD/DO ……..(1) DF || OR PF/FR = PD/DO …… (2) From 1 and 2 PE/EQ = PF/FR (by converse of BPT) ∴ EF || QR	1 mark 1 mark 1 mark 1 mark
25.	Perimeter of a semi-circular protractor = 108 cm πr + d = 108 πr + 2r = 108 r = 21 cm d = 2r d = 42 cm	1 mark 1 mark

	(OR) Area of minor segment = Area of sector OAPB – Area of ΔAOB $= \frac{\theta}{360^0}\pi r^2 - \frac{1}{2}$ x b x h $= \frac{1}{4}$ x 3.14 x 100 - $\frac{1}{2}$ x 100 = 78.5 – 50 = 28.5 cm^2	 1 mark 1 mark
	SECTION – C **Questions 26 to 30 carry 3 marks each.**	
26.	Proof of $\sqrt{5}$ is an irrational number.	3mark
27.	$\frac{p^2-1}{p^2+1} = \frac{(sec\theta+tan\theta)^2-1}{(sec\theta+tan\theta)^2+1}$ $= \frac{(sec^2\theta-1)+tan^2\theta+2\,sec\theta tan\theta}{sec^2\theta+(tan^2\theta+1)+2\,sec\theta tan\theta} = \frac{tan^2\theta+tan^2\theta+2\,sec\theta tan\theta}{sec^2\theta+sec^2\theta+2\,sec\theta tan\theta}$ $= \frac{2\,tan^2\theta+2\,sec\theta tan\theta}{2sec^2\theta+2\,sec\theta tan\theta} = \frac{2\ tan\theta\ (\tan\theta+sec\theta)}{2\sec\theta\ (\sec\theta+tan\theta)}$ $= \frac{tan\theta}{\sec\theta} = \frac{\sin\theta}{\cos\theta}$ x cos θ = sin θ **(OR)** LHS $\frac{CosA}{1+SinA} + \frac{1+SinA}{CosA}$ $\frac{Cos^2A+(1+SinA)^2}{CosA\,(1+SinA)} = \frac{Cos^2A+1+2\,SinA+Sin^2A}{CosA\,(1+SinA)}$ $= \frac{1+1+2SinA}{CosA(1+SinA)}$ $= \frac{2(1+SinA)}{CosA(1+SinA)}$ $= \frac{2}{CosA}$ = 2 Sec A = RHS	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark
28.	i) P(a red card) = 20/46 = 10/ 23 ii) P(a face card) = 6 / 46 = 3/23 iii) P(a card of clubs) = 13/ 46	1 mark 1 mark 1 mark
29.	$4s^2 - 4s + 1 = 4s^2 - 2s - 2s + 1$ $= 2s(2s-1) - 1(2s-1)$ s = $\frac{1}{2}, \frac{1}{2}$ Sum of zeroes = $\frac{1}{2} + (\frac{1}{2}) = \frac{2}{2} = \frac{-(-4)}{4} = \frac{-b}{a} = \frac{-\text{coefficient of s}}{\text{coefficient of } s^2}$ Product of zeroes = $\frac{1}{2}$ x $\frac{1}{2} = \frac{1}{4} = \frac{constant}{\text{coefficient of } x^2}$	 1 mark 1 mark 1 mark
30	Let the fare from Bangalore bus stand to Malleshwaram = Rs x and the fare from Bangalore bus stand to Yeshwanthpur = Rs y. According to the given situations, 2x + 3y = 46 .....(i) 3x + 5y = 74 .....(ii) From i and ii , y = 10, x = 8 **(OR)** Let the number of right answers = x number of wrong answers = y According to the question, 3x - y = 40 ... (i) 4x - 2y = 50 ⇒ 2x - y = 25 ... (ii) from equation (i) and (ii) x = 15 , y = 5 number of right answers = 15 Number of wrong answers = 5 Total number of questions = 20	1 mark 1 mark 1 mark 1mark 1mark 1 mark

31	Given ABCD be a parallelogram circumscribing a circle with centre O. To Prove : ABCD is a rhombus.  We know that the tangents drawn to a circle from an exterior point are equal is length. ∴ AP = AS, BP = BQ, CR = CQ and DR = DS. AP+BP+CR+DR = AS+BQ+CQ+DS (AP+BP) + (CR+DR) = (AS+DS) + (BQ+CQ) ∴ AB+CD=AD+BC or 2AB=2AD (since AB=DC and AD=BC of parallelogram ABCD) ∴ AB=BC=DC=AD ABCD is a rhombus.	1 mark 1 mark 1 mark
	SECTION – D Questions 32 to 35 carry 5 marks each.	
32.	Let the original speed of the aircraft = x km/hr Then new speed = (x – 200) km/hr Total distance = 600 km During of the flight at original speed = $\frac{600}{x}$ hr During of the flight at new speed = $\frac{600}{x-200}$ hr According to given $\frac{600}{x-200} - \frac{600}{x} = \frac{1}{2}$ x^2 - 200 x – 240000 = 0 x = 600 , - 400 So, the original speed of the aircraft =600 km/hr During of the flight = 600/x hr = 600/600 = 1 hour. (OR) Given, Let the speed be x, then time taken (t) = $\frac{360}{x}$ If speed is increased by 5 km/h, so speed = (x+5)km/h time taken to the distance = $\frac{360}{x+5}$ time with original speed - time with increased speed =1 $\frac{360}{x} - \frac{360}{x+5} = 1$ $x^2 + 5x - 1800 = 0$ (x − 40)(x + 45) = 0 , x = 40, - 45 X = 40 km/hr, So the speed of the train is 40 km/hr. the negative value of speed (−45) is not possible.	1 mark 1 mark 1 mark 1 mark 1 mark 1 mark 1 mark 1 mark 1 mark 1 mark
33	BPT: given, prove that, figure and construction Proof **In the given figure, LM || CB** **By using basic proportionality theorem,** $\frac{AM}{MB} = \frac{AL}{LC}$ **……(i)** **LN || DC** $\frac{AN}{ND} = \frac{AL}{LC}$ **……(ii)** **From (i) & (ii)** $\frac{AM}{MB} = \frac{AN}{ND}$  	(½+½+½+½) 1 mark 1 mark 1 mark
34		

Class interval	Frequency	Cumulative Frequency
0 - 10	10	10
10 - 20	f_1	10 + f_1

	20 - 30	25	$35 + f_1$
	30 - 40	30	$65 + f_1$
	40 - 50	f_2	$65 + f_1 + f_2$
	50 - 60	10	$75 + f_1 + f_2$
	Total	100	100

2 marks

1mark

***f*1 + *f*2 = 25 Median = 32 , Median class = 30 - 40**

l = 30, h = 10, f = 30, $\frac{N}{2}$ = 50, cf = 35 + f_1

1mark

Median = l + h ($\frac{\frac{N}{2} - cf}{f}$)

32 = 30 + 10 x ($\frac{50-(35+f1)}{30}$)

f_1 = 9, f_2 = 16

1mark

35.	Dimensions of cuboid =15cm×10cm×3.5cm, radius of cone =0.5 cm, depth of cone = 1.4 cm Volume of cuboid = length × width × height $=15\times10\times3.5=525\ cm^3$ Volume of cone $= \frac{1}{3}\pi r^2 h$ $= \frac{1}{3} \times \frac{22}{7} \times 0.52 \times 1.4$ $= \frac{11}{30}\ cm^3$ Volume of wood = Volume of cuboid – 4 × Volume of cone $= 525 - 4 \times \frac{11}{30} = 523.53\ cm^3$	1 mark 1 mark 1 mark 1 mark 1 mark
36	i) AB = 2 units ii) BC = 2 units iii) OB is greater than AB and CB **(OR)** iv) AB = BC = 2 units Hence ∆ABC is an isosceles triangle.	1 mark 1 mark 2 mark **(Or)** 2 mark
37.	(i) $\sqrt{3}\tan\alpha + 2 = 5$ $\Rightarrow \tan\alpha = \sqrt{3} = \tan 60^0$ $\Rightarrow \alpha = 60^0$ ii) BD = 3 cm and BC = 6 cm In ∆BCD, $\sin\alpha = \frac{BD}{BC} = \frac{3}{6} = \frac{1}{2}$ $\Rightarrow \sin\alpha = \sin 30^0$ $\Rightarrow \alpha = 30^0$ iii) BD = AD – AC = 5 – 1.3 = 3.7 In ∆BCD, $\tan 60^0 = \frac{BD}{DC}$ $\Rightarrow \sqrt{3} = \frac{3.7}{DC} = 1.73$ $\Rightarrow DC = \frac{3.7}{1.73} = 2.14$ m (approx.) **(Or)** iv) cot α = 8/15 ⇒ BC = 17 $\Rightarrow \sin\alpha = \frac{BD}{BC} = \frac{15}{17}$	1 mark 1 mark 2mark **(Or)** 2mark
38.	i) a_6 = 16000, a_9 =22600 , d = 2200 The production during first year (a) = 5000, ii) The production during eighth year (a_8) = 20400 iii) The production during first 3 years (S_3) = 21600 **(OR)** iv) The difference of the production during 7th year and 4th year = $a_8 - a_4$ = 6600	1 mark 1 mark 2mark **(OR)** 2mark