

Marking Scheme
Class- X Session- 2021-22
TERM 1
Subject- Mathematics (Basic)

Q. N.	CORRECT OPTION	HINTS/SOLUTION
1	(d)	$P(\text{perfect Square})=5/45=1/9$
2	(c)	length of the arc= $\frac{\theta}{360^\circ} (2\pi r)=(60^\circ/360^\circ)\times 2\times(22/7)\times 21=22\text{cm}$
3	(a)	$\tan\theta = \frac{\sin\theta}{\cos\theta} = \frac{\sin\theta \times \sec\theta}{1} = xy$
4	(d)	The lines are parallel hence No solution
5	(b)	$P(\text{even composite no}) = 2/6=1/3$
6	(a)	Let the cost of one chair=Rs. x Let the cost of one table=Rs. y $8x+5y=10500$ $5x+3y=6450$ Solving the above equations Cost of each chair= x= Rs. 750
7	(c)	$\cos\theta=1-\cos^2\theta=\sin^2\theta$ Therefore $\sin^2\theta+\sin^4\theta=\cos\theta+\cos^2\theta=1$
8	(a)	Terminating
9	(c)	$2^3 \times 3^3$
10	(c)	$1^{\text{st}} \text{ No.} \times 2^{\text{nd}} \text{ No.} = \text{HCF} \times \text{LCM}$ $12960=18 \times \text{LCM}$ $\text{LCM}=720$
11	(c)	$\frac{AE}{AC}=\frac{DE}{BC}=\frac{a}{a+b}=\frac{x}{y}$ $X=\frac{ay}{(a+b)}$
12	(d)	$(2x+1)/3, (2x+1)/3$ $= (3,5)$
13	(c)	$3825=3^2 \times 5^2 \times 17$
14	(d)	$AB^2=AD^2+BD^2$ $AB=5\text{cm}$ $AC^2=AB^2+CB^2$ $AC=13\text{ cm}$ $\cot \theta=CB/AB=12/5$
15	(a)	$x+y=12$ $x-y=8$ Solving the above equations $x=10, y=2$
16	(d)	$AB^2=AC^2+AC^2$ $=AC^2+BC^2$ Hence, angle C=90°
17	(d)	Let the zeroes be a and b Then, $a=-1, a+b=-(-7)/1$ Hence, $b=7+1=8$
18	(a)	$P(\text{same no on each die})=6/36=1/6$
19	(b)	$(2,6)=((3p-2)/2, (4+2q)/2)$ $3p-2=4, 4+2q=12$ $p=2, q=4$ hence $p+q=6$
20	(c)	$147/120=49/40=49/2^3 \times 5$

		Three decimal places
21	(d)	Perimeter of protractor=Circumference of semi-circle + 2 x radius $=\pi r+2r$
22	(c)	$0 \leq P(E) \leq 1$
23	(b)	$CD/BD=BD/AD$ $BD^2=CD \times AD=6 \times 3$ $BD=3\sqrt{2}$ cm
24	(b)	$3/6=5/k \Rightarrow k=10$
25	(d)	$C1/C2=2\pi r/2\pi R$ $2\pi/4\pi=2\pi r/2\pi R$ $r/R=1/2$ $A1/A2=\pi r^2/\pi R^2=(r/R)^2=(1/2)^2=1/4$ $A2=4A1$
26	(d)	$\sin\theta=a/b$ $H^2=p^2+B^2$ $b^2=a^2+B^2$ $B=\sqrt{b^2-a^2}$ $\tan\theta=P/B=a/\sqrt{b^2-a^2}$
27	(a)	$x+y=2\sin^2\theta+2\cos^2\theta+1$ $=2(\sin^2\theta+\cos^2\theta)+1$ $=2+1=3$
28	(b)	$2\pi r-r=37$ $r\{2\pi(22/7)-1\}=37$ $r=37 \times 7/37$ $r=7$ circumference= $2\pi(22/7) \times 7=44$ cm
29	(c)	1 = 1 2 = 2 × 1 3 = 3 × 1 4 = 2 × 2 5 = 5 × 1 6 = 2 × 3 7 = 7 × 1 8 = 2 × 2 × 2 9 = 3 × 3 10 = 2 × 5 So, LCM of these numbers = 1 × 2 × 2 × 2 × 3 × 3 × 5 × 7 = 2520 Hence, least number divisible by all the numbers from 1 to 10 is 2520
30	(c)	LCM of 4,7,14=28 Bells will they ring together again at 6:28 AM
31	(b)	Let age of Father=x Years Let age of son = y years $x+y=65$ $2(x-y)=50$ Solving the above equations Father's Age =x = 45 years
32	(c)	$(\tan\theta\operatorname{cosec}\theta)^2-(\sin\theta\operatorname{sec}\theta)^2$ $=\tan^2\theta\operatorname{cosec}^2\theta-\sin^2\theta\operatorname{sec}^2\theta$ $=(\sin^2\theta/\cos^2\theta) \times 1/\sin^2\theta - \sin^2\theta \times 1/\cos^2\theta$ $=(1-\sin^2\theta)/\cos^2\theta = \cos^2\theta/\cos^2\theta = 1$
33	(d)	$A1/A2=(P1/P2)^2=(26/39)^2$

		$A1/A2=(2/3)^2=4/9$
34	(a)	Let no of Cars= x Let no of motorcycles= y $x+y=20$ $4x+2y=56$ Solving the above equations No of cars= $x=8$
35	(c)	$H^2=P^2+B^2$ $H^2=15^2+8^2$ $H=17m$
36	(c)	$(\text{altitude})^2=(\text{side})^2-(\text{side}/2)^2$ $=8^2-4^2=64-16=48$ Altitude= $4\sqrt{3}$ cm
37	(d)	$P=3/9=1/3$
38	(b)	$\Theta/360^\circ \times \pi r^2 = 1/6 \times \pi r^2$ $\Theta=60^\circ$
39	(d)	Height of Vertical stick/Shadow of vertical stick=height of tower/shadow of tower $20/10=\text{Height of tower}/50$ Height of tower= 100 m
40	(d)	$37x+43y=123$ _____(1) $43x+37y=117$ _____(2) Adding (1) and (2) $x+y=3$ _____(3) Subtracting (2) from (1) $-x+y=1$(4) Adding (3) and (4), $2y=4$ $y=2$ $\Rightarrow x=1$ \therefore solution is $x=1$ and $y=2$
41	(b)	$AB=\sqrt{\{(4-1)^2+(0-4)^2\}}$ $=\sqrt{3^2+4^2}$ $AB=5$ units
42	(a)	$(x-7)^2+(y-1)^2=(x-3)^2+(y-5)^2$ $x^2+49-14x+y^2+1-2y=x^2+9-6x+y^2+25-10y$ Simplifying $x-y=2$
43	(a)	$3x + y - 9 = 0$ Let R divide the line in ratio $k:1$ $R(\frac{2k+1}{k+1}, \frac{7k+3}{k+1})$ $3(\frac{2k+1}{k+1})+(\frac{7k+3}{k+1})-9=0$ $4k-3=0$ $K=3/4$ $3 : 4$
44	(c)	Distance of M from X-axis= $\sqrt{(2-2)^2+(0-3)^2}=\sqrt{9}=3$ units
45	(b)	$(\frac{1+3}{2}, \frac{4+5}{2}) = (\frac{4}{2}, \frac{9}{2}) = (2, \frac{9}{2})$
46	(c)	Cubic
47	(d)	Four Zeroes as the curve intersects the x-axis at 4 points
48	(d)	$p \neq 0$
49	(d)	3 Zeroes as the curve intersects the x-axis at 3 points
50	(c)	$-3, -1, 2$