

**Class- X Mathematics Basic (241)**

**Marking Scheme**

**PRE-BOARD-2022-23**

**Time Allowed: 3 Hours**

**Maximum Marks: 80**

**SECTION:A**

Q1.	b) $x^2 y^2$	Q11.	(c) $\frac{x^2-1}{2x}$
Q2.	c) $\frac{5}{7} \neq \frac{-4}{6}$	Q12.	d) 12cm
Q3.	b) D=5	Q13.	(c)11cm
Q4.	(d) four places	Q14.	a)77
Q5.	(d) k=8	Q15.	(d)3600
Q6.	(c) 30 units	Q16.	a)7,13
Q7.	(b)(3,2)	Q17.	b)9
Q8.	(b)3.2cm	Q18.	©13
Q9.	(a) $-\frac{1}{2}$	Q19.	(c)
Q10	(a)0	Q20.	(d)

**SECTION:B**

Q21	$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ $\frac{2}{k+2} = \frac{3}{6} = \frac{-4}{-(3k+2)}$ <p>K=2</p>	<p>½</p> <p>½</p> <p>1</p>
Q22	<p>Given , To prove</p> $\frac{AD}{DB} = \frac{AE}{EC}$ <p>∴ DE    BC (Converse of BPT)</p> <p>∴ ∠D = ∠B and ∠E = ∠C (Corresponding angles)</p> <p>∠B = ∠C therefore AB = AC (Sides opposite to equal angles are equal)</p> <p align="center">OR,</p> <p>Given , To prove</p> <p>∠A = ∠B then CA = CB (Sides opposite to equal angles are equal)</p> <p>CA - AD = CB - BE =&gt; CD = CE</p> $\frac{CD}{AD} = \frac{CE}{EB}$ <p>then DE    AB (By Converse of BPT)</p>	<p>½</p> <p>½</p> <p>½</p> <p>½</p> <p>OR,</p> <p>0½</p> <p>½</p> <p>½</p> <p>½</p>
Q23	∠OPQ = 90°	<p>½</p> <p>½</p> <p>1</p>



	Perimeter= $2(x+y)=52$ units	$\frac{1}{2}$
28	<p>For <math>x=2</math> <math>4+(a+1)x^2+b=0</math>  <math>4+2a+2+b=0</math>  <math>2a+b+6=0</math></p> <p>For <math>x=-3</math> <math>9+(a+1)(-3)+b=0</math>  <math>9-3a-3+b=0</math>  <math>-3a+b+6=0</math></p> <p><math>a=0</math> and <math>b=-6</math></p>	<p>1</p> <p>1</p> <p>1</p>
29	<p>LHS=<math>\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} \theta - \theta = 1</math>]</p> <p>= <math>\frac{(\tan \theta + \sec \theta) - (\theta - \theta)}{\tan \theta - \sec \theta + 1}</math></p> <p>= <math>\frac{(\tan \theta + \sec \theta) [1 - (\sec \theta - \tan \theta)]}{\tan \theta - \sec \theta + 1}</math></p> <p>= <math>\frac{(\tan \theta + \sec \theta) [1 - \sec \theta + \tan \theta]}{(\tan \theta - \sec \theta + 1)}</math></p> <p>= <math>\tan \theta + \sec \theta</math>  =RHS</p> <p style="text-align: center;">OR,</p> <p>LHS=<math>(\cot \theta - \theta)^2</math></p> <p>= <math>\left(\frac{\cos \theta - 1}{\sin \theta}\right)^2</math></p> <p>= <math>\frac{(1 - \cos \theta)^2}{\sin^2 \theta} = \frac{(1 - \cos \theta)(1 - \cos \theta)}{(1 - \cos \theta)}</math></p> <p>= <math>\frac{(1 - \cos \theta)(1 - \cos \theta)}{(1 + \cos \theta)(1 - \cos \theta)}</math></p> <p>= <math>\frac{1 - \cos \theta}{1 + \cos \theta} = \text{RHS}</math>   —</p>	<p><math>\frac{1}{2}</math></p> <p>1</p> <p>1</p> <p>1/2</p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p>1</p> <p>1/2</p>
30	Given, To prove, Figure Correct proof	<p>1</p> <p>2</p>
31	<p>For Correct zeroes <math>\frac{2}{5}</math> and <math>-2</math>  <math>a=5</math> <math>b=8</math> <math>c=-4</math></p> <p>Sum=<math>\frac{2}{5} + (-2) = \frac{-8}{5}</math>  <math>-\frac{8}{5} = -\frac{8}{5}</math></p> <p>product = <math>(-2)\frac{2}{5} = -\frac{4}{5}</math>  <math>-\frac{4}{5} = -\frac{4}{5}</math></p>	<p><math>1 + \frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p>
SECTION:D		
32	<p>Speed of train = <math>x</math> km/h and reduced speed= <math>(x-8)</math> km/hr.</p> <p><math>\frac{480}{x-8} - \frac{480}{x} = 3</math></p> <p><math>3x^2 - 24x - 3840 = 0</math></p> <p><math>x^2 - 8x - 1280 = 0</math></p> <p><math>x = 40, -32</math></p> <p><math>x = 40 \text{ Km/h}</math></p> <p style="text-align: center;">Or,</p>	<p><math>\frac{1}{2}</math></p> <p>1</p> <p><math>1 + \frac{1}{2}</math></p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p><math>\frac{1}{2}</math></p> <p>1</p> <p>1</p>

$$x^2 + y^2 = 400$$

$$4(x - y) = 16$$

$$x = 4 + y$$

$$(4 + y)^2 + y^2 = 400$$

$$2y^2 + 8y - 384 = 0$$

$$Y=12, -16$$

$$Y=12$$

$$X=4+12=16 \text{ unit}$$

½  
1  
1

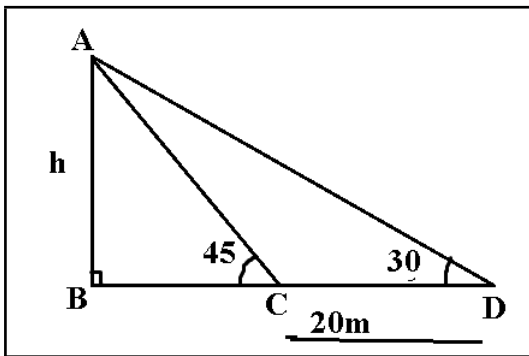
33 Figure  
Given, To prove,  
constructions  
Proof  
Application EC=9 cm

½  
1 1/2  
2  
1

34 (i) Length of arc =22 cm  
(ii)Area of Sector =231 sq.cm  
(iii)Area of segment= $(231 - \frac{441\sqrt{3}}{4})$ sq.cm.

1  
2  
2

35 In  $\Delta ABC$  right angled at B



$$\tan 45^\circ = \frac{h}{BC} \quad \text{then } h = BC$$

In  $\Delta ABD$

$$\tan 30^\circ = \frac{h}{BD} \quad \text{or,}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{h+20}$$

$$h = \frac{20}{\sqrt{3}-1}$$

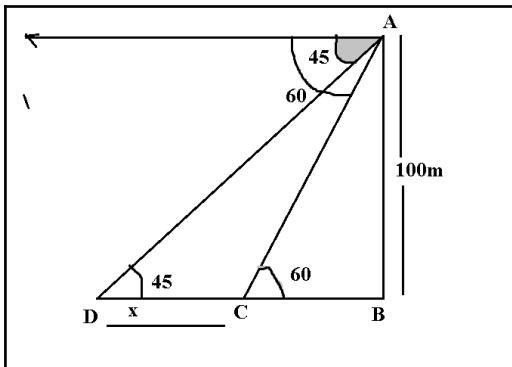
$$\text{therefore } h = 10(\sqrt{3} + 1)m$$

Or,

In  $\Delta ABC$  right angled at B

$$\tan 60^\circ = \frac{AB}{BC} \quad \text{OR, } \sqrt{3} = \frac{100}{BC} \quad \text{OR, } BC = \frac{100}{\sqrt{3}}$$

In  $\Delta ABD$



$$\tan 45^\circ = \frac{AB}{BD}$$

$$\text{Or, } 1 = \frac{100}{BC+x}$$

1  
1  
1  
1

1(for  
fig)

1

1

1  
1

$$\text{Or, } BC + x = 100$$

$$\frac{100}{\sqrt{3}} + x = 100$$

$$x = 100 - \frac{100}{\sqrt{3}}$$

$$x = \frac{100(3-\sqrt{3})}{3} m$$

SECTION: E

Q36.

(i) 152

(ii) 272

(iii) 4400

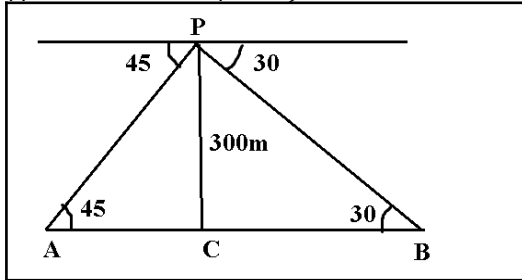
1

1

2

37

(i)  $AB = AC + CB = 300(1 + \sqrt{3})$



(ii) Point A will be nearest, Distance from A to C = 300m

(iii) Distance of P from A =  $300\sqrt{2}m$   
Distance of P from B = 600m

1

1

2

38.

(i)  $3\sqrt{2}$  unit

(ii)  $3\sqrt{2}$  unit

(iii) 6 unit

1

1

2