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CLASS X PREBOARD EXAMINATION (basic)
ANSWER KEY

SECTION A

1.b

2. d

3. d

4. b

5. b

6. a

7. a

8. b

9. d

10. a

11. c

12. b

13. b

14. d

15. b

16. c

17. c

18. c

19. d

20. b

SECTION B

21. **a)** HCF of (420, 504) = **84 cm** **2 MARKS**

OR

21. b) $17 \times 11 \times 2 + 17 \times 11 \times 5$

$= 17 \times 11 \times (2 + 5)$

$= 17 \times 11 \times 7.$ **1 MARKS**

Composite number 1 **MARKS**

22. a) $x = \frac{2(7)+3(2)}{5} = 4$ 1 **MARKS**

$y = \frac{2(2)+3(-3)}{5} = -1$ 1 **MARKS**

$Coordinates : (4, -1).$

OR

22.b) $\frac{x+1}{2} = 2 \Longrightarrow x = 3$ 1 **MARKS**

$\frac{y+4}{2} = -3 \Longrightarrow y = -10$ 1 **MARKS**

$Coordinates\ of A: (3, -10).$

23. $\angle AEB = \angle CED \quad (Vertically\ opposite\ angles)$ 1 **MARKS**

$Therefore, \triangle EAB \sim \triangle ECD\ by\ SAScriteria.$ 1 **MARKS**

24. A number must have both 2 and 5 as prime factors. 1 **MARKS**

4^ncan never end with 0. 1 **MARKS**

25. $In\ right\ \triangle OCA : r = \sqrt{24^2 + 7^2} = \sqrt{576 + 49} = \sqrt{625}$ 1.5 **MARKS**

$Value of\ r$: 25 cm . 0.5 **MARKS**

SECTION C

26. Zeroes: $\propto = \frac{1}{2}, \beta = 3$ (2 mark)

Verification:

Sum $= \frac{1}{2} + 3 = \frac{7}{2} = -\frac{b}{a}$

Product $= \frac{1}{2} \times 3 = \frac{3}{2} = \frac{c}{a}$ (1 mark)

27. Equations: $= \frac{x+2}{y+2} = \frac{5}{7} \Longrightarrow 7x - 5y = -4$ (1 mark)

$\frac{x-1}{y-1} = \frac{1}{2} \Longrightarrow 2x - y = 1.$ (1 mark)

$x = 3, y = 5$.Fraction: $\frac{3}{5}$. (1 mark)

28. $a = -3d$ (0.5 mark)

LHS = $a + 24d = 21d$ (1 mark)

RHS = $3(\mathrm{a} + 10\ \mathrm{d}) = 21d$ (1 mark)

∴ LHS=RHS (0.5 mark)

29. Discriminant $D = b^2 - 4ac = (-2)^2 - 4(3)\left(\frac{1}{3}\right) = 4 - 4 = 0.$ (1 mark)

Nature: Real and equal roots. (1 mark)

Roots: $x = \frac{1}{3}, \frac{1}{3}$. (1 mark)

30. a) Number of spheres = $\frac{\text{Volume of large sphere}}{\text{Volume of small sphere}}$ (1 mark)

$$= \frac{\frac{4}{3}\pi(6)^3}{\frac{4}{3}\pi(2)^3} = \frac{216}{8} = 27 \text{ spheres.}$$ (2 mark)

OR

30.b) CSA $= 2 \times \frac{22}{7} \times 0.25 \times 3.5 = 5.5 \text{ m}^2$ (2 marks)

Cost $= 5.5 \times ₹12 = ₹ 66$ (1 marks)

31.a) Area $= \frac{30^\circ}{360^\circ} \times \frac{22}{7} \times (7^2 - 3.5^2)$ (2 marks)

$= 9.625 \text{ cm}^2.$ (1 marks)

OR

31.b) (i) Arclength , l = Perimeter $- 2r = 27.2 - 2(5.7) = 15.8$ m $= 1580$ cm (1 marks)

(ii) $A = \frac{60^\circ}{360^\circ} \times \frac{22}{7} \times 5.7 \times 5.7 = 17.01 \text{m}^2$ (2 marks)

SECTION D

32.a) $(10y + x) - (10x + y) = 45$ (2 marks)

$x = 2, y = 7$ (2 marks)

Original Number: 27. (1 mark)

OR

32.b) Equations: $9x - 4y = 5000$, $7x - 3y = 5000$ (2 marks)

$x = 5000$ (1 marks)

Incomes: ₹45,000 and ₹35,000. (1 marks)

First Person's Expenditure: Rs. 40,000

Second Person's Expenditure: Rs. 30,000 (1mark)

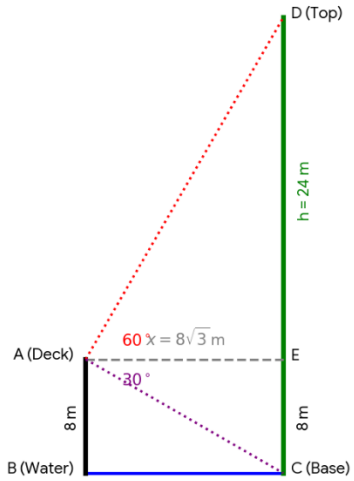
33. $(\frac{3-6}{2}, \frac{-4+2}{2}) = \left(\frac{-1+x_d}{2}, \frac{-3+y_d}{2}\right)$ (3 marks)

$Vertex\ D = (-2, -1).$ (2 marks)

The lines intersect at (-3, 4). Thus, x = -3 and y = 4. **(1 mark)**

34. Give marks for correct proof.

35. a)



(2 marks)

From right triangle $\triangle \boldsymbol{ABC}$

$\frac{1}{\sqrt{3}} = \frac{8}{x}$

$x = 8\sqrt{3}$m --- (Horizontal Distance) **(1 mark)**

From right triangle $\triangle \boldsymbol{AED}$

$\sqrt{3} = \frac{h}{x}$

$h = x\sqrt{3}$

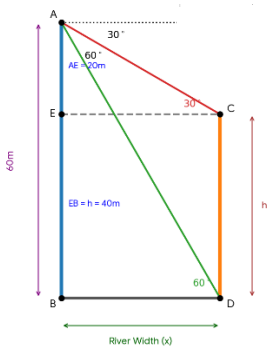
$h = \left(8\sqrt{3}\right) \times \sqrt{3} = 24m$ (1 mark)

Total height of the hill CD:

Total Height $= h + 8 = 24 + 8 = 32$m **(1 mark)**

OR

35. b)



(2 marks)

In the right-angled triangle $\triangle ABD$

$$\sqrt{3} = \frac{60}{x}$$

$$x = \frac{60}{\sqrt{3}} = \frac{60\sqrt{3}}{3} = 20\sqrt{3}\text{ m}$$ (1 marks)

In the right-angled triangle $\triangle ACE$

$$\frac{1}{\sqrt{3}} = \frac{60-h}{x}$$ (1 marks)

$$h = 40\text{ m}$$ (1 marks)

SECTION E

36.(i) AA Similarity Criterion

(ii) Ratio: $\frac{AB}{AD} = \frac{BC}{DE}$

(iii) (a) x = 7.2 m

OR

b) (iii) (b) Height $= 24$ feet

37. (i) $AB = 75\sqrt{3}$ cm

(ii) $OB = 150\ cm$

(iii) (a) $AP = 75cm$

OR

(iii) (b) PQ = 37.5cm

38. (i) Slant height: 2.5 m

(ii) Curved Surface Area of Cone: 11.79 m^2

(iii) (a) Total Cost of Sheet: ₹$1,32,000$

OR

(iii) (b) Total Volume Capacity: 54.21 m^3