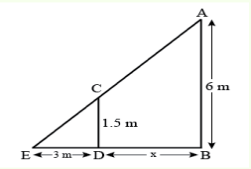
ANSWER KEY

1) (C)500
2) (D) 36
3) (B) –10
4) (B) Parallel
5) (C) 0 and 2
6) (A) 4 : 6
7) **(C) x =** $\frac{ay}{a+b}$
**8)** (A) AAA similarity criterion
9) (B) no real roots
10) (C)38
11) (B) k= 10
12) (C) (5,0)
13. (A) 1:2
14. (B) 22
15. (C) $\frac{11}{36}$
16. ( D ) 1/7
17. (A) $x^2$ +5x+6
18. (A) 2
19. B
20. A

SECTION B

21. 4/4=1
22. ½ $^2$+k x ½ -5/4= 0⇒k/2=1 Therefore, the value of k is 2
23. 

Here, woman and pole both are standing vertically,
So, CD II AB In ΔCDE and ΔABE, ∠E=∠E [common angle]
∠ABE=∠CDE [each equal to 90∘] ∴ ΔCDE~ΔABE [by AAA similarity criterion]
Then, ED/EB=CD/AB
⇒ 3/(3+x)=1.5/ 6=1/4 ∴ x=9 m
Hence, she is at the distance of 9m from the base of the pole
24. (√3 x – 2) (x – 2√3) = 0 the zeroes of the given polynomial are 2/√3 and 2√3
25.

Therefore we can write $\sqrt{5} = \frac{p}{q} - \sqrt{3}$

$(\sqrt{5})^2 = (\frac{p}{q} - \sqrt{3})^2$

$5 = \frac{p2}{q2} - \frac{2p\sqrt{3}}{q} + 3$

$5 - 3 = \frac{p2}{q2} - \frac{2p\sqrt{3}}{q}$

$\frac{p2}{q2} - 2 = \frac{2p\sqrt{3}}{q}$

$\frac{p2-2q2}{qp} = \sqrt{3}$

$\frac{p^2-2q^2}{qp}$ is a rational number as p and q are integers.

This contradicts the fact that √3 is irrational, so our assumption is incorrect.

**Therefore √5 - √3 is irrational.**

**SEC-C**

26. The LCM of 24 and 36 can be found LCM = 72. This means that the two bells will toll together every 72 minutes. The bells toll together at 9 am, and the next time they will toll together is after 72 minutes, i.e., at 10:12 am.
27. (x+1)(x—$q^2/p^2$) x= —1 or x = $q^2/p^2$

28.

$p(x) = 3x^2 - x - 4 = 3x^2 - 1x - 4$

Comparing with $ax^2 + bx + c$

$a = 3, \quad b = -1, \quad c = -4$

We have to verify

Sum of zeroes $= -\frac{\text{Coefficient of } x}{\text{Coefficient of } x^2}$

i.e. $\alpha + \beta = -\frac{b}{a}$

| L.H.S | R.H.S |
|---|---|
| $\alpha + \beta$ | $-\frac{b}{a}$ |
| $= \frac{4}{3} + (-1)$ | $= -\frac{(-1)}{3}$ |
| $= \frac{1}{3}$ | $= \frac{1}{3}$ |

Product of zeroes $= \frac{\text{Constant term}}{\text{Coefficient of } x^2}$

i.e. $\alpha \times \beta = \frac{c}{a}$

| L.H.S | R.H.S |
|---|---|
| $\alpha\ \beta$ | $\frac{c}{a}$ |
| $= \frac{4}{3} \times (-1)$ | $= \frac{-4}{3}$ |
| $= \frac{-4}{3}$ | |

29. Let the no be x , yX+y =75 , x-y =15 45,30

30 . Let the total number of red balls initially be x

P(getting a red ball) = x/12

Now, 6 red balls are put in the box, = 18 balls

Then total number of red balls = (x + 6)

P(getting a red ball) = (x + 6)/18 2(x/12) = (x + 6)/18 2x/12 = (x + 6)/18

⇒ 36x - 12x = 72 ⇒ 24x = 72 x = 3

31. In triangle OPQ, AB|| PQ by BPT 0A/AP = OB/BQ

In triangle ORQ, AC ‖ PR by BPT 0A/AP = OC/CR

OB/BQ = OC/CR by converse of BPT ,BC ‖ QR

## ***SECTION D***

32. (A)Given:- Speed of boat =18km/hr Distance =24km Let x be the speed of stream. Let t1 and t2 be the time for upstream and downstream. ⇒time=distance/speed

$$t_1 = t_2 + 1$$

$$\frac{24}{18 - x} = \frac{24}{18 + x} + 1$$

$$\Rightarrow \frac{1}{18 - x} - \frac{1}{18 + x} = \frac{1}{24}$$

$$\Rightarrow \frac{(18 + x) - (18 - x)}{(18 - x)(18 + x)} = \frac{1}{24}$$

$$\Rightarrow 48x = (18 - x)(18 + x)$$

$$\Rightarrow 48x = 324 + 18x - 18x - x^2$$

$$\Rightarrow x^2 + 48x - 324 = 0$$
$$\Rightarrow x^2 + 54x - 6x - 324 = 0$$
$$\Rightarrow x(x + 54) - 6(x + 54) = 0$$
$$\Rightarrow (x + 54)(x - 6) = 0$$

$$\Rightarrow x = -54 \text{ or } x = 6$$

Thus the speed of stream is **6km/hr**

33.

steps(2m)

(0,5),(-1,7/2) and (1,13/2)[each answer 1m]

34. PROOF(4M)

AD=60cm(1m)

35. Graph(4m)

Soln(1m)

## CASE STUDY

36. (i)CENTROID =(17/3,10/3)

(ii) SCALENE

(iii)(11/2,5/2)

37.i) parabolic

ii)cuts x-axis at (-6,0) and (6, 0). So, the zeroes of polynomial are-6 and 6.

$x^2$-36

**(iii)** $f(x)=x^2+2x-3$.

38. i) b) 5/36

ii) d) 6/36=1/6

iii) a) 23/36