24. Find the value of 'k' for which the quadratic equation $(k+1)x^2 - 2(3k+1)x + (8k+1) = 0$ has real and equal roots.

25. Three bells toll at intervals of 9, 12 and 15 minutes respectively. If they start tolling together, after what time will they next toll together?

SECTION-C

26. Find the zeroes of the polynomial $4x^2 - 3x - 1$ by factorisation method and verify the relations between the zeroes and coefficients of the polynomial.

27. Five years hence, the age of Jacob will be three times that of his son. Five years ago, Jacob's age was seven times that of his son. What are their present ages?

28. A train travels a distance of 480 km at a uniform speed. If the speed had been 8 km/h less, then it would have taken 3 hours more to cover the same distance. We need to find the speed of the train.

29. Prove that $\sqrt{5}$ is an irrational number.

30. If α, β are the two zeroes of the polynomial $25p^2 - 15p + 2$, find a quadratic polynomial whose zeroes are $\frac{1}{2\alpha}$ and $\frac{1}{2\beta}$.

30. Solve the pair of linear equations by the elimination method and the substitution method:
$x + y = 5$ and $2x - 3y = 4$

31. A motor boat whose speed is 18 km/h in still water takes 1 hour more to go 24 km upstream than to return downstream to the same spot. Find the speed of the stream.

SECTION-D

32. Find the largest number that divides 1251, 9377 and 15628 leaving remainders 1, 2 and 3 respectively.

33. Points A and B are 80 km apart on a highway. One car starts from A and another from B at the same time. If the cars travel in the same direction at different speeds, they meet in 8 hours. If they travel towards each other, they meet in 1 hour 20 minutes. What are the speeds of the two cars ?

34. The sum of a number and its positive square root is $\frac{6}{25}$. Find the number.

35. Find the values of k for each of the following quadratic equations, so that they have two equal roots.

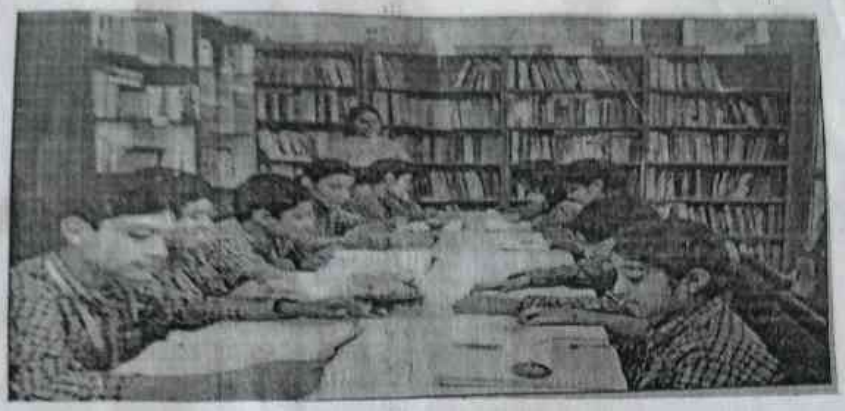
(1) $2x^2 + kx + 3 = 0$

(ii) $kx(x - 2) + 6 = 0$

SECTION-E

Source Based Questions

36. To enhance the reading skills of grade 10 students, the school nominates you and two of your friends to set-up a class library. There are two sections- Section-A and Section-B of grade 10. There are 32 students in Section-A and 36 students in Section-B.



Study the source and answer the following questions:

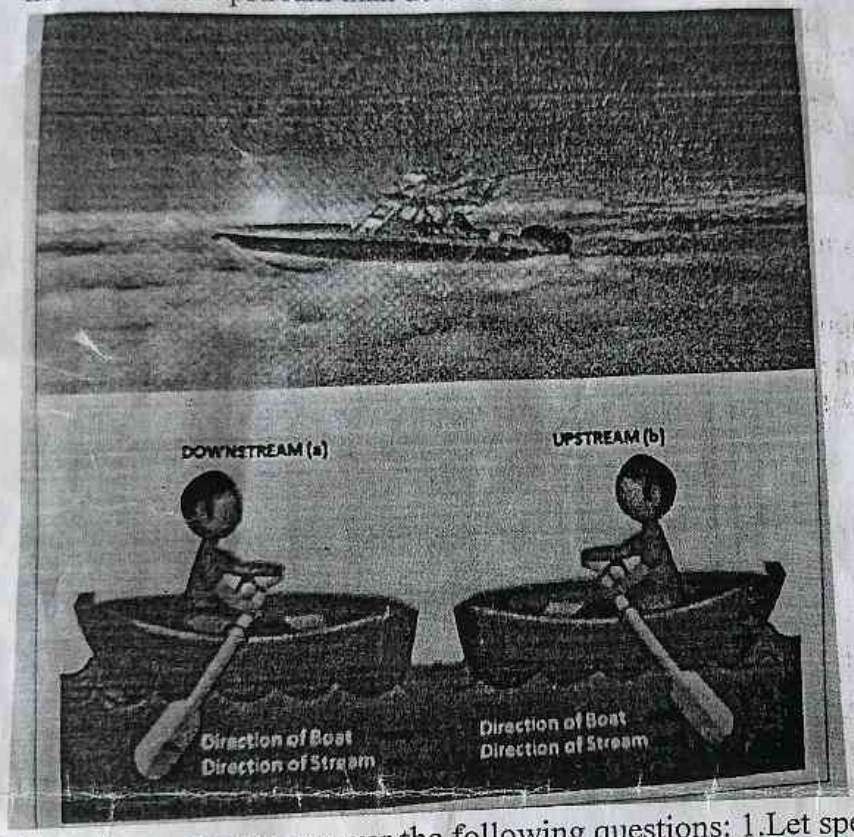
(a). What is the minimum number of books you will acquire for the class library, so that they can be distributed equally among students of Section-A or Section-B? LCM of 32 & 36 = 288

(b).If the product of two positive integers is equal to the product of their HCF and LCM is true, then find the HCF (32, 36). = 4

(c). Express 36 as a product of its primes $2^2 \times 3^2$

(d). If p and q are positive integers such that $p = ab^2$ and $q = a^2b$ where a, b are prime numbers, then find the LCM (p, q). a^2b^2

37. The speed of a motor boat is 20 km/h. For covering the distance of 15 km the boat took 1 hour more for upstream than downstream.



From above source, answer the following questions: 1.Let speed of the stream be x km/h. Then find the speed of the motorboat in upstream

2. What is the relation between speed, distance and time?

3. Write the correct quadratic equation for the speed of the current.

4. What is the speed of current

38. Two schools 'P' and 'Q' decided to award prizes to their students for two games of Hockey x per student and Cricket y per student. School 'P' decided to award a total of 9,500 for the two games to 5 and 4 students respectively; while school 'Q' decided to award 7,370 for the two games to 4 and 3 students respectively.

Based on the above information, answer the following questions :

1. Represent the following information algebraically (in terms of x and y).
2. What is the prize amount for hockey ?
3. Prize amount on which game is more and by how much?
4. What will be the total prize amount if there are 2 students each from two games ?

$4x+3y = 7350$

$5x+4y = 9500$

$x = 980$

$y = 1150$

$2x+2y = 2\times(x+y) = 2\times(980+1150)$

$= 4260$