students, each would have received one apple less. Find the number of students.

16] A number consists of two digits whose product is 18. When 27 is subtracted from the number, its digits change their places. Find the number.

17] Find the roots of the quadratic equations by the method of completing the square -

i) $2x^2 - 3x - 1 = 0$ ii) $y^2 + 8y + 4 = 0$

18] The number of straight lines y that connect x points is given by the equation: $y = \frac{x}{2}(x-1)$ How many points does a figure have if only 15 lines can be drawn connecting them?

19] 7 years ago Arun's age (in years) was five times the square of Swati's age. Three years hence Swati's age will be two-fifth of Arun's age. Find their present ages.

20] V.B.Q: While boarding an aeroplane, a passenger got hurt. The pilot showing the promptness and concern, made arrangements to hospitalise the injured and so, the plane started late by 30 mins. To reach, the destination, 1500 Km away, in time, the pilot increased the speed by 100 km/hour. Find the original speed per hour of the plane. Do you appreciate values shown by the pilot, namely, promptness in providing help to the injured and his efforts to reach in time?

Chap 5 : Arithmetic Progressions

21] Find the middle terms in the A.P 20, 16, 12 ... -17

22] Is 200 any term of the sequence 3, 7, 11, 15 ... ?

23] If a, b, c are the p^{th}, q^{th} and r^{th} terms of an AP, then prove that $a(q-r) + b(r-p) + c(p-q) = 0$

24] An A.P. has 21 terms. The sum of 10^{th}, 11^{th} and 12^{th} terms is 129 and the sum of the last 3 terms is 237. Find the A.P

25] If the ratio of the sums of n terms of two AP's is $n+7 ; 3n+1$, then find the ratio of the 7^{th} terms of the series.

26] A man repays a loan of ₹ 3250 by paying ₹ 20 in the first month and then increases the payment by ₹ 15 every month. How long will it take him to clear the loan?

27] The houses of a row are numbered consecutively from 1 to 49. Show that there is a value of x such that the sum of the numbers of the houses preceding the house numbered x is equal to the sum of the numbers of the following it. Find this value of x.

28] For an AP, show that $t_p + t_{p+2q} = 2t_{p+q}$

29] A thief runs away from a police station with a uniform speed of 100 m/mins. After one minute,

a policeman runs behind the thief to catch him. He goes at speed of 100 m/minute in first minute and increases his speed 10m each succeeding minute. After how many mins, the policeman will catch the thief?

30] Which term of the AP 5, 9, 13 .... is 81? Also find the sum $5+9+13+\dots+81$

31] Which term of the AP 3, 10, 17 ... will be 84 more than its 13th term?

32] Prove that the product of the 2nd and 3rd term of an A.P. exceeds the product of the 1st & 4th by twice the square of the difference between the 1st and 2nd terms.

33] If S_1, S_2, S_3 are the sums of $n, 2n, 3n$ terms of an A.P. Show that $S_3 = 3(S_2 - S_1)$

34] A man arranges to pay off a debt of ₹3600 in 40 annual installment which form an A.P. When 30 of the installments are paid, he dies leaving one third of the debt unpaid. Find the value of the first installment.

35] Solve $1+6+11+16+\dots+x = 148$

36] Find the sum of first seven nos. which are multiple of 2 as well as of 9.

37] An A.P consists of 37 terms. The sum of the 3 middle most terms is 225 and the sum of the last three is 429. Find the A.P.

38] V.B.Q: A sum of ₹1600 is to be used to give 10 cash prizes to students of a school for their overall academic performance like punctualities, honesty, discipline etc. If each prize is ₹20 less than its preceding prize, find the value of each of the prizes. Do you appreciate the values mentioned in the problem? Suggest some more values that should be awarded.

Chap 7: Coordinate Geometry.

39] Prove that the points $(a, b+c)$ $(b, c+a)$ and $(c, a+b)$ are collinear.

40] Find the value of p for which the points $(-5, 1)$ $(1, p)$ and $(11, -2)$ are collinear.

41] Determine the ratio in which the point $(-6, a)$ divides the join of $A(-3, -1)$ and $B(-8, 9)$. Also find the value of a.

42] If the mid-point of the line segment joining $A\left[\frac{x}{2}, \frac{y+1}{2}\right]$ and $B[x+1, y-3]$ is $C(5, -2)$. find x/y

43] If the point (x, y) be equidistant from the points $(a+b, b-a)$ and $(a-b, a+b)$, prove that $bx = ay$

44] The opposite angular points of a square are $(3, 4)$ and $(-1, 6)$. Find the co-ordinates of the remaining two vertices.

45] Find the vertices of the triangle the mid-points of whose sides are $(3, 1)$ $(5, 6)$ and $(-3, 2)$

46] ABCD is a rectangle formed by the points A(-1,-)

B(-1,4) C(5,4) and D(5,-1). P,Q,R and S are the mid-points of AB, BC, CD and DA resp. Is the quadrilateral PQRS a square? a rectangle? or a rhombus? Justify your answer.

47] Find the area of the triangle formed by the points $(a, c+a)$ (a, c) $(-a, c-a)$

48] The vertices of a ΔABC are A(4,6) B(1,5) C(7,2). A line is drawn to intersect sides AB & AC at D and E resp, such that $\frac{AD}{AB} = \frac{AE}{AC} = \frac{1}{4}$. Calculate the area of the ΔADE and compare it with the area of ΔABC.

49] If the point A(1,-2) B(2,3) C(a,2) and D are (-4,-3) form a parallelogram, find the value of a and height of the ||elgram taking AB as base.

50] VBQ: Ayush starts walking from his house. Instead of going to the office directly, he goes to a bank first from there to his daughter's school and then reaches the office. What is the extra distance travelled by Ayush in reaching his office? [Assume that all distance covered are in st. lines.] If the house is situated at (2,4) bank at (5,8) school at (13,14) and office at (13,26) and co-ordinates are in km.

Instead of using his car, he prefers to go office by walking. Which value is depicted in this question?