Ravi Maths Tuition

Arithmetic Progressions

10th Standard

Maths

Multiple Choice Question 76 x 1 = 76

1) 30th term of the AP: 10, 7, 4, . . . , is

(a) 97 (b) 77 (c) - 77 (d) - 87

2) 11th term of the AP: – 3 ,$-\frac{1}{2}$,2 , ..., is

(a) 28 (b) 22 (c) - 38 (d) $-48\frac{1}{2}$

3) What is the sum of the first 20 whole numbers

(a) 190 (b) 200 (c) 100 (d) 140

4) Amit starts his exercise regime with 25 push ups on Monday. He plans to increase 5 push ups every following Monday. How many push ups will he be doing on the 3rd Monday since he started?

(a) 35 (b) 45 (c) 60 (d) 70

5) The first term of an A.P. is 12, the last term is -8, the common difference is -2. Find the sum of the A.P.

(a) 18 (b) 16 (c) 22 (d) 20

6) The nth term of the AP 9, 13, 17, 21, 25, ... is:

(a) 3n+2 (b) 4n+5 (c) 5n+3 (d) 4n-5

7) What is the sum of the first 50 multiples of 3?

(a) 4325 (b) 3255 (c) 3825 (d) 4455

8) Which term of the A.P 10,8,6,... will be the first negative term?

(a) 6 (b) 7 (c) 5 (d) 4

9) If p, q, r, s, t are the terms of an A.P. with common difference -1 the relation between p and t is

(a) t = p – 6 (b) t = p – 5 (c) t = p + 4 (d) t = p – 4

10) The common difference and the next two terms of the A.P are.... 75, 67, 59, 51...

(a) 3, 6,9 (b) 10, 30,40 (c) -8, 43, 35 (d) 2, 3,5

11) An AP has first term -3 and a common difference -1. Find the 3rd term of the A.

(a) 5 (b) -7 (c) -1 (d) -5

12) The 8^{th} term of 117, 104, 91, 78, ...is.....

(a) 26 (b) 27 (c) 4 (d) 17

13) The 9^{th} term of an AP is 449 and 449th term is 9. The term which is equal to zero is:

(a) 502^{th} (b) 459^{th} (c) 501^{th} (d) 458^{th}

14) For an A.P the sum of first 30 terms is -1155,the common difference is -3and the thirtieth term is -82. What is the first term?

(a) 5 (b) 10 (c) 12 (d) 8

15) Find the fifth term of an A.P whose first term is -1 and common difference is -3.

(a) -16 (b) -13 (c) 10 (d) 4

16) A tree in each year grows 4cm less than it grew in previous year. If it grew 1 metre in the first year, in how many years will it have ceased growing and what will be its height then,

(a) 1300 (b) 2600 (c) 26 (d) 1500

17) Which term of the following A.P. would be 0? 36,33,30,27....

(a) 9 (b) 12 (c) 13 (d) 10

18) Which term of the A.P. 1, 4, 7 ... is 88?

(a) 30 (b) 35 (c) 27 (d) 26

19) For an A.P t_n =2n+3 what is the formula for s_n ?

(a) n(n-4) (b) n(n+1) (c) n(n+4) (d) n(n-1)

20) If for an A.P s_n= + 3n What is the n^{th} term?

(a) 2n-3 (b) n-4 (c) 2n+4 (d) 2n+2

21) Given an A.P. few of whose terms are x, y, 2, 4, 6, 8,..... What must be the values of x and y?

(a) x = -4, y = 2 (b) x = -2, y = 0 (c) x = 0, y = -2 (d) x = 2, y = -4

22) If a- b, 0 and a + b are consecutive terms of an AP then

(a) a can take any real value and b = 0 (b) a = 0 and b can take any real value (c) a = 1 and b= 0

(d) a = 0 and b = 1

23) How many terms are there in the AP 7, 13, 19, 25...205

(a) 22 (b) 38 (c) 25 (d) 34

24) In an A.P. the two consecutive terms are (2n+3) and (2n+5). Find the common difference of the A.P

(a) 2 (b) 2n+2 (c) 2n+3 (d) 2n+1

25) An AP has first term 1 with a common difference also 1 and has 49 as its last term. Find its sum. 1,2,3,4 49

(a) 1221 (b) 1242 (c) 1225 (d) 1232

26) Is the sequence, whose general term is $5n^2 + 2n + 3$ an AP?

(a) No (b) Yes (c) Depends on n (d) Insufficent information

27) The sum of 20 odd natural number is

(a) 400 (b) 100 (c) 210 (d) 420

28) What is the common difference of the A.P. in which $a_{18} - a_{14} = 32$?

(a) 8 (b) -4 (c) -8 (d) 4

29) Ramesh's salary in February 2008 is Rs. 10,000. If he's promised an increase of Rs. 1000 every year, what would be his salary in Feb 2011

(a) Rs.14,000 (b) Rs. 12,000 (c) Rs. 13,000 (d) Rs. 15,000

30) The first and last terms of an AP are 1 and 11. If the sum of all its terms is 36, then the number of terms will be

(a) 8 (b) 5 (c) 6 (d) 7

31) The common difference and the next two terms of the A.P are....75, 67, 59, 51,.....

(a) 2, 3, 5 (b) 10, 30, 40 (c) -8, 43, 35 (d) 3, 6, 9

32) If the 4th term is twice the 8th term and the 10th term is twice the nth term. Then, what is the value of n?

(a) 11 (b) 13 (c) 12 (d) 10

33) Which term of the A.P. 1, 4, 7 … is 88?

(a) 35 (b) 26 (c) 27 (d) 30

34) Find the sum of first 40 integers divisible by 6

(a) 4000 (b) 4920 (c) 2460 (d) 4290

35) Find the fifth term of an A.P whose first term is -1 and common difference is -3

(a) -13 (b) 10 (c) -16 (d) 4

36) The weights of 11 students selected for a team are noted in ascending order and are in A. P. The lowest value is 45 Kg, and the middle value is 55 Kg. What is the difference between the two values placed consecutively ?

(a) 3 (b) 4 (c) 2 (d) 6

37) 15^{th} term of the A.P. x – 7, x – 2, x + 3 … is

(a) x + 83 (b) x + 63 (c) x + 53 (d) x + 73

38) The wages of a daily wages worker go on increasing every month by RS.10 per day.When he started work, his wages were Rs. 90 per day. When he left he'd started earning Rs. 150 per day. What was the total amount he must have earned when he left the job?

(a) Rs.600 (b) Rs.560 (c) Rs. 840 (d) Rs.750

39) If sum of n terms is given by S_n = 3n2 + 5n, then the common difference of this AP is

(a) 6 (b) 8 (c) 4 (d) 14

40) 20^{th} term from the end of the A.P.3,8,13,18,….,253 is

(a) 158 (b) 112 (c) 124 (d) 164

41) The number of two digit numbers divisible by 5 is

(a) 17 (b) 16 (c) 19 (d) 18

42) Ramesh's salary in February 2008 is Rs. 10,000. If he's promised an increase of Rs. 1000 every year, what would be his salary in Feb 2011?

(a) Rs. 15,000 (b) Rs.14,000 (c) Rs. 13,000 (d) Rs. 12,000

43) The terms of an A.P. are governed by the rule tn = 2n – 3 for n ≥ 1. What will be the term in the 50^{th} place?

(a) 103 (b) 95 (c) 105 (d) 97

44) What is the common difference of the A.P. in which $a_{18} - a_{14} = 32$?

(a) 4 (b) 3 (c) 5 (d) 2

45) How many terms of AP 54, 51, 48… are required to give a sum of 513

(a) 21 or 25 (b) 23 or 24 (c) 18 or 19 (d) 22 or 23

46) In an Ap, if a = 3.5, d = 0 and n = 101,then an will be

(a) 0 (b) 3.5 (c) 103.5 (d) 104.5

47) If an AP have 8 as the first term and -5 as the common difference and its first three terms are 8, A. B, then (A + B) is equal to

(a) 0 (b) - 1 (c) 1 (d) 2

48) In an AP,if d = - 4,n = 7 and an = 4,thena is equal to

(a) 6 (b) 7 (c) 20 (d) 28

49) Let a be a sequence defined by $a_1 = 1$, $a_2 = 1$ and $a_n = a_{n-1} + a_{n-2}$ for all n > 2, then the value of $\frac{a_4}{a_3}$ is

(a) $\frac{2}{3}$ (b) $\frac{5}{4}$ (c) $\frac{4}{5}$ (d) $\frac{3}{2}$

50) The first four terms of an AP whose first term is - 2 and the common difference is-2 are

(a) - 2, 0,2, 4 (b) - 2, 4, - 8, 16 (c) - 2, - 4, - 6, - 8 (d) - 2, - 4, - 8, - 16

51) Which term of the AP 5, 15,25, ... will be 130 more than its 31st term?

(a) 42 (b) 44 (c) 46 (d) 48

52) The 21st term of an AP whose first two terms are - 3 and 4, is

(a) 17 (b) 137 (c) 143 (d) -143

53) The 10th term of an AP is 52 and 16 th term is 82, then 32nd term of the AP is

(a) 152 (b) 159 (c) 162 (d) 156

54) If the common difference of an AP is 5, then what is $a_{18} - a_{13}$?

(a) 5 (b) 20 (c) 25 (d) 30

55) Is an sequence defined by $a_n = 2n^2 + 1$ forms an AP?

(a) Yes (b) Not (c) Cannot be determined (d) None of these

56) Five distinct positive integers are in arithmetic progression with a positive common difference. If their sum is 10020, then the smallest possible value of the last term is

(a) 2002 (b) 2004 (c) 2006 (d) 2007

57) Find the sum of the series $1 + (1+ 2) + (1+ 2 + 3) +(1 + 2 + 3 + 4) + ... + (1+ 2 + 3 + ... + 20)$

(a) 1470 (b) 1540 (c) 1610 (d) 1370

58) An AP starts with a positive fraction and every alternate term is an integer. If the sum of the first 11 terms is 33, then the fourth term is

(a) 2 (b) 3 (c) 5 (d) 6

59) The sum of the series $45^2 - 43^2 + 442 - 42^2 + 43^2 - 41^2 + 42^2 - 40^2 + ...$ upto 30 terms.

(a) 1110 (b) 2220 (c) 3330 (d) 4440

60) Take a point A(3, 4) on the graph and draw two lines from it, one is parallel to X-axis and another parallel to Y-axis. Again, take four points on both line on both sides of A, such that their x-coordinates and y-coordinates form an AP with common difference 2. Then, the area of circle, passing through these four points is

(a) 12 sq units (b) 13 sq units (c) 12.56 sq units (d) 13.56 sq units

61) The sum of n terms of sequence $\frac{1}{1\times2}, \frac{1}{2\times3}, \frac{1}{3\times4}, .$ is

(a) $\frac{1}{n+1}$ (b) $\frac{1}{n}$ (c) $\frac{n+1}{n}$ (d) $\frac{n}{n+1}$

62) A circle with area A_1 is contained in the interior of a larger circle with area $A_1 + A_2$. If the radius of the larger circle is 3 and A_1, A_2 and $A_1 + A_2$ are in Ap, then the radius of the smaller circle is

(a) 3 (b) $\sqrt{3}$ (c) 2 (d) $\sqrt{2}$

63) Suppose $b_1, b_2, ... , b_{24}$ are in Ap, such that $b_1 + b_5 + b_{10} + b_{15} + b_{20} + b_{24} = 300$. Then, the sum of first 24 terms of the AP is

(a) 1200 (b) 900 (c) 600 (d) 1500

64) A long a road line, an odd number of stones placed at intervals of 10 m. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried the job with one of the end stone by carrying them in succession. In carrying, all the stones he covered a distance of 3 km. Then, the total number of stones is

(a) 10 (b) 15 (c) 12 (d) 25

65) If S_1 = 3, 7, 11, 15, upto 125 terms and S_2 = 4, 7,10, 13, 16, up to 125 terms, then how many terms are there in S_1 that are in S_2 ?

(a) 29 (b) 30 (c) 31 (d) 32

66) If in an AP, a = 2 and S_{10} = 335, then its 10th term is

(a) 55 (b) 65 (c) 68 (d) 58

67) The common difference of the AP $\frac{1}{2x}, \frac{1-4x}{2x}, \frac{1-8x}{2x}$, ... is

(a) -2x (b) -2 (c) 2 (d) 2x

68) If -5, x, 3 are three consecutive terms of an AP then the value of x is

(a) -2 (b) 2 (c) -1 (d) 1

69) What cannot be the difference between four consecutive terms of an arithmetic progression?

(a) 0,0,0 (b) -2,-2,-2 (c) 2,3,4 (d) $\frac{2}{7}, \frac{2}{7}, \frac{2}{7}$

70) The 8th term of an AP is 17 and its 14 th term is 29. The common difference of this AP is

(a) 3 (b) 2 (c) 5 (d) -2

71) The common difference of the AP whose nth term is given by $a_n = 3n + 7$, is

(a) 7 (b) 3 (c) 3n (d) 1

72) Two APs have the same common difference. The first term of one of these is - 1 and that of the other is -8. Then, the difference between their 4 th terms is

(a) 1 (b) 8 (c) 7 (d) 9

73) The 11th term from the end of the AP 10,7,4, ...-62 is

(a) 25 (b) 16 (c) -32 (d) 0

74) If the sum of the first n terms of an AP be $3n^2 + n$ and its common difference is 6 , then its first term is

(a) 2 (b) 3 (c) 1 (d) 4

75) The sum of the first 50 odd natural numbers is

(a) 5000 (b) 2500 (c) 2550 (d) 5050

76) If the sum of first n terms of an AP is $3n^2$ + 4n and its common difference is 6, then its first term is

(a) 7 (b) 4 (c) 6 (d) 3

Fill up / 1 Marks 28 x 1 = 28

77) General term of an A.P., whose first term is 'a' and common difference is 'd' is given by a_n = ...

78) The nth term of the A.P. 7, 3, -1, -5, -9,..... is given by a_n = ...

79) 30th term of the A.P. 10, 7, 4,..... is.....

80) If a, b, c are in A.P., then b = ...

81) If a constant is added to each term of an ATP., then the result pattern of number also in .....

82) Sum of 1st and 3rd term of an A.P. is equal to ..... the 2nd term.

83) nth term from the end = l - (.....)d.

84) If sum of three numbers which are in A.P., is given then the three numbers are .....

85) If the nth term of an A.P. is 2n + 1, then the sum of first n-terms of the A.P. is .....

86) In an A.P. the common difference is always .....

87) A sequence a_1, a_2, a_3,..... a_n, a_{n+1},..... is called an A.P. If there exists constant d such that

88) The constant difference between the consecutive terms of an A.P. is called.....

89) A sequence a_1, a_2, a_3,..... is an A.P. if and only if a_n is a ..... expression in n.

90) If there are p terms in an A.P., then nth term form the end is ..... th term.

91) If a, a + d, a + 2d,..... l is an A.P., then nth term from the end = l -.....

92) If sum of first n even natural numbers are .....

93) If sum of three consecutive terms of an A.P. is 21, then first term is .....

94) a - 5d, a - 3d, a + d, ..., a + 5d are in A.P.

95) Is - 150 a term of the A.P. 11, 8, 5, 2,.....?

96) Find the 25^{th} term of the AP. $-5, -\frac{5}{2}, 0, \frac{5}{2}$.....

97) Find the common difference of the A.P 1/3q,1-6q/3q,1-12q/3q,.....

98) Find the sum of first 16 terms of the A.P. 10, 6, 2,.....

99) a. a + d, a + 2d, a + 3d, ... represent an arithmetic progression, where a is the _____ and d is the _____

100) The nth term of an AP is _____

101) If x + 1,4x and 5x + 2 are in AP, then x is

102) The sum of first n natural numbers is _____

103) If sum of n terms of an AP is S_n = an + bn, then t_n is _____

104) If the nth term of an AP is 3 + 2n, then sum of first 10 terms is _____

True or False 31 x 1 = 31

105) If nth term of an A.P. is 6n + 2, then common difference is 6.

(a) False (b) True

106) List of number of students left in the school auditorium from to total strength of 1250 students when they leave the auditorium in batches of 25, form an A.P.

(a) False (b) True

107) List of numbers 2, 4, 8, 16, ..., form an A.P.

(a) True (b) False

108) The sum of first 100 natural numbers are 10100.

(a) True (b) False

109) The sum of first 4 terms and sum of first 13 terms of the A.P. 24, 21, 18, ... is 78.

(a) True (b) False

110) The common difference of the A.P. can be positive, negative or zero.

(a) False (b) True

111) An infinite A.P., has a + (n - 1)d as its last term.

(a) True (b) False

112) If a, b, c are in A.P., then b is called the arithmetic mean of a and c.

(a) False (b) True

113) The sequence 6, 6, 6, ... is not an A.P.

(a) True (b) False

114) The sum of first n natural number is $\frac{n(n+1)}{2}$

(a) False (b) True

115) If t_n = 6n + 5, then common difference is -6.

(a) True (b) False

116) The number of term of the A.P. 3, 6, 9,..... 111 is 37.

(a) False (b) True

117) If 7th term of A.P. is 34 and 13th term is 64, then its 18th term is 89.

(a) False (b) True

118) 1^2, 2^2, 3^2, 4^2 ,..... are in A.P.

(a) True (b) False

119) The number of terms of an A.P. 4, 9, 14, 19,..... 127 is 25.

(a) True (b) False

120) a_{30} - a_{20} of the A.P. a, a + d, a + 2d, a + 3d,..... is 10d.

(a) False (b) True

121) If a = 2, d = 4, then S_{40} = 3250.

(a) True (b) False

122) If nth term of sequence is a linear polynomial, then it forms an A.P.

(a) False (b) True

123) If nth term of sequence is $2n^2$ - 5, then it forms an A.P.

(a) True (b) False

124) If $T_{an} = 6n + 5$, then common difference is 6.

(a) False (b) True

125) The number of terms of the AP 3, 6, 9, ..., 111 is 37.

(a) False (b) True

126) $1^2, 2^2, 3^2, 4^1, \ldots.$ are in AP.

(a) True (b) False

127) $a_{30} - a_{20}$ of AP a, a + d, a + 2d, a + 3d, ... is 10 d.

(a) False (b) True

128) If nth term of the list of numbers is $2n^2 - 5$, then it forms an AP.

(a) True (b) False

129) The missing term of the AP 2, _,20, 29, is 11.

(a) False (b) True

130) The sum of all natural numbers from 1 to 5050.

(a) False (b) True

131) The sequence defined by a_n = $2n^2$ - 3 is an AP.

(a) True (b) False

132) 13th term of an AP : 2, 7,12, ... , is 50.

(a) True (b) False

133) The sum of n terms of an AP $x_1(x + y), (x + 2y) \ldots.$ is $\frac{n}{2}[2x + (n - 1)y]$

(a) True (b) False

134) The sum of 10 terms of an AP $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}, \ldots,$ is 60

(a) True (b) False

135) In an Ap,the first term is 21, nth term is -10 and the sum of first n terms is 99. The value of ni s 25.

(a) True (b) False

Match the following 17 x 1 = 17

136) If $\frac{2}{3}$, k, $\frac{5k}{8}$ are in A.P., then value of k.	(1) - 1
137) If 1^2, 5^2, 7^2 , 73,..... are in A.P., then value of d.	(2) $\frac{n(n+1)}{2}$
138) The value of a for which 12, a + 6, 2a, 6 are in A.P.	(3) 12
139) 10th term of -0.1, -0.2, -0.3,....	(4) -1
140) Sum of n term of the series $\sqrt{2}+\sqrt{8}+\sqrt{18}+\sqrt{32}+\ldots\ldots$ is	(5) 24
141) The common difference of the A.P given by a_n = 3n + 2	(6) 21
142) The sum of A.P. (-5) + (-8) + (-11) + ... + (-230) is	(7) 183
143) The number of multiple of 4 between 10 and 250 are	(8) 900
144) If a_{10} - a_5 = 400, then common difference is	(9) 4
145) The 35th term of an AP $5, 5\frac{1}{2}, 6, 6\frac{1}{2}$ is	(10) 23
146) Which term of an AP is 11, 6, 1, -4, ... is -99?	(11) 22
147) If the nth term of an AP is 6n + 1,then the common difference is	(12) $\frac{16}{33}$
148) The 15th term from the end of the AP 3, 6, 9, ... ,225 is	(13) 3
149) If the 14th term of an AP is 64 and 26th term is 124, then a is	(14) -8930
150) The sum of the odd numbers between 0 and 60 is	(15) 60
151) How many terms of the list of numbers 20,18, 16, ... , should be taken so that their sum is zero?	(16) 80
152) The first and last term for an AP are 1 and 11. If sum of its terms is 72, then n is	(17) 6

Assertion and reason 5 x 1 = 5

153) **Assertion** The first term of an AP is m and its common difference is p, then the 13th term is a + 10p.

Reason In an AP S_n - S_{n-1} = a_n.

Codes:

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct.

154) **Assertion** In an Ap,$S_n = n^2 + n$, then $T_{20} = 40$.

Reason In an Ap, a_n - a_{n-1} = d.

Codes:

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct.

155) **Assertion** If the nth term of an AP be $(2n^2 - 1)$,then the sum of its first n terms is n^3.

Reason If a,l and n are first term, last term and number of terms of an Ap, respectively then $S_n = \frac{n}{2}(a + l)$

Codes:

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct.

156) **Assertion** Sum of first 10 even natural number is 120.

Reason If a is the first term, l is the last term and d is the common difference of an Ap, then nth term from the end is given by 1- (n -1) d.

Codes:

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct.

157) Assertion (A) : $-5, \frac{-5}{2}, 0, \frac{5}{2}, \ldots$ is an arithmetic progression.

Reason (R) : The terms of an arithmetic progression cannot have both positive and negative rational numbers.(a) Both Assertion and Reason are correct and Reason is the correct explanation of Assettion.

(b) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

(c) Assertion is correct but Reason is incorrect.

(d) Assertion is incorrect but Reason is correct.

2 Marks 488 x 2 = 976

158) Write first four terms of the AP, when the first term a and the common difference d are given as follows:
a = 10, d = 10

159) Write first four terms of the AP, when the first term a and the common difference d are given as follows:
a = -2, d = 0

160) Write first four terms of the AP, when the first term a and the common difference d are given as follows:
a = 4, d = -3

161) Write first four terms of the AP, when the first term a and the common difference d are given as follows:
a = -1, d = $\frac{1}{2}$

162) Write first four terms of the AP, when the first term a and the common difference d are given as follows:
a = - 1.25, d = - 0.25

163) For the following APs, write the first term and the common difference:
3, 1, -1, -3,.....

164) For the following APs, write the first term and the common difference:
-5, -1, 3, 7,.....

165) For the following APs, write the first term and the common difference:
$\frac{1}{3}, \frac{5}{3}, \frac{9}{3}, \frac{13}{3}, \ldots\ldots$

166) For the following APs, write the first term and the common difference:
0.6, 1.7, 2.8, 3.9,.....

167) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
2, 4, 8, 16.....

168) Which of the following are AP's ? If they form an AP, then find the common difference d and write three more terms.. 2, $\frac{5}{2}$, 3, $\frac{7}{2}$.....

169) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
-1.2, -3.2, -5.2, -7.2.....

170) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
- 10, - 6, - 2, 2.....

171) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
3, 3 + $\sqrt{2}$, 3 + $2\sqrt{2}$, 3 + $3\sqrt{2}$,.....

172) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
0.2, 0.22, 0.222, 0.2222,.....

173) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
0, - 4, - 8, - 12,.....

174) Which of the following are APs ? If they form an AP, find the common difference d and write three more terms.
$-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2}$.....

175) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
1, 3, 9, 27.....

176) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
a, 2a, 3a, 4a.....

177) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
a, a^2, a^3, a^4.....

178) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
$\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}$ .....

179) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
$\sqrt{3}$, $\sqrt{6}, \sqrt{9}, \sqrt{12}$ .....

180) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
1^2 , 3^2 , 5^2, 7^2.....

181) Which of the following are APs? If they form an AP, find the common difference d and write three more terms.
1^2 , 5^2 , 7^2, 73.....

182) Fill in the blanks in the following table, given that a is the first term, d the common difference and a_n the nth term of the AP

	a	d	n	a_n
(i)	7	3	8	.....
(ii)	-18	....	10	0
(iii)	.....	-3	18	-5
(iv)	-18.9	2.5	....	3.6
(v)	3.5	0	105	.....

183) Which term of the AP: 3, 8, 13, 18,....., is 78?

184) Find the number of terms in each of the following APs.
7, 13, 19,...., 205

185) Find the number of terms in each of the following APs.
18, $15\frac{1}{2}$, 13, ... , -47

186) Check whether -150 is a term of the AP: 11, 8, 5, 2,...

187) An AP consists of 50 terms of which 3rd term is 12 and the last term is 106. Find the 29th term.

188) If the 3rd and the 9th terms of an AP are 4 and -8 respectively, which term of this AP is zero?

189) The 17th term of an AP exceeds its 10th term by 7. Find the common difference.

190) Which term of the AP: 3, 15, 27, 39, ... will be 132 more than its 54th term?

191) Two APs have the same common difference. The difference between their 100th terms is 100, what is the difference between their 1000th terms?

192) How many three-digit numbers are divisible by 7?

193) How many multiples of 4 lie between 10 and 250?

194) For what value of n, are the nth terms of two APs: 63, 65, 67,..... and 3, 10, 17,..... equal?

195) Determine the AP whose 3rd term is 16 and the 7th term exceeds the 5th term by 12.

196) Find the 20th term from the last term of the AP: 3, 8, 13, ..., 253

197) The sum of the 4th and 8th terms of an AP is 24 and sum of the 6th and 10th terms is 44. Find the first three terms of the AP.

198) Subba Rao started work in 1995 at an annual salary of Rs.5000 and received an increment of Rs. 200 each year. In which year did his income reach Rs.7000?

199) Ramkali saves Rs.5 in the first week of a year and then increased her weekly savings by Rs.1.75. If in the nth week, her weekly savings becomes Rs.20.75, then find the value of n.

200) Find the 10th term of the AP : 2, 7, 12, . . .

201) For the AP $\frac{3}{2}, \frac{1}{2}, -\frac{1}{2}, -\frac{3}{2}, \ldots\ldots$, write the first term a and the common difference d.

202) Which of the following list of numbers form an AP? If they form an AP, write the next two term 1, – 1, – 3, – 5, . . .

203) Find the sum of the following AP: 2, 7, 12, ..., to 10 terms.

204) Find the sum of the following AP: -37, -33, -29, ... to 12 terms.

205) Find the sum of the following AP: 0.6, 1.7, 2.8, ..., to 100 terms

206) Find the sum of the following AP: $\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \ldots\ldots$, to 11 term.

207) In an AP: given a = 5, d = 3, a_n = 50, find n and S_n.

208) In an AP: given a = 7, a_{13} = 35, find d and S_{13}.

209) In an AP: given a_{12} = 37, d = 3, find a and S_{12}.

210) In an AP: given a_3 = 15, S_{10} = 125, find d and a_{10}.

211) In an AP: given d = 5, S_9 = 75, find a and a_9.

212) In an AP: given a = 2, d = 8, S_n = 90, find n and a_n.

213) In an AP: given a = 8, a_n = 62, S_n = 210, find n and d.

214) In an AP: given a_n = 4, d = 2, S_n = -14, find n and a.

215) In an AP: given a = 3, n = 8, S = 192, find d.

216) In an AP: given l = 28, S = 144 and there are total 9 terms. Find a.

217) The first term of an AP is 5, the last term is 45 and the sum is 400. Find the number of terms and the common difference.

218) Find the sum of first 22 terms of an AP in which d = 7 and 22nd term is 149.

219) Find the sum of first 51 terms of an AP whose second and third terms are 14 and 18 respectively.

220) Show that $a_1, a_2, \ldots\ldots, a_n, \ldots\ldots$ forms an AP where a_n is defined as below:
$a_n = 3 + 4n$ Also, find the sum of the first 15 terms in each case.

221) Show that a_1, a_2, ..., a_n, ... forms an AP where a $_n$ is defined as below: $a_n = 9 - 5n$ Also, find the sum of the first 15 terms.

222) Find the sum of the first 40 positive integers divisible by 6.

223) Find the sum of the first 15 multipliers of 8.

224) Find the sum of the odd numbers between 0 and 50.

225) A contract on construction job specifies a penalty for delay of completion beyond a certain date as follows: Rs.200 for the first day, Rs.250 for the second day, Rs. 300 for the third day, etc. the penalty for each succeeding day being Rs.50 more than for the preceding day. How much money the contractor has to pay as penalty, if he has delayed the work by 30 days

226) A sum of Rs.700 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs.20 less than its preceding prize, find the value of each of the prizes.

227) In a school, students thought of planting trees in and around the school to reduce air pollution. It was decided that the number of trees, that each section of each class will plant, will be the same as the class, in which they are studying, e.g., a section of Class I will plant 1 tree, a section of Class II will plant 2 trees and so on till Class XII. There are three sections of each class. How many trees will be planted by the students?

228) Check whether 301 is a term of the list of numbers 5, 11, 17, 23,.....

229) Find the sum of : (i) the first 1000 positive integers (ii) the first n positive integers

230) Which of the following list of numbers form an AP? If they form an AP, write the next two term
4, 10, 16, 22, . . .

231) Which of the following list of numbers form an AP? If they form an AP, write the next two term – 2, 2, – 2, 2, – 2, . .

232) Which of the following list of numbers form an AP? If they form an AP, write the next two term 1, 1, 1, 2, 2, 2, 3, 3, 3, . . .

233) Determine the AP whose 3rd term is 5 and the 7th term is 9

234) In the following APs, find the missing terms in the blanks:
2, ..., 26

235) In the following APs, find the missing terms in the blanks:
....., 13, ..., 3

236) In the following APs, find the missing terms in the blanks:
5, ..., ..., $9\frac{1}{2}$

237) In the following APs, find the missing terms in the blanks:
-4, ..., ..., ..., ..., 6

238) In the following APs, find the missing terms in the boxes:
....., 38, ..., ..., ..., -22

239) Find the 31st term of an AO whose 11th term is 38 and the 16th term is 73.

240) Write down the first four terms of the sequences whose general terms are $T_n = 2n + 3$

241) Write down the first four terms of the sequences whose general terms are $T_n = 3^{n+1}$

242) Write down the first four terms of the sequences whose general terms are $T_1 = 2$, $T_n = T_{n-1} + 5$, $n \geq 2$

243) Find the 8th term of 117, 104, 91, 78,...

244) Find the 10th term of 10.0, 10.5, 11.0, 11.5,...

245) The nth term of an AP is 7 - 4n. Find its common difference.

246) Which term of the AP 21, 18, 15,....., is zero?

247) For what value of p, are 2p + 1, 13, 5p - 3 three consecutive terms of an AP?

248) If $a_n = \frac{n(n-3)}{n+4}$, then find 18th term of this sequence.

249) The 6th term of an Arithmetic Progression (AP) is -10 and its 10th term is -26. Determine the 15th term of the AP.

250) Is -150 a term of the AP 17, 12, 7, 2,..?

251) Which term of the AP 21, 42, 63, 84, ... is 420?

252) Find k, if the given value of x is the kth term of the given AP
25, 50, 75, 100,..... x = 1000

253) Find k, if the given value of x is the kth term of the given AP
$5\frac{1}{2}$, 11, $16\frac{1}{2}$, 22,....., x = 550

254) Write the expression $a_n - a_k$ for the AP: a, a + d, a + 2d, ... and find the common difference of the AP for which
(i) 11th term is 5 and 13th term is 79.
(ii) 20th term is 10 more than the 18th term.

255) Determine the 25th term of an AP whose 9th term is -6 and common difference is 5/4.

256) Determine k so that 4k + 8, $2k^2 + 3k + 6$ and $3k^2 + 4k + 4$ are three coonsecutive terms of an AP.

257) If 5 times the 5th term of an AP is equal to 10 times the 10th term, show that its 15th term is zero

258) In an AP, the 24th term is twice the 10th term. Prove that the 36th term is twice the 16th term.

259) Find the number of terms in the AP 17, $14\frac{1}{2}$, 12, ..., -32.

260) Find 10th term from end of the AP 4, 9, 14, ..., 254.

261) The nth term of an AP is 6n + 2. Find its common difference.

262) The first term of an AP is p and its common difference is q. Find its 10th term.

263) Find the next term of AP $\sqrt{2}, \sqrt{8}, \sqrt{18}$.

264) Which term of the AP 14, 11, 8, ... is -1?

265) In the following situation, form an AP:
The taxi fare after each km when the fare is Rs.15 for the first km and Rs.8 for each additional km.

266) Find the 11th term from the Ap -3, $-\frac{1}{2}$, 2,.....

267) Find the 6th term from the end of the AP 17, 14, 11, ..., - 40.

268) Find the 12th term of the AP with first term 9 and common difference 10.

269) Which term of AP 3, 15, 27, 39,..... will be 120 more than its 21st term?

270) Find the number of two-digit numbers which are divisible by 6.

271) In an AP, the first term is 12 and the common difference is 6. If the last term of the AP is 252, find its middle term.

272) Find the number of three-digit natural numbers which are divisible by 11.

273) Find $a_{30} - a_{20}$ for the AP -9, -14, -19, -24,.....

274) Find $a_{30} - a_{20}$ for the AP a, a + d, a + 2d, a + 3d,.....

275) Two APs have the same common difference. The first term of one of these is 3 and that of the order is 8. What is the difference between their
(i) 2nd terms? (ii) 4th terms?
(iii) 10th terms? (iv) 20th terms?

276) The third term of an AP is p and the fourth term is q. Find the 10th term.

277) Which term of the AP 5, 2, -1,..... is -22?

278) The fifth term of an AP is 1, whereas its 31st term is -77. Which term of the AP is -17?

279) The 8th term of an Arithmetic Progression (AP) is 37 and its 12th term is 57. Find the AP.

280) The 8th term of an arithmetic progression zero. Prove that its 38th term is triple of its 18th term.

281) The 19th term of an AP is equal to three times its sixth term. If its 9th term is 19, find the AP?

282) Which term of the sequence 17, $16\frac{1}{5}$, $15\frac{2}{5}$, $14\frac{3}{5}$,..... is the first negative term?

283) Find a, b and c such that the following numbers are in AP: a, 7, b, 23, c.

284) The eighth term of an AP is half its second term and the eleventh term exceeds one-third of its fourth term by 1. Find the 15th term.

285) Th first and the last terms of an AP are 17 and 350 respectively. If the common difference is 9, how many terms are there and what is their sum?

286) If the sum of the first n term of an AP is $4n - n^2$, what is the first term (that is S_1)? What is the sum of first two terms?What is the second term? Similarly, find the 3rd, the 10th and nth terms.

287) Find the sum of first 22 terms of the AP 8, 3, -2,.....

288) If the sum of first m terms of an AP is $2m^2 + 3m$, then what is its second term?

289) If the sum of first p terms of an AP is $ap^2 + bp$, find its common difference.

290) The first and the last terms of an AP are 1 and 11 respectively. If the sum of its terms is 36, find the number of terms.

291) In an AP, if a = 3, n = 8, S_n = 192, find d.

292) How many terms are there in an AP whose first term and 6th term are -12 and 8 respectively, and sum of all its terms is 120?

293) In an AP, the sum of first n terms is $\frac{5n^2}{2} + \frac{3n}{2}$. Find its 20th term.

294) The first term, common difference and last term of an AP are 12, 6 and 252 respectively. Find the sum of all terms of this AP.

295) Find the common difference of an AP whose first term is 4, the last term is 49 and the sum of all its terms is 265.

296) Find the sum of the: first 11 terms of the AP: 2, 6, 10,.....

297) Find the sum of the: first 51 terms of the AP whose second term is 2 and fourth term is 8.

298) Find the sum: 2 + 4 + 6 + ... + 200

299) Find the sum : -5 + (-8) + (-11) + ... + (-230)

300) Find the sum of the first 25 terms of an AP whose nth term is given by $t_n = 7 - 3n$.

301) If the sum of first n terms of an AP is given by $S_n = 3n^2 + 2n$, find the nth term of the AP.

302) Find the sum of all the natural numbers less than 100 which are divisible by 6.

303) Using AP, find the sum of all 3-digit natural numbers which are the multiples of 7.

304) The sum of three numbers of an AP is 27 and their product is 405. Find the numbers.

305) If sum of first n terms of an AP is $2n^2 + 5n$. Then find S_{20} .

306) Find the sum of n terms of AP where $a_n = 5 - 2n$.

307) Find the sum of 10 terms of AP 2, 5, 8,11,.....

308) Find the sum of first 25 terms of an AP whose nth term is 1 - 4n.

309) In an AP, the first term is -4, the last term is 29 and the sum of all its terms is 150. Find its common difference.

310) Find the sum: 3 + 11 + 19 + ... + 803.

311) The nth term (t_n) of an Arithmetic Progression is given by t_n = 4n - 5. Find the sum of the first 25 terms of the Arithmetic Progression.

312) How many terms of the AP 3, 5, 7,..... must be taken so that the sum is 120?

313) Find the number of terms of the AP 54, 51, 48,..... so that their sum is 513.

314) Find the sum of all 2-digit odd positive numbers

315) Find the sum of all 2-digit positive numbers divisible by 3.

316) The sum of n terms of an AP is $3n^2 + 5n$. Find the AP. Hence, find its 16th term.

317) The sum of first six term of an AP is 42. The ratio of its 10th term to its 30th term is 1 : 3. Calculate the first and the thirteenth terms of the AP.

318) In an AP, the sum of first ten terms is -150 and the sum of its next ten terms is -550. Find the AP?

319) For what value of k will the consecutive terms 2k + 1, 3k + 3 and 5k - 1 form an AP?

320) Find the 9th term from the end (towards the first term) of the AP. 5, 9, 13,...., 185.

321) In the following situation form an arithmetic progression.
The cost of digging a well after every metre of digging when it costs Rs.150 for the first metre and rise by Rs.50 for each subsequent metre.

322) Write the sequence with nth term: 3 + 4n

323) Write the sequence with nth term: 5 + 2n

324) Write the sequence with nth term: 6 - n

325) Write the sequence with nth term: 9 - 5n

326) Show that a - b, a and a + b form consecutive terms of an AP.

327) For what value of k, are the numbers x, 2x + k and 3x + 6 three consecutive terms of an AP?

328) In nth term of an AP is (2n + 1), then find the sum of its first three terms.

329) Find the common difference of the AP $\frac{1}{2r}, \frac{1-3r}{2r}, \frac{1-6r}{2r}, \ldots\ldots\ldots$

330) If a, b, c, d, e and f are in AP with common difference 3, then find e - c.

331) If the numbers a, b, c, d and e form an AP, then find the value of a - 4b + 6c - 4d + e.

332) An AP consists of 31 terms. If 16th term is 10, then find the sum of all the terms of this AP.

333) Find the 10th term of the sequence $\sqrt{3}, \sqrt{12}, \sqrt{27}, \ldots.$

334) Find the sum of n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \ldots.$

335) If second term of an AP is (x - y) and 5th term is (x + y), then find its first term.

336) A man receives Rs.60 for the first week and Rs.3 more each week than the preceding week. How much does he earn by the 20th week?

337) Two APs have same common difference. The first term of one of these is -1 and that of the other -8. Find the difference between their 4th terms.

338) In an AP, if $S_5 + S_7 = 107$ and $S_{10} = 235$, then find the AP, where S_n denote the sum of its first n terms.

339) How many terms of the A.P. 18, 16, 14,..... be taken so that their sum is zero?

340) If the ratio of sum of the first m and n terms of an A.P. is $m^2 : n^2$, show that the ratio of its mth and nth terms is (2m - 1) : (2n - 1).

341) The first term of an AP is 5 and its 100th term is -292. Find the 50th term.

342) Check whether 50 is a term of the AP 4, 7, 10, 13,..... or not. If yes, find which term it is.

343) Which term of the Arithmetic Progression 3, 10, 17,..... will be 84 more than its 13th term?

344) Which term of the AP 5, 9, 13, ... is 81? Also, find the sum 5 + 9 + 13 + ... + 81.

345) Justify whether it is true to say that -1, $-\frac{3}{2}$ -2, $-\frac{5}{2}$..... forms an AP as $a_2 - a_1 = a_3 - a_2$.

346) Two APs have the same common difference. The first term of one AP is 2 and that of the other is 7. The difference between their 10th terms is the same as the difference between their 21st terms, which is the same as the difference between any two corresponding terms. Why?

347) Find k if 10, k, -2 are in AP.

348) Find the common difference of the Ap and write the next two terms: 1.8, 2.0, 2.2, 2.4,.....

349) Find the common difference of the Ap and write the next two terms: 0, $\frac{1}{4}, \frac{1}{2}, \frac{3}{4}, \ldots\ldots\ldots$

350) Find the common difference of the Ap and write the next two terms: 119, 136, 153, 170,.....

351) The taxi fare each km, when the fare is Rs.15 for the first km and Rs.8 for each additional km, does not form an AP as the total fare (in Rs) after each km is 15, 8, 8, 8,.....

352) In which of the following situations do the lists of numbers involved form an AP? Give reasons for your answers.
(i) The fee charged from a student every month by a school for the whole session, when the monthly fee is Rs.400.
(ii) The fee charged every month by a school from classes I to XII, when the monthly fee for class I is Rs.250, and it increased by Rs.50 for the next higher class.
(iii) The amount of money in the account of Varun at the end of every year when Rs.1000 is deposited at simple interest of 10% per annum.
(iv) The number of bacteria in a certain food after each second, when they double in every second.

353) Determine k so that k + 2, 4k - 6 and 3k - 2 are the three consecutive terms of an AP.

354) Th sum of the 5th and 7th terms of an AP is 52 and the 10th term is 46. Find the AP.

355) If the sum of first n terms of an AP is given by $S_n = 4n^2 - 3n$, find the nth term of the AP.

356) Find the sum of the first 51 terms of the AP whose 2nd term is 2 and 4th term is 8.

357) Find 10th term from the last of the AP 8, 10, 12,....., 126.

358) The sum of 5th and 9th terms of an AP is 72 and the sum of 7th and 12th terms is 97. Find the AP.

359) The angles of a quadrilateral are in AP. The greatest angle is double the least. Find all the four angles.

360) Find the sum of 2n terms of the series $1^2 - 2^2 + 3^2 - 4^2 + 5^2 - 6^2 + \ldots\ldots$

361) Interior angles of a polygon are in AP. If the smallest angle is 120^o and common difference is 5^o, find the number of sides of the polygon.

362) Along a road lies an odd number of stones placed at intervals of 10 metres. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried the job with one of the end stones by carrying them in succession. In carrying all the stones he covered a distance of 3 km. Find the number of stones.

363) If sum of first k terms of an AP is $2k^2 + 3k$, then what is its second term?

364) In an AP, a = 4, n = 6, $S_n = 84$. Find d.

365) Determine k so that k + 2, 4k - 6 and 3k - 2 are three consecutive terms of an AP.

366) If sum of all the terms of an AP 1, 4, 7, 10,..... x is 287, find x.

367) The sum of four numbers in AP is 26 and the sum of their squares is 214. Find the numbers.

368) The sum of n terms of two APs are in the ratio 5n + 4 : 9n + 6. Find the ratio of their 25th terms.

369) Find sum of all three digit numbers which leave the remainder 3 when divided by 5.

370) A polygon has 31 sides, the lengths of which, starting from the smallest, are in AP. It the perimeter of the polygon is 527 cm and the length of the largest side is sixteen times the smallest, find the length of the smallest side and the common difference of the AP.

371) Renu Suman donated Rs.3,50,000 from her life long savings for giving 7 cash prizes to students for their academic performances. If the worth of each prize is Rs.10,000 less than the worth of its preceding prize, find the worth of each prize. What value is depicted from this action?

372) Find the 20th term of the AP whose 7th term is 24 less than the 11th term, first term being 12.

373) Determine k so that $k^2 + 4k + 8$, $2k^2 + 3k + 6$ and $3k^2 + 4k + 4$ are three consecutive terms of an AP.

374) Find the sum of the two middle terms of the AP: $-\frac{4}{3}, -1, -\frac{2}{3}, \ldots, 4\frac{1}{3}$.

375) How many terms of the AP: -15, -13, -11,.... are needed to make the sum -55? Explain the reason for double answer.

376) Find the missing term of the A.P. 2,....., 20, 29,.....

377) Find the 25th term of an A.P. -5, $\frac{-5}{2}$, 0, $\frac{5}{2}$,.....

378) If 7 times the 7th term of an A.P. is equal to 12 times its 12th term, then find its 19th term.

379) If $a_n = 5 - 11n$, then find the common difference.

380) Find the sum of 13 terms of the A.P.: -6, 0, 6, 12,.....

381) If 10th term of an A.P. is 47 and the first term is 2, then find the sum of its 15 terms.

382) If 3rd term of the A.P. is 5 and its 7th term is 9, then find A.P.

383) In A.P., $a_{16} = p$, then find the sum of first 31 terms.

384) The nth term of an A.P. is given by $a_n = 4n - 5$, then find the sum of first 25 terms of A.P.

385) Find the next term of the A.P. $\sqrt{27}, \sqrt{48}, \sqrt{75}, \ldots$.

386) Three numbers in A.P. have sum 24, find the middle term.

387) If 11th term of A.P. is 110 and 110th term is 11 and its nth term is zero, then find the value of n.

388) Which term of an A.P. 2, -1, -4,..... is -70?

389) Which term of an A.P. 21, 42, 63,.... is 210?

390) Which term of the A.P. 113, 108, 103,..... is the first negative term?

391) If the nth term of an A.P. is $\frac{3+n}{4}$, then find its 8th term.

392) Find the common difference of an A.P. in which $a_{25} - a_{12} = -52$.

393) What is the common difference of the A.P. in which $a_{18} - a_{14} = 32$?

394) Find the sum of all natural numbers from 1 to 100.

395) The sum of the first n terms of an A.P. is $2n^2 + 5n$. Then find its nth term.

396) Write first three terms of the A.P., whose first terms is $\frac{1}{2}$ and common difference is $-\frac{1}{6}$.

397) Find the 6th term from the end of the A.P. -11, -8, -5, ..., 49

398) If the first term of an A.P. is -5 and the common difference is 2, then find the sum of the first 6 terms.

399) In an A.P., if a = 1, a_n = 20 and S_n = 399, then find the value of n.

400) If 7 times the 7th term of A.P. is equal to 11 times the 11th term, then find the 18th term.

401) If the common difference of an A.P. is 5, then find the value of $a_{18} - a_{13}$.

402) Find the sum of first five multiples of 3.

403) If a_n = 3 - 4n, show that a_1, a_2, a_3,.....form an A.P.

404) Find the 10^{th} term of the A.P., 5, 8, 11, 14,.....

405) Name the famous mathematician associated with finding the sum of the first 100 natural numbers.

406) In the following situation, does the list of numbers involved make an arithmetic progression, and why? Number of students left in the school auditorium from the total strength of 1000 students when they leave the auditorium in batches of 25.

407) Write the first four terms of the A.P., when the first term 'a' and common difference 'd' are given as follows: a = -1.5, d = -0.5

408) For the following A.P. write the first term and the common difference: $\frac{1}{5}, \frac{3}{5}, \frac{5}{5}, \frac{7}{5}, \ldots$.

409) Which of the following are A.P.s? If they from an A.P., find the common difference d and write three more terms: 3, 6, 12, 24,....

410) Which of the following are A.P.s? If they from an A.P., find the common difference d and write three more terms: 1, 4, 16, 64,.....

411) Which of the following are A.P.s? If they from an A.P., find the common difference d and write three more terms: a = -10, d = ..., n = 15, a_n = 18

412) Which of the following are A.P.s? If they from an A.P., find the common difference d and write three more terms: a = ..., d = -5, n = 20, a_n = -15

413) Which of the following are A.P.s? If they from an A.P., find the common difference d and write three more terms: a = 5, d = 0, n = 207, a_n = ...

414) In the following A.P., find the missing term : 1, ..., 7, 10

415) In the following A.P., find the missing term : $\sqrt{2}$, ..., $5\sqrt{2}$

416) In the following A.P., find the missing term : 7, ..., 21, ...

417) Find the sum of the series: $(a - b)^2 + (a^2 + b^2) + (a + b)^2 + \ldots\ldots + \{(a + b)^2 + 6ab\}$.

418) A student taking a test consisting of 10 questions is told that each question after the first question is worth 2 marks more than the preceding questions. If third question of the test is worth 5 marks, what is the maximum score that the student can obtain by attempting 8 questions?

419) Find the sum of first 19 terms of an A.P. whose 8th term is 41 and 13th term is 61.

420) Find the sum of all three-digit numbers which are divisible by 9.

421) The sum of the first three terms of an A.P. is 15. If the sum of their squares is 93, find the A.P.

422) Find whether the following list of numbers form an A.P. If they form an A.P., find the common difference d and write two more terms: $\sqrt{6}, \sqrt{24}, \sqrt{54}, \sqrt{96}, \ldots$.

423) Find the 8th term from the end of the A.P. 5, 8, 11, 14, 17,....., 152

424) For what value of n, are the nth terms of two A.P.'s: 60, 63, 66,... and 2, 7, 12,... equal?

425) Two A.P.'s have the same common difference. The difference between their 80th term is 50. What is the difference between their 800th term?

426) Mala saved Rs.10 in the first week of a year and then increased her weekly savings by Rs.2.00. If in the nth week, weekly savings become Rs.68, find n.

427) In an A.P., given a = 6, a_n = 63, S_n = 690, find n and d.

428) A sum of Rs.1408 is to be used to give 16 cash prizes to cricket players of a school for their overall Test performance. If each prize is Rs.10 less than its preceding prize, find the value of each of the prizes.

429) Find the sum of all two-digit numbers which when divided by 4 yields 3 as remainder.

430) The 5th and 15th term of an A.P. are 13 and -17 respectively. Find the sum of first 21 terms of the A.P.

431) The first and the last term of an A.P. are 4 and 81 respectively. If the common difference is 7, how many terms are there in the A.P. and what is their sum?

432) Find the sum of all two-digit natural numbers which when divided by 3 yields 1 as remainder.

433) Find the sum of all two-digit numbers greater than 50 which when divided by 7 leave a remainder 4.

434) Which term of the A.P. 4, 12, 20, 28,..... will be 120 more than its 21st term?

435) If S_n, the sum of first n terms of an A.P. is given by $S_n = 3n^2 - 4n$, then find its nth term.

436) If S_n, the sum of first n terms of an A.P. is given by $S_n = 5n^2 + 3n$, then find its nth term.

437) If $\frac{4}{5}$, a, 2 are three consecutive terms of an A.P., then find the value of a.

438) For what value of p, are 2p - 1, 7 and 3p three consecutive terms of an A.P.?

439) If the sum of the first q terms of an A.P. is $2q + 3q^2$, what is its common difference?

440) In an A.P., the sum of its first ten terms is -80 and the sum of its next ten terms is -280. Find the A.P.

441) In an A.P., the first term is 2, the last term is 29 and sum of the terms is 155. Find the common difference of the A.P.

442) The ratio of the 5th and 3rd terms of an A.P. is 2 : 5. Find the ratio of the 15th and 7th terms.

443) In A.P. 56, 63, 70,....., 497, how many terms are there?

444) Find the sum of first 15 terms of an A.P., whose nth term is 3 - 2n.

445) If nth term of an A.P. is 7 - 3n, then find its common difference.

446) If the sum of three numbers in A.P., is 27, then find the middle term.

447) Find the sum of first 10 odd natural numbers

448) If x - 2, x + 4, 2x - 1 are in A.P. then find the value of x.

449) If the nth term of an A.P. is (3n + 1), then find first and second term.

450) Which term of the A.P. 1, 4, 7,..... is 91?

451) Find the sum of the first 10 multiples of 8.

452) If 14th term of an A.P. exceeds its 8th term by 12, then find the common difference.

453) Find number of two-digit numbers divisible by 5.

454) Find the sum of the first n positive integers

455) If a, b, c are in A.P., then find the value of a.

456) If $\frac{1}{3}$, k, $\frac{4k}{6}$ are in A.P., then find the value of k.

457) Find the missing term of the A.P. 2, ..., 24, 35

458) Which term of the A.P. 50, 40, 30, ... is zero?

459) Find the 3rd term from the end of A.P. -8, -5, -2, ..., 46

460) Find the common difference of the A.P. $2, 2 + \sqrt{2}, 2 + 2\sqrt{2}, 2 + 3\sqrt{2}$,.....

461) Find the 10th term of the A.P. 4, 8, 12,....., 144

462) If a = 5, d = 5 and n = 10, then find the value of a_n.

463) If 12th term of an A.P. exceeds oit 6th term by 36, then find the common difference.

464) If sum of three consecutive terms of an A.P. is 27, then find the first term.

465) For the $A.P.$: $\frac{3}{2}, \frac{1}{2}, -\frac{1}{2}, -\frac{3}{2}, \ldots$,write the first term a and the common difference d.

466) Write first four terms of the A.P., when the first term a is -2 and the common difference d is zero.

467) Find the 10 term of the A.P : 2, 7, 12, 17, ...

468) In n^{th} term of an A.P. is 2n+1, then find its common difference.

469) Find k, so that 13, k, -3 are in A.P.

470) Find the missing term of the A.P. 7, $\frac{29}{2}$.

471) Find the 10^{th} term from the end of A.P. -15, -13, -11, ..., 33.

472) Find the common difference of the A.P. $\frac{2}{3p}, \frac{2-3p}{3p}, \frac{2-6p}{3p}, \ldots..$

473) What is the common difference of an A.P. in which a_{12}-a_8 = 24?

474) If sum of five numbers in A.P. is 40, then find the middle term.

475) For what value of k will k + 9, 2k - 1 and 2k + 7 are the consecutive terms of an A.P.?

476) Find the sum of first 8 terms of p-6, p-4, p-2, ...

477) If $\frac{3+5+7+...\ to\ n\ terms}{5+8+11+...\ to\ 10\ terms}$=7, then find the value of n.

478) Find the sum of first 20 multiples of 5.

479) The amount of money in the account every year, when Rs.10000 is deposited at compound interest at 8% per annum. Do these amounts from an A.P.?

480) Write first four terms of the A.P. whose first term is 10 and common difference is 10.

481) Write first four terms of the A.P. whose first term is -1 and common difference is $\frac{1}{2}$.

482) For the following APs, write the first term and the common difference:
(i) -5, -1, 3, 7,.....
(ii) 0.6. 1.7, 2.8, 3.9, ...

483) How many terms of the A.P. 27, 24, 21, ... should be taken so that their sum is zero?

484) How many terms of the A.P. 18, 16, 14, ... should be taken so that their sum is zero?

485) Find whether the following list of numbers form an A.P. If they form an A.P., find the common difference d and write three more terms. a, a^2, a^3, a^4, ...

486) Find whether the following list of numbers form an A.P. If they form an A.P., find the common difference d and write three more terms.
$3,\ 3+\sqrt{2}, 3\ +\ 2\sqrt{2},\ 3+3\sqrt{2}, \ldots.$

487) Fill in the blanks a=7, d=3, n=8, a_n = ...Here, a is the first term, d is the common difference and a=n term of an A.P.

488) Fill in the blanks a = -18.9, d = 2.5, n = ..., a_n=3.6

489) The 8th term of an AP is equal to three times its third term. If its 6th term is 22, find the A.P.

490) The 9th term of an A.P. is equal to 6 times its second term. If its 5th term is 22, find the A.P.

491) The 4th term of an A.P. is zero. Prove that the 25th term of the A.P. is zero. Prove that the 25th term of the A.P. is three times its 11th term.

492) The 16^{th} term of an A.P. is 1 more than twice its 8^{th} term. If the 12^{th} term of the A.P. is 47, then find its n^{th} term.

493) Sum of the first 20 terms of an A.P. is -240, and its first term is 7. Find its 24th term.

494) Find the next term of the A.P. $\sqrt{3}, \sqrt{12}, \sqrt{27}$, ...

495) The n^{th} term of an A.P. cannot be n^2+1. Justify your answer.

496) Find the sum of first 16 terms of the A.P. : 10, 6, 2, ...

497) If the 2^{nd} term of an A.P. is 13 and the 5^{th} term is 25, what is its 7^{nd} term of an A.P. is 13 and the 5 term is 25, what is its 7^{th} term?

498) Write first four terms of an A.P., whose first term is -2 and the common difference is -2.

499) If the first two terms of an A.P. are -3 and 4, then find its 21^{st} term.

500) In an A.P., if a = -7.2, d = 3.6 and a = 7.2, then find n.

501) For the A.P. -3, -7, -11, ... , can we find directly a_{30}-a_{20} without actually finding a_{30} and a_{20}? Give reasons.

502) Justify whether it is true to say that the following is the n^{th} term of an A.P. $3n+5^2+5$

503) If the numbers n-2, 4n-1 and 5n+2 are in A.P., find the value of n..

504) If the n^{th} terms of the two A.P's. : 9, 7, 5, ... and 24, 21, 18, ...are the same, find the value of n. Also, find that term.

505) Find the value of the middle most term(s) of the A.P. -11, -7, -3, ..., 49

506) Determine the A.P. whose fifth term is 19 and the difference of the eighth term from the thirteenth term is 20.

507) Split 207 into three parts such that these are in A.P. and the products of the two smaller parts is 4623.

508) If m and n term of an A.P. th and n term of an A.P. are $\frac{1}{n} and \frac{1}{m}$ and respectively, then find its mn th term.

509) If the pth, qth and rth term of an A.P. are a, b and c respectively, then show that:
(i) (a-b)r+(b-c)p+(c-a)q = 0
(ii) a(q-r)+br-p()+c(p-q) = 0

510) Find the sum of the series: 5 + 7 + 9 + 10 +13 + 13 + 17 + 16 +.....to 60 terms.

511) Find the 5th term of an A.P. $\frac{2p+1}{p}, \frac{2p-1}{p}, \frac{2p-3}{p}, \ldots$.

512) For what value of k, 2k - 7, k+5 and 3k + 2 are three consecutive terms of an A.P.?

513) If the sum of the first n terms of an A.P. is given by $3n^2+5n$, find the common difference of the A.P.

514) The ratio of the sum of m and n terms of an A.P, is $m^2:n^2$. Show that the ratio of the m th and n th term is (2m-1):(2n-1).

515) If a_1, a_2, a_3, ..., be an A.P. of non-zero terms, prove that: $\frac{1}{a_1a_2} + \frac{1}{a_2a_3} + \ldots\ldots + \frac{1}{a_{n-1}a_n} = \frac{n-1}{a_1a_n}$.

516) The taxi far after each km, when the fare is Rs.15 for the first km and Rs.8 for each additional km does not form an A.P. as the total fare (in Rs.) after each km is 15, 8, 8, 8.
(i) Is the statement true? Give reason.
(ii) If the taxi owner uses a milage meter which shows 10% extra for each km, which value is violated by the taxi owner.

517) The fee charged every month by a school from classes I to XII, when the monthly fee for class I is Rs.250, and it increases by Rs.50 for the next higher class. In the above situation, do the list of numbers involved form an A.P. Give reasons.
If you find your classmate can't attend the school due to lack of money, you will:
(a) ask your friends to contribute for his fee if you find that your pocket money is less than the amount required.
(b) do not bother about him.
(c) donate your pocket money and ask him to find the balance amount from some other means.
(d) give him your saving box without telling your parents.
Write the appropriate answer.

518) A school decided to award cash prizes to the students for the five values i.e., honesty, punctuality, obedience, non-violence and truth. If all the five prizes together amount to Rs.1600 and each prize is Rs.20 less than its preceding prize, find the value of each of the prizes.

519) Nature club of a school arranged different plants as per availability for the school campus. They arranged all the plants of same kind in rows and the number of plants of same kind in the next row is 3 less than the number of plants in the previous row. If the number of plants in the first row is 29 and the number of plants in the last row is 5 then,
(i) how many kinds of plants are arranged?
(ii) find the total number of plants used.
(iii) write the value depicted by the nature club.

520) In a school students through of planting trees. It was decided that the number of trees that each section of each class will plant be the same as the class in which they are studying i.e., a section of class I will plant 1 tree, a section of class II will plant 2 trees and so on, a section of class XII will plant 12 trees. There are three sections of each class.
(i) How many trees will be planted by the students?
(ii) Write the importance of trees.

521) The students of a school decided to beautify the school on the annual day by fixing colourful flags on the straight passage of the school. They have 27 flags to be fixed at intervals of every 2m. The flags are stored at the position of the middle most flag. Ruchi was given the responsibility of placing the flags. Ruchi kept her books where the flags were stored. She could carry only one flag at a time.
(i) How much distance did she cover in completing this job and returning back to collect her books?
(ii) What is the maximum distance she travelled carrying a flag? On which day the armed forces flag day is celebrated?

522) Find the 19th term of the following sequence. $t_n = \begin{cases} n^2, where\ n\ in\ even \\ n^2 - 1, where\ n\ is\ odd \end{cases}$

523) If 21, a, b and -3 are in AP, then find the value of(a+b).

524) In an AP, if d = -4, n =7 and $a_n = 4$, then find the value of a first term.

525) Find the 4th term from the end of an AP -11, -8, -5,....., 49.

526) If the nth term of an AP is (2n + 1), then find the sum of its first three terms.

527) If k - 1, k + 3 and 3k - 1 are in AP, then find the value of k.

528) Which term of the AP 21, 42, 63, 84, ... is 210?

529) What is the sum of all natural numbers from 1 to 100?

530) Find the 15th term of the AP y - 7, y - 2, y + 3, ...

531) Find the 7th term of the sequence whose nth term is given by $a_n = (-1)^{n-1}.n^3$.

532) Find the missing term of an AP 3, -, 33, 48, ...

533) If $\frac{1+3+5+....upto\ n\ terms}{2+5+8+...upto\ 8\ terms} = 9$, then find the value of n.

534) Find the 7th term from the end of the AP 7, 12, 13, ..., 184.

535) How many terms are there in the AP 7, 16, 25, ..., if nth term is 349?

536) Find the common difference of an AP, whose first term is $\frac{1}{2}$ and 8th term is $\frac{17}{6}$.

537) Find the 7th term from the end of the AP 7, 12, 13, ..., 184.

538) How many terms are there in the AP 7, 16, 25, ..., if nth term is 349?

539) Find the common difference of an AP, whose first term is $\frac{1}{2}$ and 8th term is $\frac{17}{6}$.

540) The 8th term of an AP is 37 and its 12th term is 57. Find the AP.

541) The sum of n terms of an AP is $2n + 3n_2$. Determine the AP and find its rth term.

542) Find the sum of the first 25 terms of an AP, whose nth term is given by $a_n = 7 - 3n$

543) Determine k. so that $k^2 + 4k + 8, 2k^2 + 3k + 6$ and $3k^3 + 4k + 4$ are three consecutive of an AP.

544) If for a given AP, a = 7 and $a_{13} = 35$, then find S_{13}.

545) Find the sum of all multiples of 7 lying between 500 and 900.

546) How many terms of the AP 9, 17, 25, ..., must be taken to get a sum of 450?

547) In an Ap, given a = -4 and d = 3, find its 20th term and the sum of first 20th terms.

548) If the sequence $\{a_n\}$ is defined by $a_1 = 2$ and $a_{n+1} = a_n + 2n\,(n \geq 1)$, then find the value of a_{100}

549) Find the sum of all the 11 terms of an AP whose middle most term is 30.

550) Two APs have the same common difference. The first term of an AP is 2 and that of the other is 7. The difference between their 10th terms is the same as the difference between their 21st terms, which is the same as the difference between any two corresponding terms? Why?

551) In an AP, if a = 3.5, d = 0 and n = 101, then what is the value of a_n?

552) Which term of the AP 3, 8, 13, ... is 248?

553) What will be the number of terms of the AP 9, 17, 25, ... whose sum is 636?

554) Which of the following form an AP? Justify your answer.
1,1,2,2,3,3..

555) Find the next term of the AP: 3, 1, -1, -3, ...

556) Find the common difference of the AP: $\frac{1}{p}, \frac{1-p}{p}, \frac{1-2p}{p}, \ldots$

557) For an AP, if a_{18} - a_{14} =32, then find the common difference d.

558) If the common difference of an AP is 3, then find a_{20}-a_{15} .

559) The fourth term of an AP is 11. The sum of the fifth and seventh terms of the AP is 24. Find its common difference.

560) The nth term of an AP is $a_n = 2_n+1$, find its sum

561) Find the sum of first 24 terms of the AP a_1, a_2, a_3 ..., if its is known that $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225$

562) If the common difference of an AP is 5, then what is a_{18} - a_{13}?

563) The angles of a triangle are in AP. The greatest angle is twice the last. Find all the angles of the triangle.

564) Find, 100 is a term of the A.P. 25, 28, 31, or not.

565) Which term of an A.P. 150, 147, 144, is its first negative term?

566) Which of the term of A.P.5, 2, -1, ... is - 49 ?

567) In a certain A.P.32^{th} term is twice the 12^{th} term. Prove that 70^{th} term is twice the 31^{st} term.

568) If five times the fifth term of an AP. is equal to eight times its eighth term, show that its 13^{th} term is zero.

569) The fifth term of an A.P. is 20 and the sum of its seventh and eleventh terms is 64. Find the common difference.

570) The ninth term of an A.P. is - 32 and the sum of its eleventh and thirteenth term is - 94. Find the common difference of the A.P.

571) Find the first four terms of an AP. whose first term is - 2 and common difference is - 2.

572) Find the tenth term of the sequence $\sqrt{2}, \sqrt{8}, \sqrt{18}$

573) The seventeenth term of an A.P. exceeds its 10^{th} term by 7. Find the common difference.

574) The fourth term of an A.P.is 11. The sum of the fifth and seventh terms of the A.P.is 34. Find the common difference.

575) Find the next term of the series $\sqrt{2}, \sqrt{8}, \sqrt{18}, \sqrt{32}\ldots$.

576) Is series $\sqrt{3}, \sqrt{6}, \sqrt{9}, \sqrt{12}$..... an AP. ? Give reason.

577) Find the middle term of the A.P. 213, 205, 197, ... 37.

578) Find the middle term of the A.P. 6, 13, 20, ..., 216

579) What is the next term of an AP.$\sqrt{7}, \sqrt{28}, \sqrt{63}, \ldots..$?

580) If the common difference of an AP. is - 6, find $a_{16} - a_{12}$

581) If the 2^{nd} term of an A.P.is 8 and the 5^{th} term is 17, find its 19^{th} term.

582) If the numbers x + 3, 2x + 1 and x - 7 are in A.P., find the value of x.

583) Find the values of a, b and c, such that the numbers a, 10, b, c, 31 are in A.P.

584) For what value of k will the consecutive terms 2k + I, 3k + 3 and 5k- 1 form an AP. ?

585) For A.P.show that $a_p + a_p + 2_q = 2a_{p+q}$

586) The first three terms of an A.P.are 3y - 1, 3y + 5 and 5y + 1 respectively then find y.

587) For what value of k will k + 9, 2k - 1 and 2k + 7 are the consecutive terms of an A.P. ?

588) In the A.P. 2, x, 26 find the value of x.

589) For what value of k; k + 2, 4k - 6, 3k - 2 are three consecutive terms of an A.P.

590) If 18, a, b, - 3 are in A.P.,then find a + b.

591) Find the first four terms of an A.P. whose first term is 3x + y and common difference is x - y

592) Find the 37^{th} term of the A.P. $\sqrt{x}, 3\sqrt{x}, 5\sqrt{x}, \ldots.$

593) For an A.P.,if $a_{25} - a_{20} = 45$, then find the value of d.

594) Find the sum of first ten multiples of 5.

595) Find the sum of first five multiples of 2.

596) What is the sum of five positive integers divisible by 6.

597) If the sum of n terms of an A.P.is $2n^2 + 5n$, then find the 4th term.

598) If the sum of first k terms of an A.P.is 3P - k and its common difference is 6. What is the first term?

599) How many terms of the A.P.65, 60, 55, ... be taken so that their sum is zero?

600) Ho many terms of the A.P.18, 16, 14 ....be taken so tliat their sum is zero?

601) How many terms of the A.P.27, 24, 21, ... should be taken so that their sum is zero?

602) In an A.P., if $S_5 + S_7 = 167$ and $S_{10} = 235$, then find the A.P., where S_n denotes the sum of first n terms.

603) Find the sum of sixteen terms of an A.P. - 1, - 5, -9, ...

604) If the n^{th} term of an A.P. is 7 - 3n, find the sum of twenty five terms.

605) If the 1^{st} term of a series is 7 and 13^{th} term is 35. Find the sum of 13 terms of the sequence.

606) If the n^{th} term of a sequence is 3 - 2n. Find the sum of fifteen terms.

607) If S_n denotes the sum of n terms of an A.P. whose common difference is d and first term is a, find $S_n - 2S_{n-1} + S_{n-2}$.

608) The sum of first n terms of an A.P. is $5n - n^2$. Find the n^{th} term of the A.P.

609) The first and last term of an A.P. are 5 and 45 respectively. If the sum of all its terms is 400, find its common difference.

610) Examine that the list of numbers 7, 13, 19, 25, ... form an AP.It.they form an Ap, write the next two terms

611) Which of the following form an AP? Justify your answer.
$\sqrt{3}, \sqrt{12}, \sqrt{27}, \sqrt{48} \ldots .$

612) Which of the following form an AP? Justify your answer.
0.3, 0.33, 0.333,

613) Which of the following form an AP? Justify your answer.
$4, 4 + \sqrt{2}, 4 + 2\sqrt{2}, 4 + 3\sqrt{2}, \ldots$

614) Check that the list of numbers defined by the following term is an AP or not. Also give reason.
$t_n = 9 - 11n^2$

615) Check that the list of numbers defined by the following term is an AP or not. Also give reason.
$t_n = 5 + 6n$

616) Check that the list of numbers defined by the following term is an AP or not. Also give reason.
$t_n = 3n - 2$

617) Check that the list of numbers defined by the following term is an AP or not. Also give reason.
$t_n = 2n^2 + 1$

618) Check that the list of number defined by an = $2n^2 + 1$ is an AP or not.

619) Find 11th term of AP : - 5, - 5 / 2, 0, 5 / 2, ...

620) If in an Ap, a = 15, d = -3 and $a_n = 0$, then find the value of n.

621) What will be the value of $a_8 - a_4$ for the following AP 4, 9, 14, ... 254.

622) The taxi fare after each kilometre, when the fare is Rs.15 for the first kilometre and Rs. 8 for each additional kilometre, does not form an AP as the total fare (in Rs.) after each kilometre is 15, 8, 8 ,8, ... Is the statement true? Give reasons.

623) Find the sum of first 20 terms of an AP in which a = 1 and 20th term = 58.

624) If S_n the sum of first n terms of an AP is given by $S_n = 3n^2 - 4n$, find the nth term.

625) If the sum of first n terms of an AP is n^2 then find its 10th term.

626) Find the sum of all the two digit numbers which leave the remainder 2 when divided by 5.

627) Find the sum of first 15 multiples of 4.

628) Find the sum of even positive integers between 1 and 200

629) If S_n the sum of the first n terms of an AP is given by $S_n = 2n^2 + n$, then find its nth term.

630) The first term of an AP is 3, the last term is 83 and the sum of all its items is 903. Find the number of terms and the common difference of the AP.

631) Find the sum of all even numbers between 101 and 999.

632) The ages of the students in a class are in Ap, whose common difference is 4 months. If the youngest student is 8 yr old and the sum of the ages of all the students is 168 yr, then find the number of students in the class.

633) Prove that the sum of later half of 2n terms of an AP is equal to one-third of the sum of the first 3n terms

634) In an Ap, if the common difference (d) = -4 and the seventh term (a_7) is 4, then find the first term.

635) Find the sum of first 8 multiples of 3.

636) Which term of the AP : 120, 116, 112, ... is first negative term?

637) If the 2nd term of an AP is 13 and 5th term is 25, then what is its 7th term?

638) The 16th term of an AP is 1 more than twice its 8th term. If the 12th term of an AP is 47, then find its nth term

639) In which of the following situations, do the list of numbers involved form an AP? Give reason for your answer.
(i) The number of bacteria in certain food item after each second, when they double in every second.
(ii) Number of students left in the school auditorium from the total strength of 800 students, when they leave the auditorium in batches of 20 students.

640) If a clock strikes one at one O'clock, two at two O'clock and so on, but does not strike at half hours, then total number of times the bell will be stuck in 24 hours, are 156. Pradeep at once said, "It is true". Do you agree with Pradeep?

641) Is 68 a term of the AP : 7,10, 13,.....?

642) $\sqrt{2}, \sqrt{18}, \sqrt{50}, \sqrt{98} \ldots$
Is the above pattern in AP?Justify your answer

643) Consider the list of numbers given below $\frac{1}{2}+k, \frac{2}{3}+k, \frac{4}{5}+k \ldots$ where k is an integer.
Is the above list of numbers an arithmetic progression? Justify your answer.

644) Find the common difference of the AP $\frac{1}{p}, \frac{1-p}{p}, \frac{1-2p}{p}, \ldots$

645) In an AP, if the common difference (d) is - 4 and the seventh term (a_7) is 4,then find the first term

3 Marks 198 x 3 = 594

646) How many terms of AP : 9, 17, 25,..... must be taken to give a sum of 636?

647) Which term of the AP : 21, 18, 15, . . . is – 81? Also, is any term 0? Give reason for your answer

648) Find the 11th term from the last term (towards the first term) of the AP : 10, 7, 4, . . ., – 62.

649) How many two-digit numbers are divisible by 3?

650) A sum of Rs 1000 is invested at 8% simple interest per year. Calculate the interest at the end of each year. Do these interests form an AP? If so, find the interest at the end of 30 years making use of this fact.

651) In a flower bed, there are 23 rose plants in the first row, 21 in the second, 19 in the third, and so on. There are 5 rose plants in the last row. How many rows are there in the flower bed?

652) If the sum of the first 14 terms of an AP is 1050 and its first term is 10, find the 20th term.

653) The sum of the third and the seventh terms of an AP is 6 and their product is 8. Find the sum of first sixteen terms of the AP.

654) Find the sum of the first 22 terms of the AP : 8, 3, –2, . . .

655) How many terms of the AP : 24, 21, 18, . . . must be taken so that their sum is 78?

656) If m times the mth term of an AP is equal to n times its nth term, find the (m + n)th term of the AP.

657) If 9th term of an AP is zero, prove that its 29th term is double of its 19th term.

658) Find the value of the middle term of the following AP: -6, -2, 2, ..., 58

659) Determine the AP whose fourth term is 18 and the difference of the ninth term from the fifteenth term is 30.

660) How many numbers lie between 10 and 300, which when divided by 4 leave a remainder 3?

661) The 2nd, 31st and the last term of an AP are $7\frac{3}{4}$, $\frac{1}{2}$ and $-6\frac{1}{2}$, respectively. Find the first term and number of terms.

662) Which term of the progression 19, $18\frac{1}{5}$, $17\frac{2}{5}$,.... is the first negative term.

663) The sum of n terms of an AP is $5n^2 - 3n$. Find the AP and also its 10th term.

664) In an AP, the first term is 8, nth term is 33 and sum to first n terms is 123. Find n and d, the common difference.

665) Find the sum of all multiples of 5 lying between 101 and 999.

666) Show that the sum of first n even natural numbers is equal to $(1 + \frac{1}{n})$ times the sum of the first n odd natural numbers.

667) How many terms of the AP - 6, $\frac{-11}{2}$ -5,..... are needed to give the sum -25? Explain the double answer.

668) If the 8th term of an AP is 37 and the 15th term is 15 more than the 12th term. Find the AP. Hence find the sum of the first 15 terms of the AP.

669) If the seventh term of an AP is $\frac{1}{9}$ and its ninth term is $\frac{1}{7}$, find its 63re term.

670) The sum of the first 7 terms of an A.P. is 63 and the sum of its next 7 terms is 161. Find the 28th term of this A.P.

671) If S_n denotes the sum of the first n terms of an A.P., prove that $S_{12} = 3(S_8 - S_4)$.

672) In an AP, if the 12th term is -13 and the sum of its four terms is 24, find the sum of its first ten terms.

673) Divide 56 in four parts in AP, such that the ratio of the product of their extremes (1st and 4th) to the product of means (2nd and 4rd) is 5 : 6.

674) The digits of a positive number of three digits are in AP and their sum is 15. The number obtained by reversing the digits is 594 less than the original number. Find the number.

675) The sum of n terms of an AP whose first term is 5 and common difference is 36 is equal to the sum of 2n terms of another AP whose first term is 36 and common difference is 5. Find n.

676) The sum of n terms of a sequence is $3n^2 + 4n$. Find the nth term and show that the sequence is an AP.

677) Find the sum: $\frac{a-b}{a+b} + \frac{3a-2b}{a+b} + \frac{5a-3b}{a+b} + \ldots$ to 11 terms.

678) $a_1, a_2, a_3, \ldots\ldots, a_{24}$ are in AP and $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 300$. Find the sum of first 24 terms of the AP.

679) If S_n denotes the sum of n terms of an AP whose common difference is d, show that $d = S_n - 2S_{n-1} + S_{n-2}$.

680) If $T_1, T_2, T_3, \ldots\ldots, T_n$ are consecutive terms of an AP, then prove that $\frac{1}{T_1T_2} + \frac{1}{T_2T_3} + \ldots\ldots + \frac{1}{T_{n-1}T_n} + \frac{n-1}{T_1.T_n}$

681) In the following A.P., find the missing term: 9, ..., ..., ..., 25

682) In the following A.P., find the missing term: -1.1, ..., ..., ..., ..., -11.1

683) Which term of an A.P.:4, 9, 14, 19,.... is 124?

684) Find the number of terms in A.P.: 3, 6, 9, 12,.....,111.

685) Which term of the A.P.: 84, 80, 76, ... is 0?

686) Find the number of terms in A.P.: -1, $-\frac{5}{6}, -\frac{2}{3}, -\frac{1}{2}, \ldots\ldots, \frac{10}{3}$

687) Find the numbers of terms in A.P.: 5, 12, 19, 28, ..., 159.

688) Is 68 a term of the A.P. 7, 10, 13,.....?

689) Is 302 a term of the A.P. 3, 8, 13,.....?

690) Is 184 a term of the A.P. 3, 7, 11,.....?

691) The 10th term of an A.P. is 52 and 16th term is 82. Find 82. Fiind the 32nd term.

692) Find the general tem of an A.P. whose 7th term is -1 and 16th term is 17.

693) The 6th and 17th terms of an A.P. are 19 and 41 respectively, find the 40th term.

694) The 10th and 18th terms of an A.P. are 41 and 73 respectively. Find 26th term.

695) Determine the A.P. whose 3rd term is 5 and 7th term is 9.

696) Find the 12th term from the last term of the following A.P.: 3, 5, 7, 9,... 201

697) Find the 12th term from the last term of the following A.P.: 1, 4, 7, 10,.....,88

698) Which term of an A.P. 3, 10, 17,... will be 84 more than its 13th term?

699) Two A.P.s have the same common difference. The difference between their 100th terms is 111222333. What is the difference between their millionth terms?

700) How many multiples of 9 lie between 10 and 300?

701) For what values of n is the nth terms of the following A.P.s same: 1, 7, 13, 19,....

702) For what values of n is the nth terms of the following A.P.s same: 69, 68, 67,....?

703) How many terms of the A.P. 3, 9, 15, 21,... must be taken to give a sum of 1875.

704) Find the sum of first 33 terms of an A.P. in which d = 4 and 33rd term is 136.

705) Find the sum of all two digit natural numbers which when divided by 7 yields 1 as remainder

706) Find the sum of all odd numbers between 100 and 200

707) How many two-digit numbers are divisible by 4?

708) How many three-digit numbers are divisible by 12?

709) How many three-digit numbers are divisible by 11?

710) Find the sum of all multiples of 9 lying between 400 and 800.

711) Find the sum of all three-digit natural numbers, which are multiples of 7.

712) How many terms of the A.P. 9, 17, 25,...., must be taken to get a sum of 450?

713) If the sum of first 4 terms of an A.P. is 16 and that of 23 terms is 529, find the sum of first n terms.

714) If the sum of the first 7 terms of an A.P. is 119 and that of the first 17 terms is 714, find the sum of its first n terms.

715) The sum of first m terms of an A.P. is $4m^2$ -m. If its nth term is 107, find the value of n. Also, find the 21st term of this A.P.

716) The sum of first q terms of an A.P. is $63q - 3q^2$. If its pth term is -60, find the value of p. Also, find the 11th term of this A.P.

717) Find the sum of all natural numbers less than 100 and divisible by 6.

718) Find the sum of all multiples of 9 typing between 300 and 700.

719) Find the sum of all three-digit natural numbers, which are multiples of 9.

720) Find the sum of all three-digit natural numbers, which are multiples of 11.

721) Find the sum of the first 50 odd natural numbers.

722) Find the sum of first twelve multiples of 7.

723) If sum of three numbers in A.P. is 21 and their product is 231. Find the numbers.

724) Find three numbers in A.P. whose sum is 15 and the product is 80.

725) The sum of first three terms of an A.P. is 33. If the product of the first and third term exceeds the second term by 29, find the A.P.

726) The sum of first n terms of three arithmetic progressions are S_1, S_2 and S_3 respectively. The first term of each A.P. is 1 and their common differences are 1, 2 and 3 respectively. Prove that $S_1 + S_3 = 2S_2$.

727) The 4th term of an A.P. is equal to 3 times the first term and the 7th term exceeds twice the 3rd term by 1. Find the A.P.

728) Find the sum of the first 31 terms of an A.P. whose nth term is given by $3 + \frac{2}{3}n$.

729) The first term of an A.P. is -5 and the last term 45. If the sum of the terms of the A.P. is 120, then find the number of terms and the common difference.

730) Which term of the A.P., -2, -7, -12, ... will be -77? Find the sum of this A.P. upto the term -77.

731) In an A.P. if $S_n=3n^2+5n$ and $a_k=164$, find the value of k.

732) The sum of the first n terms of an A.P. whose first term is 8 and the common difference is 20 is equal to the sum of first 2n terms of another A.P. whose first term is -30 and the common difference is 8. Find n.

733) Examine that the list of numbers obtained from following situation, will be the form of an AP. "Amount let with Sandeep (in Rs) out of the total amount of Rs 12000 which he had in the biginning when he spends Rs 500 in the beginning of every month."

734) Find the common difference of the AP 3,-2,-7,-12,...

735) Find the 20th term of the sequence 7,3,-1,-5,...

736) Which term of the Ap 21,18,15,...is-81?

737) Determine the general term of an AP whose 7th term is -1 and 16th term is 17.

738) How many numbers of two digits are divisible by 7?

739) A sum of Rs 2000 is invested at 7% simple interest per year. Calculate at the end of each year. Do these interest form an AP? If so, then find the interest at the end of 20th year making use of this fact.

740) Determine the 10th term from the end of the AP 4,9,14,...,254.

741) Write the first four terms in each of the list of numbers defined by $a = (-1)^{n-1}n^4$

742) Write the first four terms in each of the list of numbers defined by $a_n = 2n + 3$

743) Find the common difference and the next two terms of the AP 0 6 1 2 18,...

744) Examine that the sequence 7, 13, 19, 25,... is an AP. Also, find the common difference.

745) Two APs have two same common difference. The difference between their 100th terms is 111222333. What is the different between their millionth terms?

746) The first term of an AP is an 5, common difference is 3 and the last term is 80. Find the number of terms.

747) In a flower bed, there are 43 roses plants in the first row, 41 in the second, 39 in the third and so on. These are 11 rose plants in the last row. How many rows are there in the flower bed?

748) A sum of Rs 5000 is invited at 8% simple interest per annum. Calculate the interest at the end of each year. Do these interest form an AP? Find the interest at the end of 30 year.

749) Find the sum of 20 terms of the AP 1, 4, 7, 10, ..., 58.

750) If the sum of first 10 terms of an AP is 140 and the sum of first 16 terms is 320, then find the sum of m terms.

751) How many terms of the AP $20, 19\frac{1}{3}, 18\frac{2}{3}, \ldots$ must be taken, so that their sum is 300?

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

753) The interior angles of a polygon are in AP. The smallest angle is 120^0 and the common difference is 5^0 . Find the number of sides of the polygon.

754) Kanika was given her pocket money on Jan 1st, 2008. She puts Rs 1 on day, 1, Rs 2 on day 2, Rs 3 on day 3 and continued doing so till the end of the month, from this money into her piggy back she also spent Rs 204 of her pocket money and found that at the end of the month she still had Rs 100 with her. How much was her pocket money for the month?

755) Find the arithmetic mean of 2 and 12.

756) In an AP, given d = 5, $S_9 = 75$, find a and a_9.

757) In an AP, given a = 2, d = 8, $S_n = 90$, find n and a_5.

758) In an AP, given a = 8, $a_n = 62, S_n = 210$, find n and d.

759) The sum of the first n terms of an AP is given by $S_n = 2n^2 + 5n$. Find the nth term of the AP.

760) Find the sum of first 21 terms of an AP whose 2nd term is 8 and 4th term is 4.

761) Find the sum of first 25 terms of an AP whose nth term is 1-4n.

762) If the sum of first p terms of an AP is q and the sum of first q terms is p, then find the sum of first (p + q) terms.

763) A man arranges to pay off a debt of Rs 3600 by 40 annual installments which are in AP. When 30 of the installments are paid, he dies leaving one - third of the debt unpaid. Find the value of the 8th installment.

764) Find the number of integers between 200 and 500 which are divisible by 7.

765) Find the number of terms of the AP 64,60,56,...., so that their sum is 544.

766) The sum of first six terms of an arithmetic progression is 42. The ratio of its 10th term to its 30th term is 1:3. Calculate the first and the 13th term of the AP.

767) The ratio of the sums of first n terms of two APs is (4n+2):(3n+47). Find the ratio of their 9th terms.

768) The sum of the first five terms and the sum of the first seven terms of an AP is 167. If the sum of the first ten terms of this AP is 235. then find the sum of its first twenty terms.

769) Anil repays the total loan of Rs 118000 by paying every month starting with the first installment of Rs 1000. He increases the installment by Rs 100 every month. (i) What amount will he pay as the last installment of loan? (ii) On 5th of every month, the amount of instalment is directly transferred from his bank account. Therefore, Anil ensures sufficient funds in his bank account before 5th of every month. What values are depicted by Anil in this act?

770) If sum of first 6 terms of an AP is 36 and that of the first 16 terms is 256, then find the sum of first 10 terms.

771) Find the sum of first 17 terms of an AP, where 4th and 9th terms are -15 and - 30, respectively.

772) 12th term of an AP is 213 and the sum of its four terms is 24, then what is the sum of its first 10 terms?

773) Sum of the first n terms of an AP is $5n^2 - 3n$ Find the AP and also find its 16th term.

774) The sum of the first, third and seventeenth terms of an AP is 216. Find the sum of the first 13 terms of the AP.

775) If four numbers are in AP such that their sum is 50 and the greatest number is 4 times the least, then find the numbers.

776) If there are (2n + 1) terms in an AP, then prove that the ratio of the sum of odd terms and the sum of even terms is(n + 1) : n

777) Find the number of terms in the series $20, 19\frac{1}{3}, 18\frac{2}{3}, \ldots$, of which the sum is 300. Explain the double answer.

778) The sum of the first term and the fifth term of an ascending AP is 26 and the product of the second term by the fourth term is 160. Find the sum of the first seven terms of this AP.

779) The sum of the first n terms of an AP whose first term is 8 and common difference is 20, is equal to the sum of first 2n terms of another AP whose first term is -30 and the common difference is 8. Find the value of n.

780) Find the sum of a + b, a - b, a - 3b,... upto 22 terms.

781) Find the sum of all two digit numbers which divided by 3 leaves 1 as remainder.

782) In an AP, the sum of first n terms is $\frac{3n^2}{2} + \frac{5n}{2}$. Find its 25th term.

783) Find the sum of those integers between 1 and 500, which are multiples of 2 as well as of 5.

784) Examine that the list of numbers 13, 10, 7, 4,... form an AP. If it form an Ap, write the next two terms.

785) Examine that the list of numbers obtained from following situation, will be in the form of an AP.
"Amount left with Sandeep (in RS) out of the total amount of RS.12000 which he had in the beginning, when he spends RS.500 in the beginning of every month."

786) Find the common difference of the following AP is:
3, -2, -7, -12,....

787) Write an AP having 4 as the first term and -3 as the common difference.

788) Check that the list of numbers defined by a_n =3n + 2 is an AP or not. If it is a an AP, then find the common difference of it. Also, write the first four terms of the list of numbers.

789) Find the 20th term of the sequence 7,3,-,1,-5...

790) How many terms are there in the sequence 3,6,9,12,...,111?

791) Which term of the AP: 21, 18, 15,.... is -81?

792) Find the sum of the first 20 terms of an AP in which a=1 and 20th term=58.

793) Find the sum of the first 24 terms of an AP, whose nth term is given by

794) Find the sum of first 10 terms of AP is 140 and the sum of first 16 terms is 320, then find the sum of first m terms.

795) If the sum of first n terms of an AP is given by $S_n=6n+7n^2$, then find the nth term of the AP. Also, find 10th term of the AP.

796) Find four numbers in AP whose sum is 20 and the sum of whose squares is 120.

797) The sum of first n, 2n and 3n terms of an AP are S_1, S_2 and S_3, respectively. Prove that $S_3 = 3(S_2 - S_1)$.

798) The sum of first n terms of three APs are S_1, S_2, S_3. The first term of each AP is unity and their common differences are 1, 2 and 3, respectively. Prove that $S_1 + S_3 = 2\ S_2$..

799) If an AP has a=1, a_n =20 and S_n=399, then find the value of n.

800) Find the 20^{th} term of an A.P.whose 3^{rd} term is 7 and the seventh term exceeds three times the 3^{rd} term by 2. Also find its nth term (a_n)

801) If 7^{th} term of an A.P.is $\frac{1}{9}$and 9^{th} term is $\frac{1}{7}$, find 63^{rd} term.

802) The ninth term of an A.P. is equal to seven times the second term and twelfth term exceeds five times the third term by 2. Find the first term and the common difference.

803) Determine an AP. whose third term is 9 and when fifth term is subtracted from 8^{th} term, we get 6.

804) The p^{th}, q^{th} and r^{th} terms of an A.P. are a, band c respectively, Show that a(q - r) + b(r - p) + c(p - q) = 0.

805) The sum of n terms of an AP. is $3n^2$ + 5n. Find the A.P. Hence find its 15^{th} term.

806) In an A.P. the sum of first n terms is $\frac{3n^2}{2} + \frac{13n}{2}$ Find the 25^{th} term.

807) The sum of first n terms of three arithmetic progressions are S_1, S_2 and S_3 respectively. The first term of each A.P. is 1 and common differences are 1, 2 and 3 respectively. Prove that S_1+ S_3 = $2S_2$

808) The sums of first n terms of three A.Ps' are S_1,S_2 and S_3 . The first term of each is 5 and their common difference are 2, 4 and 6 respectively. Prove that S_1 + S_3 = $2S_2$.

809) If S_n denotes, the sum of the first n terms of an A.P. Prove that S_{12} = 3(S_8 - S_4).

810) The 14^{th} term of an A.P. is twice its 8^{th} term. If the 6^{th} term is -8, then find the sum of its first 20 terms

811) In an A.P., if the 12^{th} term is -13 and the sum of its first four terms is 24, find the sum of its first ten terms.

812) The tenth term of an A.P., is -37 and the sum of its first six terms is - 27. Find the sum of its first eight terms.

813) If the ratio of the sums of first n terms of two A.P's is (7n + 1) : (4n + 27), find the ratio of their m terms. th terms.

814) If sum of the first n terms of an A.P. is $\frac{1}{2}$ [$3n^2$ + 7n], then find its n^{th} term. Hence write its 20^{th} term.

815) Find the sum of first seventeen terms of A.P. whose 4^{th} and 9^{th} terms are -15 and -30 respectively.

816) The common difference of an A.P.is -2. Find its sum, if first term is 100 and last term is -10.

817) The 16^{th} term of an A.P. is five times its third term. If its 10^{th} term is 41, then find the sum of its first fifteen terms.

818) The 13^{th} term of an A.P.is four times its 3^{rd} term. If the fifth term is 16, then find the sum of its first ten terms.

819) The n^{th} term of an A.P.is given by (- 4n + 15). Find the sum of first 20 terms of this A.P.

820) The sum of first 7 terms of an A.P.is 63 and sum of its next 7 terms is 161. Find 28^{th} term of A.P.

821) The sum of first n terms of an A.P.is given by S_n = $3n^2$ - 4n. Determine the A.P.and the 12^{th} term.

822) Find the number of natural numbers between 101 and 999 which are divisible by both 2 and 5.

823) How many three digit natural numbers are divisible by 7?

824) How many two digit numbers are divisible by 7?

825) How many three digit numbers are such that when divided 7, leave a remainder 3 in each case?

826) How many multiples of 4 lie between 11 and 266?

827) Prove that be n^{th} term of an A.P.can not be n^2 + 1. Justify your answer.

828) Find the sum of all two digit odd positive numbers.

829) Find the sum of the two digit numbers divisible by 6.

830) Find the sum of the integers between 100 and 200 that are divisible by 6

831) Find the number of terms of the A.P.- 12, - 9, - 6,....., 21. If 1 is added to each term of this A.P., then find the sum of all the terms of the A.P.thus obtained.

832) How many terms of the A.P. - 6,-$\frac{11}{2}$ - 5, are needed to give the sum - 25? Explain the double answer.

833) If S_1, S_2, S_3 be the sum of n, 2n, 3n terms respectively of an A.P.Prove that $S_3 = 3(S_2 - S_1)$.

834) A spiral is made up of successive semi-circles with centres alternately at A and B starting with A, of radii 1cm, 2 cm, 3 cm,.... as shown in the figure.What is the total length of spiral made up of eleven consecutive semi-circles? (Use $\pi = 3.14$).

835) Find the common difference of the following AP is:
(ii) 11, 11, 11, 11, ...

836) Find the common difference of the following AP is:
(iii) $5\frac{1}{2}, 9\frac{1}{2}, 13\frac{1}{2}, 17\frac{1}{2}....$

837) Find the common difference of the following AP is:
(iv) $\sqrt{3}, \sqrt{12}, \sqrt{27}, \sqrt{48}, ...$

838) (i) Examine that the list of numbers obtained from the following situation, will be in the form of an AP or not. 'The amount of money in the account every year, wheb Rs. 100 is deposited at compound interest at 4% per annum.'
(ii) The cost of digging a well after every metre of digging when it cost Rs.300 for the first metre and rises by Rs. 65 for each subsequent metre.

839) Check whether 200 is a term ot the list ot numbers 7, 11, 15, 19, ...

840) If the sum of first 7 terms of an AP is 49 and that of first 17 terms is 289, find the sum of its first 20 terms.

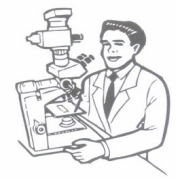
841) The ratio of the 10th term to its 30th term of an AP is 1 : 3 and the sum of its first six terms is 42. Find the first term and the common difference of AP.

842) The sum of the first three terms of an AP is 33. If the Sum of the twice of first and the third term exceeds the third term by 28, then find the AP.

843) The sum of the first two terms of an arithmetic progression is the same as the sum of the first seven terms of the same arithmetic progression.
Can such an arithmetic progression exist? Justify your answer.

Case Study Questions 17 x 4 = 68

844) In a pathology lab, a culture test has been conducted. In the test, the number of bacteria taken into consideration in various samples is all3-digit numbers that are divisible by 7, taken in order.



On the basis of above information, answer the following questions.
(i) How many bacteria are considered in the fifth sample?
(a) 126 (b) 140 (c) 133 (d) 149
(ii) How many samples should be taken into consideration?
(a) 129 (b) 128 (c) 130 (d) 127
(iii) Find the total number of bacteria in the first 10 samples.

(a)	(b)	(c)	(d)
1365	**1335**	**1302**	**1540**

(iv) How many bacteria are there in the 7^{th} sample from the last?
(a) 952 (b) 945 (c) 959 (d) 966
(v) The number of bacteria in 50^{th} sample is
(a) 546 (b) 553 (c) 448 (d) 496

845) In a class the teacher asks every student to write an example of A.P. Two friends Geeta and Madhuri writes their progressions as -5, -2, 1,4, ... and 187, 184, 181, ... respectively. Now, the teacher asks various students of the class the following questions on these two progressions. Help students to find the answers of the questions.

(i) Find the 34^{th} term of the progression written by Madhuri.

(a) 286 (b) 88 (c) -99 (d) 190

(ii) Find the sum of common difference of the two progressions.

(a) 6 (b) -6 (c) 1 (d) 0

(iii) Find the 19^{th} term of the progression written by Geeta.

(a) 49 (b) 59 (c) 52 (d) 62

(iv) Find the sum of first 10 terms of the progression written by Geeta.

(a) 85 (b) 95 (c) 110 (d) 200

(v) Which term of the two progressions will have the same value?

(a) 31 (b) 33 (c) 32 (d) 30

846) Meenas mother start a new shoe shop. To display the shoes, she put 3 pairs of shoes in 1^{st} row,S pairs in 2^{nd} row, 7 pairs in 3^{rd} row and so on.

On the basis of above information, answer the following questions.

(i) If she puts a total of 120 pairs of shoes, then the number of rows required are

(a) 5 (b) 6 (c) 7 (d) 10

(ii) Difference of pairs of shoes in 17^{th} row and 10^{th} row is

(a) 7 (b) 14 (c) 21 (d) 28

(iii) On next day, she arranges x pairs of shoes in 15 rows, then x =

(a) 21 (b) 26 (c) 31 (d) 42

(iv) Find the pairs of shoes in 30^{th} row.

(a) 61 (b) 67 (c) 56 (d) 59

(v) The total number of pairs of shoes in 5^{th} and 8^{th} row is

(a) 7 (b) 14 (c) 28 (d) 56

847) Anuj gets pocket money from his father everyday. Out of the pocket money, he saves Rs 2.75 on first day, Rs 3 on second day, Rs 3.25 on third day and so on.
On the basis of above information, answer the following questions .

(i) What is the amount saved by Anuj on 14^{th} day?

(a) Rs 6.25 **(b) Rs 6.50** **(c) Rs 6.75** **(d) Rs**

(ii) What is the total amount saved by Anuj in 8 days?

(a) Rs 18 **(b) Rs 33** **(c) Rs 24** **(d) Rs 29**

(iii) What is the amount saved by Anuj on 30^{th} day?

(a) Rs 10 **(b) Rs 12.75** **(c) Rs 10.25** **(d) Rs 9.75**

(iv) What is the total amount saved by him in the month of June, if he starts savings from 1^{st} June?

(a) Rs 191 **(b) Rs 191.25** **(c) Rs 192** **(d) Rs 192.5**

(v) On which day, he save tens times as much as he saved on day-I?

(a) 9^{th} **(b) 99^{th}** **(c) 10^{th}** **(d) 100^{th}**

848) In a board game, the number of sea shells in various cells forms an A.P. If the number of sea shells in the 3^{rd} and 11^{th} cell together is 68 and number of shells in 11^{th} cell is 24 more than that of 3^{rd} cell, then answer the following
questions based on this data.

(i) What is the difference between the number of sea shells in the 19^{th} and 20^{th} cells?

(a) 2 **(b) 3** **(c) 8** **(d) 7**

(ii) How many sea shells are there in the first cell?

(a) 52 **(b) 18** **(c) 16** **(d) 54**

(iii) How many total sea shells are there in first 13 cells?

(a) 442 **(b) 221** **(c) 204** **(d) Can't be determined**

(iv) Altogether, how many sea shells are there in the first 5 cells?

(a) 220 (b) 125 (c) 96 (d) 110

(v) What is the sum of number of sea shells in the 7^{th} and 9^{th} cell?

(a) 42 **(b) 32** **(c) 74** **(d) 80**

849) Amit was playing a number card game. In the game, some number cards (having both +ve or -ve numbers) are arranged in a row such that they are following an arithmetic progression. On his first turn, Amit picks up 6^{th} and 14^{th}card and finds their sum to be -76. On the second turn he picks up 8^{th} and 16^{th}card and finds their sum to be -96. Based on the above information, answer the following questions.

(i) What is the difference between the numbers on any two consecutive cards?

(a) 7 (b) -5 (c) 11 (d) -3

(ii) The number on first card is

(a) 12 (b) 3 (c) 5 (d) 7

(iii) What is the number on the 19^{th} card?

(a) -88 (b) -82 (c) -92 (d) -102

(iv) What is the number on the 23^{rd} card?

(a)	**(b)**	**(c)**	**(d)**
-103	**-122**	**-108**	**-117**

(v) The sum of numbers on the first 15 cards is

(a)	**(b)**	**(c)**	**(d)**
-840	**-945**	**-427**	**-420**

850) While playing a treasure hunt game, some clues (numbers) are hidden in various spots collectively forms an A.P. If the number on the n^{th} spot is 20 + 4n, then answer the following questions to help the player in spotting the clues.

(i) Which number is on the first spot?

(a) 20 (b) 24 (c) 16 (d) 28

(ii) Which number is on the $(n - 2)^{th}$ spot?

(a)	**(b)**	**(c)**	**(d)**
16+4n	**24+4n**	**12+4n**	**28+4n**

(iii) Which number is on the 34^{th} spot?

(a) 156 (b) 116 (c) 120 (d) 160

(iv) What is the sum of all the numbers on the first 10 spots?

(a) 410 (b) 420 (c) 480 (d) 410

(v) Which spot is numbered as 116?

(a) 5^{th} (b) 8^{th} (c) 9^{th} (d) 24^{th}

851) A sequence is an ordered list of numbers. A sequence of numbers such that the difference between the consecutive terms is constant is said to be an arithmetic progression (A.P.).

On the basis of above information, answer the following questions.

(i) Which of the following sequence is an A.P.?

(a) 10,24,39,52,.... **(b) 11,24,39,52, ...** **(c) 10,24,38,52, ...** **(d) 10, 38, 52, 66, ...**

(ii) If x, y and z are in A.P., then

(a) x + z = y **(b) x - z = y** **(c) x + z = 2y** **(d) None of these**

(iii) If a_1 a_2, a_3 ..... , a_n are in A.P., then which of the following is true?

(a) $a_1 + k$, $a_2 + k$, $a_3 + k$, , $a_n + k$ are in A.P., where k is a constant.

(b) $k - a_1$ $k - a_2$, $k - a_3$, , $k - a_n$ are in A.P., where k is a constant.

(c) ka_1, ka_2, ka_3 ..... , ka_n are in A.P., where k is a constant.

(d) All of these

(iv) If the n^{th} term (n > 1) of an A.P. is smaller than the first term, then nature of its common difference (d) is

(a) d > 0 (b) d < 0

(c) d = 0 (d) Can't be determined

(v) Which of the following is incorrect about A.P.?

(a) All the terms of constant A.P. are same.

(b) Some terms of an A.P. can be negative.

(c) All the terms of an A.P. can never be negative.

(d) None of these

852) Jack is much worried about his upcoming assessment on A.P. He was vigorously practicing for the exam but unable to solve some questions. One of these questions is as shown below. If the 3^{rd} and the 9^{th} terms of an A.P. are 4 and - 8 respectively, then help Jack in solving the problem.

(i) What is the common difference?

(a) 2 (b) -1 (c) -2 (d) 4

(ii) What is the first term?

(a) 6 (b) 2 (c) -2 (d) 8

(iii) Which term of the A.P. is -160?

(a) 80^{th} (b) 85^{th} (c) 81^{th} (d) 84^{th}

(iv) Which of the following is not a term of the given A.P.?

(a) -123 (b) -100 (c) 0 (d) -200

(v) What is the 75^{th} term of the A.P.?

(a) -140 (b) -102 (c) -150 (d) -158

853) Do you know, we can find A.P. in many situations in our day-to-day life. One such example is a tissue paper roll, in which the first term is the diameter of the core of the roll and twice the thickness of the paper is the common difference. If the sum of first n rolls of tissue on a roll is $S_n = 0.1\ n^2 + 7.9n$, then answer the following questions.

(i) Find S_{n-1}.

(a) $0.1n^2 - 0.2n - 7.8$ **(b) $0.1n^2 - 7.9n$** **(c) $0.1n^2 + 7.7n - 7.8$** **(d) None of these**

(ii) Find the radius of the core.

(a) 8 cm **(b) 4 cm** **(c) 16 cm** **(d) Can't be determined**

(iii) S_2 =

(a) 16.2 **(b) 8.2** **(c) 2.8** **(d) 4.8**

(iv) What is the diameter of roll when one tissue sheet is rolled over it?

(a) 7.6 cm **(b) 7.9 cm** **(c) 8.1 cm** **(d) 8.2 cm**

(v) Find the thickness of each tissue sheet

(a) 2 cm **(b) 1 cm** **(c) 1 mm** **(d) 2 mm**

854) The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

(i) Find the production during first year.

(a) Rs. 5000 **(b) Rs. 2200** **(c) Rs. 10000** **(d) none of these**

(ii) Find the production during 8th year

(a) Rs. 7200 **(b) Rs. 22000** **(c) Rs. 20400** **(d) none of these**

(iii) Find the production during first 3 years.

(a) Rs. 21600 **(b) Rs. 22000** **(c) Rs. 20400** **(d) none of these**

(iv) In which year, the production is Rs. 29,200.

(a) 10 **(b) 11** **(c) 12** **(d) 13**

(v) Find the difference of the production during 7th year and 4th year.

(a) Rs. 5000 **(b) Rs. 2200** **(c) Rs. 10000** **(d) none of these**

855)

(a) Find the total number of rows of candies.

(i) 12 (ii) 10 (iii) 14 (iv) 8

(b) How many candies are placed in last row?

(i) 22 (ii) 21 (iii) 24 (iv) 18

(c) Find the difference in number of candies placed in 7th and 3rd row.

(i) 8 (ii) 10 (iii) 12 (iv) 14

(d) If Aditya decides to make 15 rows, then how many total candies will be placed by him with the same arrangement?

(i) 200 (ii) 150 (iii) 255 (iv) 210

(e) Find the number of candies in 12th row.

(i) 21 (ii) 30 (iii) 25 (iv) 19

856) In a school, students thought of planting trees in and around the school to reduce air pollution. It was decided that each section of each class would plant twice as many plants as the class standard. There were 3 sections of each standard from 1 to 12. So, if there are three sections in class 1 say 1A, 1B and 1C, then each section would plant 2 trees. Similarly, each section of class 2 would plant 4 trees and so on. Thus, the number of trees planted by classes 1 to 12 formed an AP given by 6, 12, 18,...

(a) What is the common difference of the AP formed

(i) 6 (ii) 5 (iii) 3 (iv) 2

(b) What will be the nth term of the AP formed?

(i) 5n (ii) 6n (iii) 5n+6 (iv) 6n+6

(c) How many trees will be planted by the students of all the sections of class 8?

(i) 42 (ii) 48 (iii) 54 (iv) 60

(d) Find the total number of trees planted by class 12 students.

(i) 54 (ii) 72 (iii) 66 (iv) None of these

(e) What will be the third term from the end of the AP formed?

(i) 72 (ii) 66 (iii) 60 (iv) 54

857) India is competitive manufacturing location due to the low Cost of manpower and strong technical and engineering capabilities contributing to higher quality production runs. The production of TV sets in a factory increases uniformly by a fixed number every year. It produced 16000 sets in 6th year and 22600 in 9th year.

Based on the above information,answer the following questions:

(i) Find the production during first year.

(ii) Find the production during 8th year.

(iii) Find the production during first 3 yr.

(iv) In which year, the production is 29200.

(v) Find the difference of the production during 7th year and 4th year.

858) Your friend Veer wants to participate in a 200 m race. He can currently run that distance in 51 s and with each day of practice it takes him 2s less. He wants to do in 31 s.

(i) Which of the following terms are in AP for the given situation?

(a) 51, 53, 55.... (b) 51, 49, 47 ....

(c) -51, -53, -55 .... (d) 51, 55, 59...

(ii) What is the minimum number of days he needs to practice till his goal is achieved?

(a) 10 (b) 12 (c) 11 (d) 9

(iii) Which of the following term is not in the AP of the above given situation?

(a) 41 (b) 30 (c) 37 (d) 39

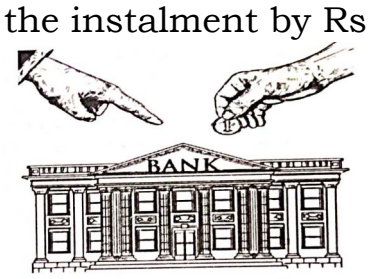
(iv) If nth termn of an AP is given by $a_n = 2n + 3$, then common difference of an AP is

(a) 2 (b) 3 (c) 5 (d) 1

(v) The value of x, for which 2x, x + 10, 3x + 2 are three consecutive terms of an AP

(a) 6 (b) -6 (c) 18 (d) -18

859) Your elder brother wants to buy a car and plans to take loan from a bank for his car. He repays his total loan of Rs 118000 by paying every month starting with the first instalment of Rs 1000. If he increases the instalment by Rs 100 every month, answer the following:



(i) The amount paid by him in 30th instalmnent is

(a) 3900 (b) 3500 (c) 3700 (d) 3600

(ii) The amount paid by him in the 30 instalments is

(a) 37000 (b) 73500 (c) 75300 (d) 75000

(iii) What amount does he still have to pay after 30th instalment?

(a) 45500 (b) 49000 (c) 44500 (d) 54000

(iv) If total instalments are 40, then amount paid in the last instalment?

(a) 4900 (b) 3900 (c) 5900 (d) 9400

(v) The ratio of the 1st instalment to the last instalment is

(a) 1 : 49 (b) 10 : 49 (c) 10 : 39 (d) 39 : 10

860) Manpreet Kaur is the national record holder for women in the shot-put discipline. Her throw of 18.86 m at the Asian Grand Prix in 2017 is the biggest distance for an Indian female athlete.

Keeping her as a role model, Sanjitha is determined to earn gold in Olympics one day

Initially her throw reached 7.56 m only. Being an athlete in school, she regularly practiced both in the mornings and in the evenings and was able to improve the distance by 9 cm every week.

During the special camp for 15 days, she started with 40 throws and every day kept increasing the number of throws by 12 to achieve this remarkable progress.

Based on the above information, answer the following questions.

(i) How many throws Sanjitha practiced on 11th day of the camp?

(ii) What would be Sanjitha's throw distance at the end of 6 months? Or When will she be able to achieve a throw of 11.16 m?

(iii) How many throws did she do during the entire camp of 15 days ?

5 Marks 167 x 5 = 835

861) In which of the following situations, does the list of numbers involved make an arithmetic progression, and why?
(i) The taxi fare after each km when the fare is Rs.15 for the first km and Rs. 8 for each additional km.
(ii) The amount of air present in a cylinder when a vacuum pump removes $\frac{1}{4}$ of the air remaining in the cylinder at a time.
(iii) The cost of digging a well after every metre of digging, when it costs Rs.150 for the first metre and rises by Rs.50 for each subsequent metre.
(iv) The amount of money in the account every year, when Rs.10000 is deposited at compound interest at 8% per annum.

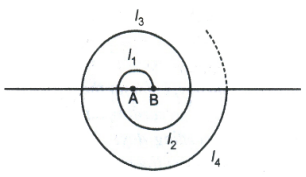
862) Find the sums given below: $7 + 10\frac{1}{2} + 14 + ... + 84$

863) Find the sums given below: $34 + 32 + 30 + ... + 10$

864) Find the sums given below: $-5 + (-8) + (-11) + ... + (-230)$

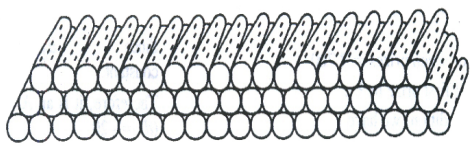
865) If the sum of first 7 terms of an AP is 49 and that of first 17 terms is 289, find the sum of its first n terms.

866) A spiral is made up of successive semicircles, with centres alternately at A and B, starting with centre at A, of radii 0.5 cm, 1.0 cm, 1.5 cm, 2.0 cm, ... as show in fig. What is the total length of such a spiral made-up of 13 consecutive semicircles? (Take $\pi = \frac{22}{7}$)



(Length of successive semicircles is l_1, l_2, l_3, l_4, . . . with centres at A, B,. . ., respectively.]

867) 200 logs are stacked in the following manner: 20 logs in the bottom row, 19 in the next row, 18 in the row next to it and so on.
(i) In how many rows are the 200 logs placed and how many logs are in the top row?
(ii) Which value is depicted in the pattern of log?



868) Find the 31st term of an AP, whose 11th term is 38 and the 16th term is 73.

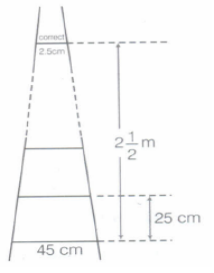
869) The first and the last terms of an AP are 17 and 350, respectively. If the common difference is 9, then how many terms are there and what is their sum?

870) If the sum of the first n terms of an AP is $4n - n^2$, then what is the first term (i.e S_1)? What is the sum of first two terms? What is the second term? Similarly, find the 3rd, 10th and the nth terms.

871) Which term of the AP : 121, 117, 113, . . ., is its first negative term? [Hint : Find n for $a_n < 0$]

872) 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 houses following it. Find the value of X. [$S_{x-1} = S_{49} - S_x$]

873) A ladder has rungs 25 cm apart. The rungs decrease uniformly in length from 45 cm at the bottom to 25 cm at the top. If the top and the bottom rungs are $2\frac{1}{2}$m apart, then what is the length of the wood required for the rungs? [Number of rungs $= \frac{250}{25} + 1$]

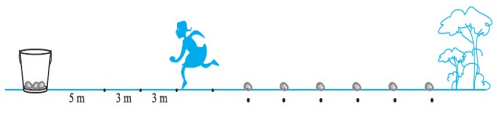


874) In the following APs, find the missing terms in the boxes :
(i) 2, □, 26 (ii) □, 13, □, 3
(iii) 5, □, □, $9\frac{1}{2}$ (iv) −4, □, □, □, □, 6
(v) □, 38, □, □, □, −22

875) Find the sum of first 24 terms of the list of numbers whose nth term is given $a_n = 3 + 2n$

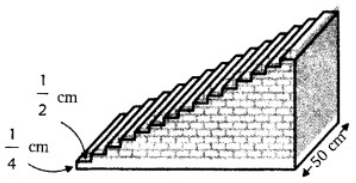
876) A manufacturer of TV sets produced 600 sets in the third year and 700 sets in the seventh year. Assuming that the production increases uniformly by a fixed number every year, find :
(i) the production in the 1st year
(ii) the production in the 10th year
(iii) the total production in first 7 years

877) In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line (see Fig)



A competitor starts from the bucket, picks up the nearest potato, runs back with it, drops it in the bucket, runs back to pick up the next potato, runs to the bucket to drop it in, and she continues in the same way until all the potatoes are in the bucket. What is the total distance the competitor has to run? [To pick up the first potato and the second potato, the total distance (in metres) run by a competitor is 2 x 5 + 2 x (5 + 3)]

878) A small terrace at a football ground comprises of 15 steps each of which is 50 m long and built of solid concrete.
Each step has a rise of $\frac{1}{4}$ m and a tread of $\frac{1}{2}$ m. (see Fig) Calculate the total volume of concrete required to build the terrace. [Hint : Volume of concrete required to build the first step $= \frac{1}{4} \times \frac{1}{2} \times 50\ \text{m}^3$]



879) If the sum of first 4 terms of an AP is 40 and that of first 14 terms is 280, find the sum of its n terms.

880) The first and the last terms of an AP are 8 and 350 respectively. If its common difference is 9, how many terms are there and what is their sum?

881) How many multiples of 4 lie between 10 and 250? Also find their sum.

882) Find the common difference of an AP whose first term is 5 and the sum of its four terms is half the sum of the next four terms.

883) An AP consists of 21 terms. The sum of the three terms in the middle is 129 and of the last three is 237. Find the AP.

884) Deepa has to buy a Scotty. She can buy Scotty either making cash down payment of Rs.25,000 or by making 15 monthly instalments as below.
1st month - Rs.3425, IInd month - Rs.3225, IIIrd month - Rs. 3025, IVth month - Rs.2825 and so on.
(i) Find amount of 6th instalment.
(ii) Total amount paid in 15 instalments.

885) A manufacturer of laptop produced 6000 units in 3rd year and 7000 units in the 7th year. Assuming that production increases uniformly by a fixed number every year, find
(i) the production in the 1st year,
(ii) the production in the 5th year,
(iii) the total production in 7 years.

886) Find the sum of the integers between 100 and 200 that is divisible by 9.

887) Find the sum of the integers between 100 and 200 that is not divisible by 9.

888) The students of a school decided to beautify the school on the Annual Day by fixing colourful flags on the straight passage of the school. They have 27 flags to be fixed at intervals of every 2m. The flags are stored at the position of the middle most flag. Ruchi was given the responsibility of placing the flags. Ruchi kept her books where the flags were stored. She could carry only one flag at a time. How much distance did she cover in completing this job and returning back to collect her books? What is the maximum distance she travelled carrying a flag?

889) If the sum of first 6 terms of an AP is 36 and that of the first 16 terms is 256, find the sum of first 10 terms.

890) Kanoka was given her pocket money on Jan 1st, 2008. She puts Rs.1 on day 1, Rs.2 on day 2, Rs.3 on day 3, and continued doing so til the end of the month, from this money into her piggy bank. She also spent Rs.204 of her pocket money, and found that at the end of the month she still had Rs.100 with her. How much was her pocket money for the month?

891) Find the sum of all three-digit numbers each of which leaves the remainder 2, when divided by 3.

892) The sum of the first five terms of an AP and the first seven terms of the same AP is 167. If the sum of the first ten terms of this AP is 235, find the sum of its first twenty terms.

893) Deepak repays his total loan of Rs.1,18,000 by paying every month starting with the first instalment of Rs.1000. If he increase the instalment by Rs.100 every month, what amount will be paid as the last instalment of loan? What amount of loan he still have to pay after the 30th instalment?

894) If S_1 , S_2 , S_3 are the sum of n terms of three APs, the first term of each being unity and the respective common difference being 1, 2, 3; prove that $S_1 + S_3 = 2S_2$

895) If the pth terms of an AP is $\frac{1}{q}$ and the qth term is $\frac{1}{p}$, show that the sum of pq terms is $\frac{1}{2}$ (pq + 1).

896) 150 workers were engaged to finish a piece of work in a certain number of days. Four workers dropped the second day, four more workers dropped the third day and so on. It takes 8 more days to finish the work now. Find the number of days in which the work was completed.

897) Interior angles of a polygon are in AP. If the smallest angle is 120^o and common difference is 5^o , find the number of sides of the polygon.

898) Sehaj Batra gets pocket money from his father every day. Out of the pocket money, he says money for poor people in his locality. On 1st day he saves Rs.27.5. On each succeeding day he increases his saving by Rs.2.5. Find
(i) the amount saved by Sehaj on 10th day,
(ii) the amount saved by Sehaj on 25th day, and
(iii) the total amount saved by Sehaj in 30 days.

899) The ratio of the 11th term to the 18th term of an AP is 2 : 3. Find the ratio of the 5th term to the 21st term, and also the ratio of the sum of the first five terms to the sum of the first five terms to the sum of the first 21 terms.

900) Show that the sum of an AP whose first term is a, the second term b and the last term c, is equal to $\frac{(a+c)(b+c-2a)}{2(b-a)}$.

901) A long a road lies a odd number of stones placed at intervals of 10 metres. These stones have to be assembled around the middle stone. A person can carry only one stone at a time. A man carried the job with one of the end stones by carrying them in succession. In carrying all the stones he covered a distance of 3 km. Find the number of stones.

902) In an AP of 50 terms, the sum of first 10 terms is 210 and the sum of its last 15 terms is 2565. Find the AP.

903) In a school, students decided to plant trees in and around the school to reduce air pollution. It was decided that the number of trees, that each section of each class will plant, will be double of the class in which they are studying. If there are 1 to 12 classes in the school and each class has two sections, find how many trees were planted by the students. Which values is shown in this questions?

904) If S_n denotes the sum of the first n terms of an AP, prove that $S_{30} = 3(S_{20} - S_{10})$.

905) Find the 60th term of the AP 8, 10, 12,..... if it has a total of 60 terms and hence find the sum of its last 10 terms.

906) Find the middle term of the sequence formed by all three-digit numbers which leave a remainder 3, when divided by 4. Also, find the sum of all numbers on both sides of the middle terms separately.

907) A thief runs with a uniform speed of 100 m/minute. After one minute, a policeman runs after the thief to catch him. He goes with a speed of 100 m/minute in the first minute and increases his speed by 10 m/minute every succeeding minute. After how many minutes the policeman will catch the thief?

908) The houses in a row are numbered consecutively from 1 to 49. Show that three exists a value of X such that sum of numbers of houses preceding the house numbered X is equal to sum of the numbers of houses following X.

909) Jobanpreet applied for a teaching job and got selected. She has been offered the job with a starting monthly salary of Rs.12500 with an annual increment of Rs.1250. Find her salary after 15 years of service. Also, find the total amount received by Jobanpreet in 15 years.

910) A sum of Rs.5000 is to be used to give eight cash prizes to students of a school for their overall academic performance. If each prize is Rs.50 less than its preceding prize, find the value of each of the prizes.

911) The sum of 4th and 6th terms of an A.P. is 38 and sum of 5th and 10th terms of an A.P. is 58. Find the A.P.

912) The sum of 3rd and 5th terms of an A.P. is 38 and sum of 7th and 10th terms is 83. Find the A.P.

913) The sum of first 8 terms of an arithmetic progression is 156. The ratio of its 12th term to its 68th term is 1 : 5. Calculate the first term and the fifteenth term.

914) The ratio of the sum of n terms ot two A.P.s is (7n + 1) : (4n + 27). Find the ratio of their mth term.

915) The sum of 4th and 8th terms of an A.P. is 24 and the sum of the 6th and 10th terms is 34. Find the first term and the common difference of the A.P.

916) A sum of Rs.1600 is to be used to give ten cash prizes to students of a school for their overall academic performance. If each prize is Rs.20 less than its preceding prize, find the value of each of the prizes

917) The 17th term of an A.P. is 5 more than twice its 8th term. If the 11th term of the A.P. is 43. then find its nth term.

918) If the sum of first m terms of an A.P. is n and the sum of first n term is m, then show that the sum of its first (m+n) terms is -(m+n).

919) A thief, after committing a theft, runs at a uniform speed of 50 m/minute. After 2 minutes, a policeman runs to catch him. He goes 60 m in first minute and increases his speed by 5 m/minute every succeeding minute. After how many minutes, the policeman will catch the thief?

920) Yasmeen saves Rs.32 during the first month, Rs.36 in the second month and Rs.40 in the third month. If she continues to save in this manner, in how many months will she save Rs.2000?

921) Solve the equation - 4 + (-1) + 2 + ...+ x = 437

922) Jaspal Singh repays his total loan of Rs.118000 by paying every month starting with the first instalment of Rs.1000. If he increases the instalment by Rs.100 every month,
(i) What will be paid by him in the 30th instalment?
(ii) What amount of loan does he still have to pay after the 30th instalment?

923) In which of the following situations, does the list of numbers involved make an arithmetic progression and why?
(i) The taxi fare after each km when the fare is Rs 15 for the first kilometer and Rs 8 for each additional kilometer.
(ii) The amount of air present in a cylinder when a vacuum pump removes 1/4 of the air remaining in the cylinder at a time.
(iii) The cost of digging a well after every meter of digging, when is costs Rs 150 for the first meter and rises by Rs 50 for each subsequent meter.
(iv) The amount of money in the account every year, when Rs 10000 is deposited at compound interest at 8% per annum.

924) Write first four terms of the AP, when the first term a and the common difference d are given as follows
(i) a = 10,d = 10
(ii) a = -2, d = 0
(iii) a = 4, d = -3
(iv) $a = -1, d = \frac{1}{2}$
(v) a = -1.25, d = -0.25

925) Which of the following are APs? If they form an AP, then find the common difference d and write three more terms. $-\frac{1}{2}, -\frac{1}{2}, -\frac{1}{2} - \frac{1}{2}, \ldots$

926) In the following APs, find the missing terms of the boxes.
2, - , 26

927) In the following APs, find the missing terms of the boxes. -,13,-,3

928) In the following APs, find the missing terms of the boxes.
$5, -, -, 9\frac{1}{2}$

929) In the following APs, find the missing terms of the boxes. -4, - , -, -, -, 6

930) In the following APs, find the missing terms of the boxes.
-, 38, -, -, -, -22

931) Which term of the AP 3, 8, 13, 18,.... is 78?

932) Find the sum of first n terms from the following APs. 2, 7, 12,....., upto 10 terms

933) Find the sum of first n terms from the following APs. -37, -33, -28,...., upto 12 terms.

934) Find the sum of first n terms from the following APs. 0.6, 1.7, 2.8,...., upto 100 terms

935) Find the sum of first n terms from the following APs. $\frac{1}{15}, \frac{1}{12}, \frac{1}{10}, \ldots,$ upto 11 terms.

936) Find the sum of first n terms from the APs given below. $7 + 10\frac{1}{2} + 14, \ldots + 84$

937) Find the sum of first n terms from the APs given below. 34+32+30+....+10

938) Find the sum of first n terms from the APs given below. -5 + (-8) + (-11) +... +(-230)

939) In an AP, given a = 5, d = 3, $a_n = 50$, find n and S_n.

940) In an AP, given a = 7, $a_{13} = 35$, find d and S_{13}.

941) In an AP, given $a_{12} = 37, d = 3$, find a and S_{12}.

942) In an AP, given $a_3 = 15, S_{10} = 125$, find d and a_{10}.

943) In an AP, given $a_n = 4, d = 2, S_n = -14$, find n and a.

944) In an AP, given $a_n = 4, n = 8, S_n = 192$, find d.

945) In an AP, given l =28, S =144 and there are total 9 terms, find a.

946) How many terms of the AP 9, 17, 25, ... must be taken to give a sum of 636?

947) If the sum of 7 terms of an AP is 49 and that of 17 terms is 289, then find the sum of n terms.

948) Mamta has two options to buy a house
(i) She can pay a lumpsum amount of Rs 2200000.
(ii) She can pay Rs 400000 cash and balance in 18 annual installments of Rs 100000 plus 10% interest on the unpaid amount.
She prefers the option (i) and denotes 50% of the difference of the costs in the above two options to National Relief Fund.
(a) What amount was donated to National Relief Fund?
(b) By choosing to pay a lumpsum amount and donating 50% of the difference to National Relief Fund, which value is depicted by Mamta?

949) Each year, a tree grows 5 cm less than it did the preceding year. If it grew by 1m in the first year, the in how many years will it have ceased growing?

950) If the mth term of an AP is $\frac{1}{n}$ and nth term is $\frac{1}{m}$, then show that the sum of mn terms is $\frac{1}{2}(mn+1)$.

951) The sum of the first p, q, r terms of an AP are a, b anLEWc, respectively. Show that $\frac{a}{p}(q-r)+\frac{b}{q}(r-p)+\frac{c}{r}(p-q)=0$.

952) Jaipal Singh repays the total loan of Rs 118000 by paying every month starting with the first instalment of Rs 1000. If the increases the instalment by Rs 100 every month, then what amount will be paid by him in the 30th instalment? What amount of loan does he still have to pay after 30th instalment?

953) The ratio of the sums of first m and n terms of an AP is $m^2 : n^2$ Show that the ratio of the mth and nth terms (2m-1) : (2n - 1).

954) If $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is the AM between a and b, then find the value of n.

955) If $a_1, a_2, \ldots, a_{n-1}, a_{n-1}, a_n$ are in AP, then prove that
$\frac{1}{a_1.a_n}+\frac{1}{a_2.a_{n-1}.}+\frac{1}{a_3.a_{n-2}}+\frac{1}{a_n.a_1}=\frac{2}{a_1+a_n}\left(\frac{1}{a_1}+\frac{1}{a_2}+\ldots\frac{1}{a_n}\right)$

956) Ram asks the labour to dig a well upto a depth of 10m. Labour charges Rs 150 for first metre and Rs 50 for each subsequent metres. As labour was uneducated, he claims Rs 550 for the whole work.
(i) What should be the actual amount to be paid to the labour?
(ii) What value of Ram is depicted in the question, if he pays Rs 600 to the labour?

957) Nidhi Saves Rs 2 on first day of the month, Rs 4 on second day, Rs 6 on third day, and so on.
(i) What will be her savings in the month of February 212?
(ii) What value is depicted by Nidhi?

958) How many two digits numbers are there between 6 and 120, which are divisible by 6? Ram calculated it by using AP, while Shyam calculated it directly. Which value is depicted by Ram?

959) A man saves Rs 320 during the first month, Rs 360 in the second month, Rs 400 in the third month. If he continues his savings in this list of numbers, then in how man months, will he save Rs 200000?

960) A person buys cash certificates of Rs 125. Thereafter, every year, he buys these certificates of the value exceeding previous year purchase by Rs 25. Find the total value of certificates purchased by him in 20 year.

961) If pth, qth and rth terms of an AP are a, b and c respectively, then show that (a - b) r (b - c) p + (c - a) q = 0.

962) If $a_1, a_2, a_3, \ldots, a_n$ are in AP, where $a_i > 0$ then find the value of $\frac{1}{\sqrt{a_1}+\sqrt{a_2}}+\frac{1}{\sqrt{a_2}+\sqrt{a_3}}+\ldots+\frac{1}{\sqrt{a_{n-1}}+\sqrt{a_n}}$

963) Interior angles of a polygon are in AP. If the smallest angle is 107.5^0 and common difference is,5^0 then find the number of sides of the polygon.

964) An AP consists of 37 terms. The sum of the three middle most term is 225 and the sum of the last three is 429. Find the AP.

965) Find the sum of all three digit numbers which leaves remainder 2, when divided by 3.

966) 360 bricks are stacked in the following manner, 30 bricks in the bottom row, 29 bricks in the next row, 28 bricks in the next to it, and so on. In how many rows, 360 bricks are placed and how many bricks are there in there in the top row?

967) Sathyam purchases every year bank certificates of value exceeding the last year purchase by Rs 25. After 20 yr, he find that the total value of the certificate purchased by him is Rs 7250. Find the value of the certificate purchased (i) in the first year. (ii) in the 13th year.

968) The third term of an AP is 7 and the seventh term exceeds three times the term by 2. Find the first term, the common difference and the sum of first 20 terms.

969) Write the first term and common difference of an AP: 5, 8, 11, 14,...

970) Write the common difference of an AP:
$\sqrt{3}, 2\sqrt{3}, 3\sqrt{3}, . .$

971) Examine that the sequence 7,13,19,25,... is an AP. Also, find the common difference.

972) Find the common difference and the next two terms of the AP : 6,12,18,...

973) Write first three terms of the sequence which is defined by $a_n=5_n+3$.

974) Write the first four terms in each of the list of numbers defined by
(i) $a_n=(-1)^{n-1}n^4$
(ii) $a_n=2n+3$

975) Check that the list of numbers defined by the following term is an AP or not. Also give reason.
$t_n = 4n^3 + 3$

976) Show that the sequence, defined by its nth term $\frac{3+n}{4}$, forms an AP. Also, find the common difference of it.

977) Write next three terms of the given AP:
(a + b),(a + 1) + b,(a +1) + (b + 1),...

978) Examine that the sequence obtained from the following situation, will be in the form of an AP or not.
"The amount of money in the account every year, when RS.100 is deposited at compound interest at 4% per annum.'

979) Find the 11th term of AP: -5, -5/2,0,5/2,...

980) If d=-4, n=7 and a_n =4, then find the value of a.

981) The first term of AP is 5, common difference is 3 and last term is 80. Find the number of terms.

982) Check if 0 is a term of the AP: 31, 28, 25, ...

983) Find p, if the given value of x is the pth term of the following AP : 25, 50, 75, 100, ...; x = 1000

984) The 11th term of an AP is 80 and the 16th term is 110. Find the 31st term.

985) Which term of an AP: 3, 8, 13, 18,.. will be 130 more than its 31st term?

986) In an AP, if a = 10, d = 5 and n = 100, then find the value of a_{100} and also find the 50 th term from the end.

987) A man starts repaying a loan as first instalment of Rs.100. If he increases the instalment by Rs.5 every month, then what amount he will pay in the 30th instalment.

988) Find the sum of 10 terms of an AP: 50,46,42,... .

989) Find the sum of 100 terms of an AP: 2,4,6..., 200.

990) Find the sum of 25 terms of an AP whose nth term is 1-4n.

991) If the sum of first n terms of an AP is given by S_n= n (4n+1), then find the nth term of the AP. Also, find the AP.

992) The sum of three numbers in AP is - 3 and their product is 8. Find the numbers.

993) 228 logs are to be stacked in a store in the following manner: 30 logs in the bottom, 28 in the next row, then 26 and so on, in how many rows can these 228 logs be stacked? How many logs are there in the last row?

994) The sum of four consecutive numbers in an AP is 32 and the ratio of the product of the first and the last terms to the product of the two middle terms is 7:15. Find the numbers.

995) A farmer buys a used tractor for RS.12000. He pays RS. 6000 cash and agrees to pay the balance in annual instalments of RS.500 with 12% interest on unpaid amount. What will the tractor cost him?

996) Solve the equation: 1 + 4 + 7 + 10+...+x = 287

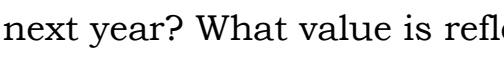
997) Find the sum of the two middle most terms of the AP: $-\frac{4}{3}, -1\frac{-2}{3}, \ldots 4\frac{1}{3}$ [Sum of the two middle most terms = $a_9 + a_{10}$]

998) Rajeev donated RS. 700000 to a school from his life long savings by giving 7 cash prizes to the students for their academic performances. If the worth of each prize is RS.20000 less than the worth of its preceding prize, then find the worth of each prize. What value is depicted from this action?

999) Aditi required Rs 2500 after 12 weeks to send her daughter to school. She saved Rs.100 in the first week and increased her weekly saving by Rs 20 every week. Find whether she will be able to send her daughter after 12 weeks. What value is generated in the above situation?

1000) The sum of three numbers in AP. is 12 and sum of their cubes is 288. Find the numbers.

1001) In a potato race, a bucket is placed at the starting point, which is 5 m from the first potato, and the other potatoes are placed 3 m apart in a straight line. There are ten potatoes in the line. (see fig.)



A competitor starts from the bucket, picks up the nearest potato, runs back with it, drops it in the bucket, runs back to pick up the next potato, runs to the bucket to drop it in, and she continues in the same way until all the potatoes are in the bucket. What is the total distance the competitor has to run?

[**Hint :** To pick up the first potato and the second potato, the total distance (in metres) run by a competitor is $2 \times 5 + 2 \times (5 + 3)$]

1002) In a school, students thought of planting trees in and around rne scfioof to reduce air pollution. It was decided that the number of trees that each section of each class will plant, will be the same as the class, in which they are studying, e.g., a section of Class I will plant 1 tree, a section of Class II will plant 2 trees and so on till Class XII.There are three sections of each class.
(i) How many trees will be planted by the students?
(ii) Which mathematical concept is used in the above problem?
(iii) Which value is depicted in this problem?

1003) Find the value of a, band c such that the numbers a, 7, b, 23 and c are in AP.

1004) Reshma wanted to save at least Rs 6,500for sending her daughter to school next year (after 12 months). She saved Rs 450 in the first month and raised her savings by Rs 20 every next month. How much will she be able to save in next 12 months? Willshe be able to send her daughter to the school next year? What value is reflected in this questions?

1005) The minimum age of children to be eligible to participate in a painting competition is 8 years. It is observed that the age of youngest boy was 8 years and the ages of rest of participants are having a common difference of 4 months. If the sum of ages of all the participants is 168 years, find the age of eldest participant in the painting competition.

1006) A thief runs with a uniform speed of 10 m/minute. After one minute a policeman runs after, the thief to catch him. He goes with a speed of 100 m/minute in the first minute and increases his speed by 10 m/minute every succeeding minute. After how many minutes the policeman will catch the thief.

1007) If S_n denotes the sum of first n terms of an A.P., prove that, $S_{30} = 3(S_{20} - S_{10})$

1008) The sum of first 20 terms of an A.P.is 400 and sum of first 40 terms is 1600.Find the sum of its first 10 terms.

1009) Find $\left(4 - \frac{1}{n}\right) + \left(7 - \frac{2}{n}\right) + \left(10 - \frac{3}{n}\right) + \ldots\ldots$upto n terms.

1010) An arithmetic progression 5, 12, 19, ... has 50 terms. Find its last term. Hence find the sum of its last 15 terms.

1011) Find the middle terms of the sequence formed by all numbers 9 and 95, which leave a remainder 1 when divided by 3. Also find the sum of the numbers on both sides of the middle term separately.

1012) Find the middle term of the sequence formed by all three-digit numbers which leave a remainder 5 when divided by 7. Also find the sum of all numbers on both sides of the middle term separately.

1013) If the sum of first n terms of an A.P.is given by $S_n = 3n^2 + 4n$.Determine the A.P.and the n^{th} term.

1014) The sum of the 3^{rd} and 7^{th} terms of an A.P. is 6 and their product is 8. Find the sum of first 20 terms of the A.P.

1015) A sum of Rs 280 is to be used towards four prizes. If each prize after the first is Rs 20 less than its preceding prize, find the value of each of the prizes.

1016) In a garden bed, there are 23 rose plants in the first row, 21 are in the 2^{nd}, 19 in 3^{rd} row and so on. There are 5 plants in the last row. How many rows are there of rose plants? Also find the total number of rose plants in the garden.

1017) A sum of Rs 1890 is to be used to give seven cash prizes to students of a school for their overall academic performance. If each prize is Rs 50 less than its preceding prize, find the value of each of the prizes.

1018) If the sum of first m terms of an A.P.is same as the sum of its first n terms ($m \neq n$), show that the sum of its first (m + n) terms is zero.

1019) In an A.P.of 50 terms, the sum of first 10 terms is 210 and sum of its last 15 terms is 2565. Find the A.P.

1020) A student of class X gets pocket money from his mother everyday. Out of the pocket money, she saves money for poor people in her locality. On 1st day she saves Rs. 36. On each succeeding day she increases her saving by Rs. 4.5.
(i) Which mathematical concept and formula is being to used here for solving this question.
(ii) Find the amount saved by student 22th day.

1021) If the mth term of an AP is $\frac{1}{n}$ and nth term is $\frac{1}{m}$, then show that the sum of mn terms is 1

1022) 14, 21, 28, 35, ... and 26, 39, 52, 65, ...are s two arithmetic progressions such that the pth term of the first arithmetic progression is the same as the qth term of the second arithmetic progression, Derive a relationship between p and g. Show your work

1023)