1. a= 1  
   L = 11  
     
   Sn = 36  
   => n( a +L) /2 = 36  
   => n(1+11)= 72  
   => n \*12 = 72  
   => n = 6  
     
     
   No.of terms = 6
2. Sum of first n terms of AP, Sn = 2n2 + 5n Now choose n =1 and put in the above formula,First term = 2+5 = 7 Now put n=2 to get the sum of first two terms = 2x4 + 5x 2= 8 + 10 = 18 This means  first term + second term = 18 but first term =7 as calculated above so, second term = 18-7 = 11 So common difference becomes, 11-7 = 4 So the AP becomes, 7, 11, 15, ....nth term = a + (n - 1)d = 7 + (n-1)4 = 7 + 4n - 4 = 3 + 4n
3. **Sn = 3n² + n**

**d = 6**

If n = 1,

S1 = 3×1²+1

    = 4

S1  = a = 4

1. If 18,a,b,-3 are in AP then:

a-18=-3-b

a+b=18-3

a+b=15

1. A.P1 = -1,(-1+d).....  
   A.P2 = -8,(-8+d).....  
     
   a4 = a+3d  
     
   Difference between their 4th term ;  
   = (-8+3d)-(-1+3d)  
   = -8+3d+1-3d  
   = -8+1  
   = -7
2. N(n+2)
3. 18th and 11th term of an A.P. are in the ratio 3 : 2, then its 21st and 5th terms are in the ratio.

a18 = a + 17d

a11 = a + 10d

Given a18: a11 :: 3:2

So 2(a18) = 3(a11)

  2(a+17d) = 3(a+10d)

 2a + 34d = 3a +30d

 a - 4d = 0

 a = 4d --------(1)

a21 = a + 20d

1. None of these
2. N^2
3. 1
4. a, 7 , b , 23 , c are in AP  
     
   so, 7 - a = b - 7 = 23 - b = c -23  
     
   -b - a = -14  
   a + b = 14 --------(1)  
     
   2b = 30  
   b = 15  
   put this in equation (1)  
     
   a = -1  
     
   now , again ,  
     
   b + c = 46  
   c = 46 -15 = 31
5. 7a7 = 11a11  
   ⇒ 7[a+(7-1d] = 11 [a+(11-1)d]    [∵ an = a + (n-1)d]  
   ⇒ 7(a + 6d) = 11(a + 10d)  
   ⇒ 7a + 42d = 11a + 110d  
   ⇒ 4a + 68d = 0  
   ⇒ 2(2a + 34d) = 0  
   ⇒  2a + 34d = 0  [∵ 2 ≠ 0]  
   ⇒  a + 17d = 0  
   ∴ 18th term of an AP, a18 = a + (18-1)d  
   = a + 17d = 0
6. Sn=1/2(3n^2+7n)

S1=1/2(3+7)=5

S2=1/2(3\*4+7\*2)=26/2=13

We know

S1=a1=5

S2=a1+a2=13

S2-s1=a1+a2-a1

13-5=a2

a2=8

We know d=a2-a1

d=8-5=3

nth term of AP =an=5+(n-1)3

an= 2+3n

Therefore 20th term =

a20= 2+3(20)=62

Hence 20th term of AP is 62

1. a=53

d=48-53

=-5

A.p=a+(n-1)

=53(n-1)-5

= 53-5n+5

=58-5n

Now ,we have to the suitable value of n so that the value of (58-5n)is negative

Let us taken n =11

nth term =58-55

=3

which is not negative

Now putting n=12 we get

nth term. =58-60=2

**This the Frist negative term of the series and it is the 12th term of the A.P**

1. **Sn = n/2(2a+(n-1)d)  given a=1, d=4-1=3 & Sn = 287**

**287 = n/2 (2\*1 +(n-1) 3)**

**287\*2 = n(2 + 3n - 3)**

**574 = 2n + 3n^2 - 3n**

**3n^2 -n - 574 = 0**

**on solving the quadratic equation using formula n= -b + sq.root(b^2 -4ac)**

**-----------------------**

**2a**

**we get   n = 14,  -41/3  n not equal to  -41/3 due to negative nos.**

**n=14**

**Sn = n/2 (a +l)**

**287 = 14/2(1 +x)**

**574 = 14 (1+x)**

**574 / 14 = 1+x**

**41 = 1 + x**

**So, x = 41 - 1**

**x = 40 is the solution**

1. **Let the 3 consecutive numbers be , ( a-d) , a , (a+d)**

**a-d+a+a+d = 24**

**3a=24**

**a=8**

**(a-d).a.(a+d)=440**

**(a^2 - d^2 ) a = 440**

**(8^2 - d^2)8=440**

**d^2 = 9**

**d=+3 or d=-3**

**Terms : (8-3),8,(8+3) ; 5,8,11,.....**

**(8+3),8,(8-3) ; 11,8,5,....**

**18.** **Since, S(n) = n/2[2a + (n - 1)d]**

**Given, S(7) = 63**

**Hence, S(7) = 7/2[2a + 6d] = 63**

**or, 2a + 6d = 18 .... (i)**

**Now, the sum of 14 terms is**

**S(14) = S(first 7) + S(next 7)**

**= 63 + 161**

**= 224**

**19.** **given that, mth term=1/n and nth term=1/m.**

**then ,let a and d be the first term and the common difference of the A.P.**

**so a+(m-1)d=1/n...........(1) and a+(n-1)d=1/m...........(2).**

**subtracting equation (1) by (2) we get,**

**md-d-nd+d=1/n-1/m**

**=>d(m-n)=m-n/mn**

**=>d=1/mn.**

**again if we put this value in equation (1) or (2) we get, a=1/mn.**

**then, let A be the mnth term of the AP**

**a+(mn-1)d=1/mn+1+(-1/mn)=1**

**hence proved.**

20. -11,-7 , -3 ......,49 is in AP

first term = a = -11

common difference =d = a2- a1= -7-(-11) = -7 +11 = 4

last term = l = 49

a +(n-1)d =49

-11+(n-1)4 =49

(n-1)4 =49+11

(n-1)4 = 60

n-1 = 60/4

n-1 = 15

n= 15 +1 =16

number of terms are in AP is 16

middle terms or 8th and 9th terms

a8 = a+7d = -11+7\*4 = -11+28 = 17

a9 = a +8d = -11+8\*4 =-11+32 = 21

21. Let the four parts be a - 3d, a - d, a + d and a + 3d.

Then, a - 3d + a - d + a + d + a + 3d = 56

⇒ 4a = 56

⇒ a = 56/4

⇒ a = 14

Hence, four parts are 14 - 3d, 14 - d, 14 + d and 14 + 3d

Now, According to the Question,

⇒ (14 - 3d) (14 + 3d)/(14 - d) (14 + d) = 5/6

⇒ 196 - 9d²/196 - d² = 5/6

⇒ 6(196 - 9d²) = 5(196 - d²)

⇒ 6 × 196 - 54d² = 5 × 196 - 5d²

⇒ 6 × 196 - 5 × 196 =54d² - 5d²

⇒ (6 - 5) × 196 = 49d²

⇒ d² = 196/49

⇒ d² = 4

⇒ d² = ± 2

The four parts are {14 - 3(± 2), {14 - (± 2)}

Hence, first possible divisions will be 8, 12, 16 and 20.

And the second possible divisions will be 20, 16, 12 and 8.

22. Hello,

 We first find the LCM of 2 and 5 which is 10.

Now all those integers which are multiples of 10 are also the multiples of 2 and 5.

Therefore, multiples of 2 as well as of 5 between 1 and 500 are:

10, 20, 30, ...., 490

Series forms an AP with first term,a=10 and common difference,d=20-10=10.

Let total number of terms of this AP be n.

Therefore, nth term of AP, an = Last term, l= 490

an=a(n-1)d=l;

10+(n-1)10=490;

(n-1)10=480;

n-1=48;

n=48+1=49;

n=49

Thus,sum of n terms of AP is given as:

S₄₉=49/2 (10+490);

      =49/2 (500);

      =49×250=12250

23. Let a be the first term and d be the common difference of the given AP.

Sum of the first n terms is given by

Sn = n/2 {2a + (n - 1)d}

Putting n = 10, we get

S₁₀ = 10/2 {2a + (10 - 1)d}

210 = 5 (2a + 9d)

2a + 9d = 210/5

2a + 9d = 42 ...............(1)

Sum of the last 15 terms is 2565

⇒ Sum of the first 50 terms - sum of the first 35 terms = 2565

S₅₀ - S₃₅ = 2565

⇒ 50/2 {2a + (50 - 1)d} - 35/2 {2a + (35 - 1)d} = 2565

25 (2a + 49d) - 35/2 (2a + 34d) = 2565

⇒ 5 (2a + 49d) - 7/2 (2a + 34d) = 513

⇒ 10a + 245d - 7a + 119d = 513

⇒ 3a + 126d = 513

⇒ a + 42d = 171 ........(2)

Multiply the equation (2) with 2, we get

2a + 84d = 342 .........(3)

Subtracting (1) from (3)

  2a + 84d = 342

  2a + 9d   =  42

-      -         -

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        75d = 300

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 d= 4

Now, substituting the value of d in equation (1)

2a + 9d = 42

2a + 9\*4 = 42

2a = 42 - 36

2a = 6

a = 3

So, the required AP is 3, 7, 11, 15, 19, 23, 27, 31, 35, 39 ........

24. As given his savings are 100+120+140+................+320 is an AP

So

a1=100 , d=a2-a1=120-100=20 , n=12

Sum of series will be

Sn=n/2[2a1+(n-1)d]

Sn=12/2[2\*100+(12-1)20]

Sn=6[200+220]

Sn=6[420]=2520 rupees it means yes she will be able to collect Rs. 2500.