Worksheets of Online class

Session 1

Worksheet 1

1) $1^2+1=2, 2^2+2=6, 3^3+3=12\cdots$ is a sequence.

   a) Write the next term

   b) What is the tenth term of the sequence?

   c) Is 30 a term of the sequence ? If so what is its position?

   d) Is 99 a term of the sequence ?How can we realise it ?

2) Consider the sequence $\frac{1}{7}, \frac{2}{7}, \frac{3}{7}\cdots$

   a) What is the next term of this sequence?

   b) What is the position of 1 in this sequence?

   c) What is the position of 100 in this sequence?

   d) Prove that this sequence contains all natural numbers.

3) The interior angle sum of n sided polygon is $(n-2)\times 180$. Answer the following questions.

   a) Write the angle sum of triangle, quadrilateral, pentagon , hexagon $\cdots$ as a sequence.

   b) What is the tenth term of the sequence?

   c) If these are regular polygons write the sequence of one interior angle.

   d) Write the sequence of exterior angle sum

4) Consider the sequence $0, 3, 8, 15\cdots$. Terms are 1 less than the perfect squares in the order.

   a) Write the next term .

   b) What is its tenth term?

   c) What is the largest two digit term of the sequence?

   d) Which number just below 1000 a term of this sequence?

5) Consider the sequence $1, 6, 11, 16\cdots$

   a) Describe this sequence in three different ways?

   b) Which number just below 100 a term of the sequence?

   c) How many terms are there below 100 in this sequence?

Answers and Explanation

1) a) $4^2 + 4 = 16 + 4 = 20$

b) $x_{10} = 10^2 + 10 = 100 + 10 = 110$

c) $30 = 5^2 + 5$

$x_5 = 30$

d) 99 is not a term of this sequence as all of its terms are even numbers.

2) a) $\frac{4}{7}$

b) $x_7 = \frac{7}{7} = 1$

Seventh term is 1

c) $x_{700} = \frac{700}{100} = 100$

Seven hundredth term is 100

d) For $n = 7, 14, 21 \cdots$ we get the counting numbers $1, 2, 3, \cdots$

3) a) $x_n = (n-2) \times 180$

$x_1 = (3-2) \times 180 = 180$, $x_2 = (4-2) \times 180 = 360$, $x_3 = (5-2) \times 180 = 540 \cdots$

Sequence : $180, 360, 540 \cdots$

b) $x_{10} = (12-2) \times 180 = 1800$

c) $\frac{180}{3}, \frac{360}{4}, \frac{540}{5}, \frac{720}{6} \cdots$

$60, 90, 108, 120 \cdots$

d) $360, 360, 360 \cdots$

4) a) $5^2 - 1 = 24$

b) $10^2 - 1 = 99$

c) 99

d) $31^2 = 1 = 961 - 1 = 960$

5) a) Sequence of numbers having 1 or 6 comes in one's place.

Sequence starting from 1 and adding 5 repeatedly

Sequence of numbers 4 less than the multiples of 5

b) 96

c) There are $2 \times 10 = 20$ terms below 100

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721

Worksheets of Online class

Session 11

Worksheet 11

1) Answer the following questions

   a) Find the sum of first 30 odd numbers.

   b) Using this calculate $3 + 9 + 15 + 21 + \cdots 177$

   c) How many odd numbers from 1 in the order makes the sum 2500?

   d) Find the sum $5 + 15 + 25 + 35 \cdots 155$

2) Answer the following questions

   a) Find the sum of first 25 even numbers

   b) Using this Calculate $6 + 12 + 18 + 24 + \cdots + 150$

   c) How many even numbers from 2 in the order makes the sum 110?

   d) Find the sum $10 + 20 + 30 + \cdots + 100$

3) Answer the following questions

   a) What is the sum of first 20 natural numbers

   b) Using the sum of first 20 natural numbers write the sum of first 20 even numbers.

   c) How much more is the sum of first 20 even numbers than the sum of first 20 odd numbers.

   d) Calcualte $2 + 4 + 6 + 8 + 10 + \cdots + 200$

4) Look at the table given below

```
                1
              3 5 7
            9 11 13 15 17
          19 21 23 25 27 29 31
--------------------------------- -----------
```

   a) Write the number of numbers in each line as a sequence.

   b) How many numbers are there in 20 th line?

   c) Write the numbers in the right end of each line as a sequence?

   d) Algebraic form of this sequence is $2n^2 - 1$. Which number comes in the right end of 20 th line?

   e) Which number comes in the left end of 20 th line.

5) Choose the correct answer 2

a) What is the sum of first 10 even numbers

(a) 100 (b) 110 (c) 120 (d) 130

b) How many odd numbers from 1 in the order makes the sum 100

(a) 20 (b) 13 (c) 10 (d) 15

c) Sum of first 20 even numbers is 420. What is the sum of first 20 natural numbers?

(a) 210 (b) 130 (c) 230 (d) 450

d) Sum of first 20 odd numbers is 400 . What is the sum of first 20 even numbers?

(a) 450 (b) 330 (c) 420 (d) 145

Challengers Academy

Answers and Explanation

1) a) Sum$= 30^2 = 900$

b) $3 + 9 + 15 + 21 + \cdots 177 = 3(1 + 3 + 5 + \cdots + 59)$

To find number of terms in $1, 3, 5, \cdots 59$.

$2n - 1 = 59, 2n = 60, n = 30$

There are 30 odd numbers .Sum 900

$3(1 + 3 + 5 + \cdots + 59) = 3 \times 900 = 2700$

c) $n^2 = 2500, n = \sqrt{2500} = 50$

Sum of first 50 odd numbers is 2500

d) $5 + 15 + 25 + 35 \cdots 155 = 5(1 + 3 + 5 + 7 + \cdots + 31)$

Find number of odd numbers from 1 to 31.

$2n - 1 = 31, 2n = 32, n = 16$

$5(1 + 3 + 5 + 7 + \cdots + 31) = 5 \times 16^2 = 5 \times 256 = 1280$

2) a) Sum $= n(n + 1) = 25 \times (25 + 1) = 25 \times 26 = 650$

b) $6 + 12 + 18 + 24 + \cdots + 150 = 3(2 + 4 + 6 + \cdots 50)$

There are 25 even numbers from $2$to 50. Sum is 650

$3(2 + 4 + 6 + \cdots 50) = 3 \times 650 = 1950$

c) $110 = 10 \times 11 = 10(10 + 1)$

Sum of first 10 even numbers is 110

d) $5+15+25+35 \cdots 155 = 10(1+2+3+\cdots+10) = 10 \times \frac{10(10+1)}{2} = 10 \times 55 = 550$

e) .

3) a) Sum$= \frac{n(n+1)}{2} = \frac{20(20+1)}{2} = 210$

b) Sum $2+4+6+\cdots+40 = 2(1+2+3+\cdots+20) = 2\times 210 = 420$

c) $20^2 = 400$.
20 more

d) $2+4+6+8+10+\cdots+200 = 100(100+1) = 10100$
(There are 100 even numbers upto 200

4) a) $1, 3, 5, 7\cdots$

b) $x_n = 2n-1$, $x_{20} = 2\times 20 - 1 = 39$

c) $1, 7, 17, \cdots$

d) $x_n = 2n^2 - 1$. Number at the end of 20 th line $= 2\times 20^2 - 1 = 2\times 400 - 1 = 799$

5) a) 110

b) 10

c) 210

d) 420

1

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721

Notes of Online class

Session 3

worksheet 3

1) Consider the arithmetic sequence $3, 8, 1318 \cdots$

   a) What is the common difference of the sequence ?

   b) Describe this sequence in another way

2) Multiply each of $1, 2, 3, 4 \cdots$ by 2 and add 3

   a) Write the sequence

   b) What is the common difference ?

   c) What is its tenth term?

   d) Describe this sequence differently

3) Consider the arithmetic sequence $a + 1, a + 2, a + 3 \cdots$

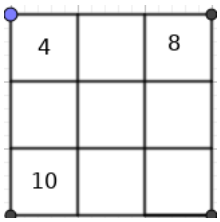
   a) Write two more terms

   b) What is the common difference ?

   c) What is the tenth term?

   d) Write its n th term

4) Some missing spaces are there in the picture. Write suitable numbers in the boxes which makes horizontal , vertical and diagonal numbers in arithmetic se quence



5) Consider the arithmetic sequence $2, 5, 8 \cdots$.
   This the sequence of numbers 1 less than the multiples of 3

   a) What is the common difference ?

   b) Explain the sequence differently

   c) What is its tenth term ?

   d) What is its n th term?

Answers and Explanation

1) a) $d = 8 - 3 = 5$

   b) Sequence of numbers 2 less than multiple of 5

2) a) $1 \times 2 + 3, 2 \times 2 + 3, 2 \times 3 + 3, 2 \times 4 + 3 \cdots$
   $5, 7, 9, 11 \cdots$

   b) $d = 7 - 5 = 2$

   c) $x_{10} = x_1 + 9d = 5 + 9 \times 2 = 23$

   d) Sequence of numbers starting from 5 and adding 7 repeatedly

3) a) $a + 4, a + 5$

   b) 1

   c) $a + 13$

   d) $x_n = a + (n + 3)$

4) Look at the table

4	6	8
7	9	11
10	12	14

5) a) $d = 5 - 2 = 3$

   b) Sequence starting from 2 and adding 3 repeatedly

   c) 1 less than the tenth multiple of 3.Tenth term is $3 \times 10 - 1 = 29$

   d) $3n - 1$

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721

Notes of Online class

Session 4

worksheet 4

1) The 10 term and 12 th term of an arithmetic sequence are 16 and 24

   a) What is the common difference ?

   b) What is the first term?

   c) What is the 20 th term ?

   d) Check 50 a term of this sequence?

2) The difference between 10 th term and 15 th term is 20.

   a) What is the common difference ?

   b) What should be subtracted from 10 th term to get 5 th term?

   c) What is the difference between 5 th term and 15 th term?

   d) If the 5 th term is 30 what is its first term?

3) Multiply the counting numbers from 1 onwards by 5 and add 4 .

   a) Write the sequence .

   b) What is the common difference ?

   c) What is the difference between 5 th term and 15 th term

   d) Is 100 a term of this sequence ? How can we understand it

4) Consider the sequence $64, 60, 56 \cdots$

   a) Write next three terms ?

   b) What is the common difference ?

   c) What number should be subtracted from 10 th term to get 7 th term.

   d) Is 0 a term of this sequence?

5) Consider the arithmetic sequence $1, 11, 21, 31, 41 \cdots$

   a) What is the common difference ?

   b) Which is the first three digit term of this sequence .

   c) Describe this sequence in other words

   d) What is the difference between tenth term and 20 th term?

Answers and Explanation

1) a) $x_{12} - x_{10} = 2d, 2d = 24 - 16, 2d = 8, d = 4$

b) $x_1 = x_{10} - 9d = 16 - 9 \times 4 = 16 - 36 = -20$

c) $x_{20} = x_{10} + 10d = 16 + 10 \times 4 = 16 + 40 = 56$

d) To check , take 50 as a term and find the difference between 50 and another term 16.
$50 - 16 = 34$. It is not a multiple of 4. That is 50 is not a term.

2) a) $5d = 20, d = \frac{20}{5} = 4$

b) $x_5 = x_{10} - 5d$
$5d = 5 \times 4 = 20$ should be subtracted from 10 th term to get 5 th term.

c) $x_{15} - x_5 = 10d = 10 \times 4 = 40$

d) $x_1 = x_5 - 4d = 30 - 4 \times 4 = 30 - 16 = 14$

3) a) $5 \times 1 + 4, 5 \times 2 + 4, 5 \times 3 + 4 \cdots$
$9, 14, 19 \cdots$

b) $d = 14 - 9 = 5$

c) $x_{15} - x_5 = 10d = 10 \times 5 = 50$

d) $100 - 9 = 91$, which is not a multiple of the common difference 5.
100 is not a term

4) a) $52, 48, 44 \cdots$

b) $d = 60 - 64 = -4$

c) $x_7 = x_{10} - 3d$. $3d = 3 \times 3 \times -4 = -12$ should be subtracted.

d) 0 is a term . Add $16d = 16 \times -4 = -64$ we get 0 a term

5) a) $d = 11 - 1 = 10$

b) 101

c) This is the sequence of numbers having 1 in one's place.

d) $x_{20} - x_{10} = 10d = 10 \times 10 = 100$

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721

Notes of Online class

Session 5

Worksheet 5

1) First term of an arithmetic sequence is 2 and common difference 3.
   a) Write the sequence .
   b) How many times common difference should be added to the first term to get 25 th term.
   c) What is the 25 th term of the sequence ?
   d) Write the algebraic form of the sequence .

2) Consider the arithmetic sequence $1, 5, 9, 13 \cdots$
   a) What is the common difference of the sequence ?
   b) How many times common difference should be added to 1 to get its 10 th term?
   c) How many times common difference should be added to 1 to get n th term?
   d) Write the algebraic form of the sequence .

3) Algebraic form of an arithmetic sequence is $3n + 7$.
   a) Write the sequence
   b) What is the 20 th term of the sequence ?
   c) What should be added to its 5 th term to get 10 th term?

4) Algebraic form of an arithmetic sequence is $\frac{1}{2}n + 3$.
   a) What is the smallest n which gives the term a natural number?
   b) Write the sequence of natural number term of the sequence.
   c) Natural number terms make another arithmetic sequence.Write its alge braic form
   d) What is the largest two digit term?
   e) How many natural number terms are there below 100

5) Consider the arithmetic sequence $\frac{1}{7}, \frac{2}{7}, \frac{3}{7} \cdots$
   a) What is the n th term of the sequence?
   b) What is n which makes the term first natural number
   c) At what position 100 comes in the sequence ?
   d) How many natural number terms are below 100

Answers and Explanation

1) a) $2, 5, 8, 11 \cdots$

b) 24 times 3should be added.

c) $x_{25} = 2 + 24 \times 3 = 2 + 72 = 74$

d) $x_n = dn + (f - d) = 3n - 1$

2) a) $d = 5 - 1 = 4$

b) 9 times common difference should be added.

c) $(n - 1)$times 3 should be added

d) $x_n = dn + (f - d) = 4n - 3$

3) a) Give the values $1, 2, 3 \cdots$ to n in its algebraic form.Terms are $10, 13, 16 \cdots$

b) $x_{20} = 3 \times 20 + 7 = 67$

c) 5times common difference should be added.It is $5 \times 3 = 15$

4) a) $n = 2$

b) Give the values $2, 4, 6, 8 \cdots$ to n.The sequence is $4, 5, 6, 7 \cdots$

c) $x_n = n + 3$

d) 99

e) 96

5) a) $\frac{n}{7}$

b) $n = 7$

c) 700th position

d) Give the values$7, 14, 21 \cdots$ to n we get integer terms . Se quence of integer terms are $1, 2, 3 \cdots$. So there are 99 integer terms below 100.

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721

Notes of Online class

Session 6

1) Consider the sequence of numbers which gives the remainder 2on dividing by 3

   a) Write the sequence

   b) What is the algebraic form of this sequence ?

   c) Is 101 a term of this sequence ?

2) Algebraic form of an arithmetic sequence is $3n-2$.

   a) What is the common difference ?

   b) Write the sequence

   c) What is the remainder when the terms are divided by its common difference ?

   d) What is the first three digit term of the sequence ?

3) Look at the picture.This is the squence of triangles made by matchsticks

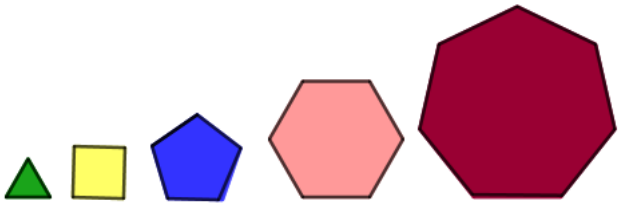
   a) Write the number of matchsticks needed for making terms as a sequence?

   b) What is the algebraic form of the sequence?

   c) How much more matchsticks are nedded to make 15 th term than 10 th term?

   d) How many matchsticks are needed to make 30 th term?

4) Look at the sequence of regular polygons of sides $3, 4, 5, 6, 7, 8 \cdots$



   a) If the number of sides are written as a sequence then what is the algebraic form

   b) How many sides are there in the polygon comes as the 10 th term?

c) At what position a polygon with 10 sides comes as a term? 2

5) $32, 27, 22, 17 \cdots$ is an arithmetic sequence.

a) Write the next three terms of the sequence?

b) What is the common difference of the terms ?

c) Write the algebraic form of this sequence?

d) Which is the smallest positive term of the sequence?

e Which is the largest negative term of this sequence?

Answers and Explanation

1) a) $2, 5, 8, 11, 14 \cdots$

b) $x_n = dn + (f - d) = 3n + (2 - 3) = 3n - 1$

c) When we divide 101 by 3 , surely we get the remainder 2. So we can say 101 is a term of this sequence.

2) a) 3

b) $3 \times 1 + 2, 3 \times 2 + 2, 3 \times 3 + 2, 3 \times 4 + 2 \cdots$
$1, 4, 7, 10 \cdots$

c) 1

d) 100 is the first three digit term. On dividing 100 by 3 we get the remainder 1

3) a) $3, 5, 7, 9, 11 \cdots$

b) $x_n = dn + (f - d) = 2n + (3 - 2) = 2n + 1$

c) No of sticks needed is $5d = 5 \times 2 = 10$.
(We have studied that the difference between tenth term and 15 th term is $5d$)

d) $x_{30} = 3 \times 30 + 1 = 61$

4) a) $3, 4, 5, \cdots$
$x_n = dn + (f - d) = 1 \times n + (3 - 1) = n + 2$

b) $x_{10} = 10 + 2 = 12$

c) 8 th position a polygon with 10 sides comes.

5) a) $12, 7, 2$

b) $d = 22 - 27 = -5$

c) $x_n = dn + (f - d) = -5n + (32 -^{-} 5) = -5n + (32 + 5) = -5n + 37$

d) 2

e) $2 - 5 = -3$

Notes of Online class

Session 7

Worksheet 7

1) The first term of an arithmetic sequence is -7 and common difference 3.

   a) Write the sequence.

   b) Write the algebraic form of this sequence

   c) How many terms are there below 100 in this sequence ?

   d) Which is the largest two digit term of this sequence?

2) 10 th term of an arithmetic sequence is 47 and 14 th term is 63.

   a) What is the common difference of this sequence?

   b) Find the first term

   c) Write the algebraic form of this sequence?

   d) How many terms are there below 100 in this sequence?

3) First term of an arithmetic sequence is $\frac{1}{2}$, common difference is $\frac{1}{6}$

   a) Write the algebraic form of this sequence

   b) At what position in the sequence a natural number term first apperars in the sequence?

   c) At position the number 100 occurs in the sequence as a term

   d) Prove that this sequence contains all natural numbers.

4) Consider the arithmetic sequence $-117, -114, -111 \cdots$

   a) Write two more terms of this sequence

   b) Write the algebraic form of this sequence

   c) How many terms are there below 0 (that is negative terms) in this se quence?

   d) At what position 0 comes as a term of this sequence.

5) 2nd and 4 th terms of an arithmetic sequence are 12 and 18.

   a) What is the common difference of this sequence?

   b) Find the first term of the sequence?

   c) Write the algebraic form of this sequence?

   d) At what position 300 comes in this sequence?

Answers and Explanation

1) a) $-7, -4, -1, 2 \cdots$

b) $x_n = dn + (f - d) = 3n + (-7 - 3) = 3n - 10$

c) $3n - 10 < 100, 3n < 110, n < \frac{110}{3} = 36.2.$
100 There are 36 terms below 100

d) $-7, -4, -1, 2, 5, 8, 11 \cdots$
11 is the first two digit term

2) a) $x_{14} - x_{10} = 4d, 63 - 47 = 4d, 4d = 16, d = 4$

b) $x_1 = x_{10} - 9d = 47 - 9 \times 4 = 47 - 36 = 11$

c) $x_n = dn + (f - d) = 4n + (11 - 4) = 4n + 7$

d) $4n + 7 < 100, 4n < 93, n < \frac{93}{4}, n < 23.2$
There are 23 terms below 100 .

3) a) $x_n = dn + (f - d) = \frac{1}{6} + (\frac{1}{2} - \frac{1}{6})$
$x_n = \frac{1}{6} + (\frac{3}{6} - \frac{1}{6}$
$x_n = \frac{1}{6} + \frac{2}{6} = \frac{n+2}{6}$

b) $n = 4, x_4 = \frac{4+2}{6} = \frac{6}{6} = 1$
Fourth term is the first integer term

c) $n = 598, x_{598} = \frac{598+2}{6} = \frac{600}{6} = 100$
598 th term is 100

d) $n = 4, 10, 16 \cdots$ gives the numbers $1, 2, 3, 4 \cdots$ as the terms

4) a) $-108, -105$

b) $d = -114 -^{-} 117 = -114 + 117 = 3$
$x_n = dn + (f - d) = 3n + (-117 - 3) = 3n - 120$

c) All negative numbers are less than 0 . So we can write $3n - 120 < 0.$
$3n - 120 < 0, 3n < 120, n < \frac{120}{3}, n < 40$
There are 39 negative numbers

d) 40th term is 0

5) a) $2d = 18 - 12 = 6, d = 3$

b) $x_1 = x_2 - d = 12 - 3 = 9$

c) $x_n = dn + (f - d) = 3n + (9 - 3) = 3n + 6$

d) $3n + 6 = 300, 3n = 294, n = \frac{294}{3} = 98$

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721

Notes of Online class

Session 8

Worksheet 8

1) Third term of an arithmetic sequence is 22

   a) What is the sum of first and fifth terms of this sequence?

   b) What is the sum of 4 th and 2nd terms of this sequence?

   c) If the first term is 8 then what is the common difference ?

   d) Write the algebraic form of this sequence.

2) Sum of the first term and tenth term of an arithmetic sequence is 28

   a) What is the sum of 2 nd and 9 th terms of this sequence

   b) What is the sum of fifth and sixth terms of this sequence

   c) Calculate the sum of first 10 terms of this sequence.

3) We know that a pentagon has 5 angles.In a pentagon, if the angles are arranged in the increasing order we get an arithmetic sequence having five terms.In such a pentagon the middle term is always 108°

   a) If the first term (smallest angle) is 42° then what is the difference between two adjacent angles.

   b) Write the largest angle of the pentagon

   c) What are the angles of the pentagon?

4) Algebraic form of an arithmetic sequence is $7n + 3$

   a) What is the 15 th term of the sequence?

   b) What is the sum of first term and twenty nineth term terms of this sequence?

   c) What is the sum of 14 th and 16 th terms of the sequence.

5) Choose the correct answer from the given options

   a) If the fifth term of an arithmetic sequence is 20 then what is the sum of first and nineth terms of this sequence 40603025

   b) In an arithmetic sequence if $x_1 + x_{10} = 100$ then what is $x_5 + x_6$ 14060100250

   c) The difference between 3 rd term and 10 th term of an arithmetic sequence is 30 then what is the difference between 10 th term and 31st term of this sequence . 906010080

   d) $\square, \square, 24, \square, \square$ are in an arithmetic sequence. If the number in the left end is 8 then what is the number in the right end? 904010080

Answers and Explanation

1) a) $x_1 + x_5 = 2 \times x_3 = 2 \times 22 = 44$

   b) $x_4 + x_2 = 44$

   c) $f = x_1 = 8$
   $x_3 - x_1 = 2d, 2d = 22 - 8, 2d = 14, d = 7$

   d) $x_n = dn + (f - d) = 7n + (8 - 7) = 7n + 1$

2) a) $x_2 + x_9 = 28$

   b) $x_5 + x_6 = 28$

c) Similarly we can write

$x_1 + x_{10} = 28$

$x_2 + x9 = 28$

$x_3 + x8 = 28$

$x_4 + x7 = 28$

$x_5 + x6 = 28$

So the sum of all terms is $5 \times 28 = 140$.

3) a) $x_3 = 108$. Therefore $x_3 - x_1 = 108 - 42 = 66$

That is $2d = 66, d = 33$

The difference between two adjacent angles is 33

b) $x_5 = x_3 + 2d = 108 + 2 \times 33 = 108 + 66 = 174$

c) Angles are $42, 75, 108, 141, 174$

4) a) $x_{15} = 7 \times 15 + 3 = 105 + 3 = 108$

b) $x_1 + x_{29} = 2 \times x_{15} = 2 \times 108 = 216$

c) $x_{16} + x_{14} = 216$

5) a) $x_1 + x_{19} = 2 \times x_5 = 2 \times 20 = 40$

b) $x_5 + x_6 = x_1 + x_{10} = 100$

c) $7d = 30 \rightarrow x_{31} - x_{10} = 21d = 90$

d) $2d = 24 - 8, 2d = 16, d = 8$

$x_5 = 40$

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721

Notes of Online class

Session 9

Worksheet 9

1) Algebraic form of an arithmetic sequence is $6n - 3$

   a) Write first term and tenth term

   b) What is the sum of fifth term and sixth term

   c) Find the sum of ten terms from the beginning

   d) Can the sum of two terms of this sequence 75? How can we understand this ?

2) Sum of 15th term and 16 th term is 225

   a) What is the sum of first term and 30 th term ?

   b) If the first term is 11 then what is its 30 th term?

   c) What is the common difference of the sequence ?

   d) Write the algebraic form of the sequence .

   e) Calculate the sum of 30 terms of the sequence from the beginnig of the sequence.

3) a) Nineth term of an arithmetic sequence is 60

   b) What is the sum of first term and 17 th term?

   c) Calculate the sum of 17 terms of this sequence from the beginning.

4) Tenth term of an arithmetic sequence is 18 and its fifteenth term is 33.

   a) What is the common difference ?

   b) What is the first term of this sequence?

   c) Write the algebraic form of this sequence ?

   d) What is its 50 th term?

   e) Calculate the sum of first fifty terms of this sequence.

5) Choose the correct answer.

   a) Algebraic form of an arithmetic sequence is $\frac{3}{4}n + 1$. what is its common difference?

   (a) $\frac{4}{3}$ (b) $\frac{1}{3}$ (c) $\frac{3}{4}$ (d) 1

b) Sum of the first and thirtieth term of an arithmetic sequence is 100. what is the sum of first 30 terms of this sequence.

(a) 1500 (b) 1000 (c) 1100 (d) 2500

c) What is the tenth term of the sequence $1, 3, 5, 7 \cdots$

(a) 20 (b) 21 (c) 19 (d) 17

d) Algebraic form of an arithmetic sequence is $\frac{4}{7}n+1$. What is the first integer term of this sequence?

(a) 9 (b) 4 (c) 10 (d) 5

Answers and Explanation

1) a) $x_1 = 6 \times 1 - 3 = 6 - 3 = 3$
$x_{10} = 6 \times 10 - 3 = 60 - 3 = 57$

b) Since $x_1 + x_{10} = 60$ then $x_5 + x_6 = 60$

c) Sum =$(x_1 + x_{10}) \times \frac{10}{2} = 60 \times 5 = 300$

d) All terms are odd numbers. Sum of two odd numbers cannot be an odd number. So 75 cannot be the sum of two terms

2) a) $x_{15} + x_{16} = 225$. Therefore $x_1 + x_{30} = 225$.(Reason sum of the terms equidiatant from both ends are equal)

b) $x_{30} = 225 - 11 = 214$

c) $29d = 214 - 11 = 203, d = 203 \div 29 = 7$

d) $x_n = dn + (f - d) = 7n + (11 - 7) = 7n + 4$

e) Sum of 30 terms $= (x_1 + x_{30}) \times \frac{30}{2} = 225 \times 15 = 3375$.

3) a) $x_9 = 60$. Therfore $x_1 + x_{17} = 2 \times x_9 = 2 \times 60 = 120$

b) Sum $= (x_1 + x_{17)) \times \frac{17}{2} = 120 \times \frac{17}{2} = 60 \times 17 = 1020}$

4) a) $5d = 33 - 18 = 15, d = 3$

b) $x_1 = x_{10} - 9d = 18 - 9 \times 3 = 18 - 27 = -9$

c) $x_n = dn + (f - d) = 3n + (-9 - 3) = 3n - 12$

d) $x_{50} = 3 \times 50 - 12 = 150 - 12 = 138$

e) Sum $= (x_1 + x_{50}) \times \frac{50}{2} = (-9 + 138) \times 25 = 129 \times 25 = 3225$

5) a) $\frac{3}{4}$

b) 1500

c) 19

d) 5

Notes of Online class

1) Algebraic form of an arithmetic sequence is $6n - 3$

   a) Write first term and tenth term

   b) What is the sum of fifth term and sixth term

   c) Find the sum of ten terms from the beginning

   d) Can the sum of two terms of this sequence 75? How can we understand this ?

2) Sum of 15th term and 16 th term is 225

   a) What is the sum of first term and 30 th term ?

   b) If the first term is 11 then what is its 30 th term?

   c) What is the common difference of the sequence ?

   d) Write the algebraic form of the sequence .

   e) Calculate the sum of 30 terms of the sequence from the beginnig of the sequence.

3) a) Nineth term of an arithmetic sequence is 60

   b) What is the sum of first term and 17 th term?

   c) Calculate the sum of 17 terms of this sequence from the beginning.

4) Tenth term of an arithmetic sequence is 18 and its fifteenth term is 33.

   a) What is the common difference ?

   b) What is the first term of this sequence?

   c) Write the algebraic form of this sequence ?

   d) What is its 50 th term?

   e) Calculate the sum of first fifty terms of this sequence.

5) Choose the correct answer.

   a) Algebraic form of an arithmetic sequence is $\frac{3}{4}n + 1$. what is its common difference?

   (a) $\frac{4}{3}$ (b) $\frac{1}{3}$ (c) $\frac{3}{4}$ (d) 1

   b) Sum of the first and thirtieth term of an arithmetic sequence is 100. what is the sum of first 30 terms of this sequence.

   (a) 1500 (b) 1000 (c) 1100 (d) 2500

c) What is the tenth term of the sequence $1, 3, 5, 7 \cdots$ 2

(a) 20 (b) 21 (c) 19 (d) 17

d) Algebraic form of an arithmetic sequence is $\frac{4}{7}n+1$. What is the first integer term of this sequence?

(a) 9 (b) 4 (c) 10 (d) 5

Answers and Explanation

1) a) $x_n = 6n - 3$
$x_1 = 6 \times 1 - 3 = 3, x_{10} = 6 \times 10 - 3 = 57$

b) $x_1 + x_{10} = 60.$
$x_5 + x_6 = 60$

c) sum $= (x_1 + x_{10}) \times \frac{10}{2} = 60 \times 5 = 300$

d) All terms are odd numbers . Sum of two odd numbers cannot be an odd number. 75 cannot be the sum

2) a) $x_{15} + x_{16} = 225 \rightarrow x_1 + x_{30} = 225$

b) $x_1 + x_{30} = 225, 11 + x_{30} = 225, x_{30} = 225 - 11 = 214$

c) $29d = 214 - 11 = 203, d = \frac{203}{29} = 7$

d) $x_n = dn + (f - d) = 7n + 4$

e) sum$= (x_1 + x_{30}) \times \frac{30}{2} = 225 \times 15 = 3375$.

3) a) $x_1 + x_{17} = 2 \times x_9 = 2 \times 60 = 120$

b) sum$= (x_1 + x_{17}) \times \frac{17}{2} = 60 \times 17 = 1020$

4) a) $x_{15} - x_{10} = 5d$
$5d = 33 - 18 = 15, d = 3$

b) $x_1 = x_{10} - 9d = 18 - 9 \times 3 = 18 - 27 = -9$

d) $x_n = 3n - 12$

e) $x_{50} = 3 \times 50 - 12 = 138$
തുക$= (x_1 + x_{50}) \times \frac{50}{2} = (-9 + 138) \times 25 = 3225$

5) a) $\frac{3}{4}$

b) 1500

c) 19

d) 5

[1]Compiler : John P.A, sjpuzzles@gmail.com , jpavpz@gmail.com | 9847307721