ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.10

Write down the following sequences

1. Multiply the natural numbers by 2.

2. *Multiply the natural numbers by 6.*

3. *Multiply the natural numbers by 3 and add 1 to them .*

4. *Multiply the natural numbers by 5 and add 2 to them .*

5. *Multiply the natural numbers by 4 and subtract 3 from them .*

6. *Multiply the natural numbers by 7 and subtract 4 from them . .*

7. *Subtract the multiples of 10 from 100 .*

8. *Subtract the multiples of 5 from 50 .*

We have already learned that numbers in a sequence are called its terms .

Usually we denote first term of a sequence as x_1 , second term as x_2 , third term as x_3 and so on

Complete the table below

Sequence	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
2 , 8 , 14 , 20 , 26 , ...	8 – 2 = 6	14 – 8 = 6	20 – 14 = 6	26 – 20 = 6
7 , 12 , 17 , 22 , 27 , ...				
1 , 5 , 9 , 13 , 17 , ...				
4 , 7 , 10 , 13 , 16 , ...				
3 , 10 , 17 , 24 , 31 , ...				
2 , 4 , 6 , 8 , 10 , ...				
6 , 12 , 18 , 24, 30 , ...				
45 , 40, 35 , 30 , 25 , ...				
90 ,80 ,70 ,60 , 50 , ...				

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ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.10ANSWERS

Write down the following sequences

1. Multiply the natural numbers by 2.

2 x 1 , 2 x 2 , 2 x 3 , 2 x 4 , 2 x 5 , ... = 2 , 4 , 6 , 8 , 10 , ...

2. *Multiply the natural numbers by 6.*

6 x 1 , 6 x 2 , 6 x 3 , 6 x 4 , 6 x 5 , ... = 6 , 12 , 18 , 24 , 30 , ...

3. *Multiply the natural numbers by 3 and add 1 to them .*

3 x 1 + 1 , 3 x 2 + 1 , 3 x 3 + 1 , 3 x 4 + 1 , 3 x 5 + 1 , ...= 4 , 7 , 10 , 13 ,16 ,.....

4. *Multiply the natural numbers by 5 and add 2 to them .*

5 x 1 + 2 , 5 x 2 + 2 , 5 x 3 + 1 , 5 x 4 + 2 , 5 x 5 + 2 , ...= 7 , 12 , 12 , 17 , 22 ,.....

5. *Multiply the natural numbers by 4 and subtract 3 from them .*

4 x 1 - 3 , 4 x 2 - 3, 4 x 3 - 3 , 4 x 4 - 3 , 4 x 5 - 3 , ... = 1 , 5 , 9 , 13 , 17 ,.....

6. *Multiply the natural numbers by 7 and subtract 4 from them .*

7 x 1 - 4 , 7 x 2 - 4, 7 x 3 - 4 , 7 x 4 - 4 , 7 x 5 - 4, ... = 3 , 10 , 17, 24 , 31 ,.....

7. *Subtract the multiples of 10 from 100 .*

100 - 10 , 100 – 20 , 100 – 30 , 100 – 40 ,100 – 50 , ... = 90 , 80 , 70 , 60 , 50 ,.....

8. *Subtract the multiples of 5 from 50 .*

50 - 5 , 50 – 10 , 50 – 15 , 50 – 20 , 50– 25 , ... = 45 , 40 , 35 , 30 , 25 ,.....

Complete the table below

Sequence	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
2 , 8 , 14 , 20 , 26 , ...	8 – 2 = 6	14 – 8 = 6	20 – 14 = 6	26 – 20 = 6
7 , 12 , 17 , 22 , 27 , ...	12 – 7 = 5	17 – 12 = 5	22 – 17 = 5	27 – 22 = 5
1 , 5 , 9 , 13 , 17 , ...	5 – 1 = 4	9 – 5 = 4	13 – 9 = 4	17 – 13 = 4
4 , 7 , 10 , 13 , 16 , ...	7 – 4 = 3	10 – 7 = 3	13 – 10 = 3	16 – 13 = 3

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3 , 10 , 17 , 24 , 31 , ...	10 – 3 = 7	17 – 10 = 7	24 – 17 = 7	31 – 24 = 7
2 , 4 , 6 , 8 , 10 , ...	4 – 2 = 2	6 – 4 = 2	8 – 6 = 2	10 – 8 = 2
6 , 12 , 18 , 24 , 30 , ...	12 – 6 = 6	18 – 12 = 6	24 – 18 = 6	30 – 24 = 6
45 , 40, 35 , 30 , 25 , ...	40 – 45 = - 5	35 – 40 = - 5	30 – 35 = - 5	25 – 30 = - 5
90 ,80 ,70 ,60 , 50 , ...	80 – 90 = - 10	70 – 80 = - 10	60 – 70 = - 10	50 – 60 = - 10

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.11

Write down the following sequences

1. *Multiply the natural numbers by* 7.

2. *Multiply the natural numbers by* 10 *and add* 3 *to them* .

3. *Multiply the natural numbers by* 8 *and add* 2 *to them* .

4. *Multiply the natural numbers by* 9 *and subtract* 1 *from them* .

5. *Multiply the natural numbers by* 6 *and subtract* 5 *from them* .

6. *Subtract the multiples of* 100 *from* 500 .

7. *Subtract the multiples of* 3 *from* 80 .

Complete the table below

Sequence	*Difference between two consecutive terms*			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
5 , 8 , 11, 14 , 17 , ...	8 – 5 = 3	11 – 8 = 3	14 – 11 = 3	17 – 14 = 3
6 , 11 , 16 , 21 , 26 , ...				
2 , 6 , 10 , 14 , 18 , ...				
3 , 11, 19 , 27 , 35 , ...				
2 , 13 , 24 , 35 , 46 , ...				
60 , 52 , 44 , 36, 28 , ...				
50 , 43 , 36 , 29 , 22 , ...				

Write down 5 more rows of the above table .

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.11 ANSWERS

Write down the following sequences

1. *Multiply the natural numbers by* 7.

Ans : 1 x 7 , 2 x 7 , 3 x 7 , 4 x 7 , 5 x 7 , ... = 7 , 14 , 21 , 28 , 35 , ...

2. *Multiply the natural numbers by* 10 *and add* 3 *to them* .

Ans : 1 x 10 + 3 , 2 x 10 + 3 , 3 x 10 + 3 , 4 x 10 + 3 , 5 x 10 + 3 , ...

= 13 , 23 , 33, 43 , 53 , ...

3. *Multiply the natural numbers by* 8 *and add* 2 *to them* .

Ans : 1 x 8 + 2 , 2 x 8 + 2 , 3 x 8 + 2 , 4 x 8 + 2 , 5 x 8 + 2 , ...

= 10 , 18 , 26 , 34 , 42 , ...

4. *Multiply the natural numbers by* 9 *and subtract* 1 *from them* .

Ans : 1 x 9 - 1 , 2 x 9 - 1 , 3 x 9 - 1 , 4 x 9 - 1 , 5 x 9 - 1 , ...

= 8 , 17, 26 , 35 , 44 , ...

5. *Multiply the natural numbers by* 6 *and subtract* 5 *from them* .

Ans : 1 x 6 – 5 , 2 x 6 – 5 , 3 x 6 – 5 , 4 x 6 – 5 , 5 x 6 – 5 , ...

= 1 , 7 , 13 , 19 , 25 , ...

6. *Subtract the multiples of* 100 *from* 500 .

Ans : 500 – 100 , 500 – 200 , 500 – 300 , 500 – 400 , 500 – 500 , ...

= 400 , 300 , 200 , 100 , 0 , ...

7. *Subtract the multiples of* 3 *from* 80 .

Ans : 80 – 3 , 80 – 6 , 80 – 9 , 80 – 12 , 80 – 15 , ...

= 77 , 74 , 71 , 68 , 65 , ...

Complete the table below

Sequence	Difference between two consecutive terms			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
5 , 8 , 11, 14 , 17 , ...	8 – 5 = 3	11 – 8 = 3	14 – 11 = 3	17 – 14 = 3
6 , 11 , 16 , 21 , 26 , ...	11 – 6 = 5	16 – 11 = 5	21 – 16 = 5	26 – 21 = 5
2 , 6 , 10 , 14 , 18 , ...	6 – 2 = 4	10– 6 = 4	14 – 10 = 4	18 – 14 = 4
3 , 11, 19 , 27 , 35 , ...	11 – 3 = 8	19 – 11 = 8	27 – 19 = 8	35 – 27 = 8
2 , 13 , 24 , 35 , 46 , ...	13 – 2 = 11	24 – 13 = 11	35 – 24 = 11	46 – 35 = 11
60 , 52 , 44 , 36, 28 , ...	52 – 60 = -8	44 – 52 = -8	36 – 44 = -8	28 – 36 = -8
50 , 43 , 36 , 29 , 22 , ...	43 – 50 = -7	36 – 43 = -7	29 – 36= -7	22 – 29 = -7

Write down 5 more rows of the above table .

Sequence	Difference between two consecutive terms			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
1 , 5 , 9, 13 , 17 , ...	5 – 1 = 4	9 – 5 = 4	13– 9 = 4	17– 13 = 4
2 , 5 , 8 , 11 , 14 , ...	5 – 2 = 3	8 – 5 = 3	11 – 8 = 3	14 – 11 = 3
3 , 4 , 5 , 6 , 7 , ...	4 – 3 = 1	5 – 4 = 1	6 – 5 = 1	7 – 6 = 1
10 , 8 , 6 , 4 , 2, ...	8 – 10 = -2	6 – 8 = -2	4 – 6 = -2	2 – 4 = -2
25 , 20 , 15 , 10 , 5 , ...	20 – 25 = -5	15 – 20 = -5	10 – 15 = -5	5 – 10 = -5

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.12 ANSWER

1. *Complete the table given below .*

Sequence	*Difference between two consecutive terms*			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
3 , 5 , 7, 9 , 11 , ...	5 – 3 = 2	7 – 5 = 2	9 – 7 = 2	11 – 9 = 2
5 , 9 , 13 , 17 , 21 , ...	9 – 5 = 4	13 – 9 = 4	17 – 13 = 4	21 – 17 = 4
8 , 14 , 20 , 26 , 32 , ...	14 – 8 = 6	20 – 14 = 6	26 – 20 = 6	32 – 26 = 6
2 , 11, 20, 29 , 38, ...	11 – 2 = 9	20 – 11 = 9	29 – 20 = 9	38– 29 = 9
1, 9 , 17, 25 , 33 , ...	9 – 1 = 8	17 – 9 = 8	25 – 17 = 8	33 – 25 = 8
10 , 21 , 32, 43 , 54 , ...	21 – 10 = 11	32 – 21 = 11	43 – 32 =11	54 – 43 = 11

Write down five more rows of the table

Sequence	*Difference between two consecutive terms*			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
10 , 11, 12, 13 , 14 , ...	11 – 10 =1	12 – 11 =1	13 – 12 =1	14 – 13 =1
1 , 3 , 5 , 7 , 9 , ...	3 – 1 = 2	5 –3 = 2	7 – 5 = 2	9 – 7 = 2
5 , 8 , 11 , 14 , 17 , ...	8 – 5 = 3	11– 8 = 3	14 – 11 = 3	17 – 14 = 3
6 , 10 , 14 , 18 , 22 , ...	10 – 6 = 4	14 – 10 = 4	18 – 14= 4	22 – 18 = 4
2 , 7, 12, 17 , 22, ...	7 – 2 = 5	12 – 7 = 5	17 – 12 = 5	22 – 17 = 5

2. *Complete the table given below .*

Sequence	Difference between two consecutive terms			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
40 , 37 , 34, 31 , 28 , ...	37 – 40 = -3	34 – 37 = -3	31 – 34 = -3	28 – 31 = -3
26 , 24 , 22 , 20 , 18 , ...	24 – 26 = -2	22 – 24 = -2	20 – 22 = -2	18 – 20 = -2
65, 61 , 57 , 53 , 49 , ...	65 – 61 = -4	57 – 61 = -4	53 – 57 = -4	49 – 53 = -4
50 , 41 , 32 , 23 , 14 , ...	41 – 50 = -9	32 – 41 = -9	23 – 32 = -9	14 – 23 = -9
100, 96 , 92 , 88 , 84 , ...	96 – 100 = -4	92 – 96 = -4	88 – 92 = -4	84 – 88 = -4
77 , 66, 55 , 44 , 33 , ...	66 – 77 = -11	55 – 66 = -11	44 – 55 = -11	33 – 44 = -11

Write down five more rows of the table

ശ്രേണി	Difference between two consecutive terms			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
10 , 9, 8, 7 , 6 , ...	9 – 10 = -1	8 – 9 = -1	7 – 8 = -1	6 – 7 = -1
30 , 28, 26 , 24, 22, ...	28 – 30 = -2	26– 28 = -2	24– 26 = -2	22 – 24 = -2
33, 30 , 27 , 24 , 21 , ...	30 – 33 = -3	27 – 30 = -3	24 – 27 = -3	21 – 24 = -3
45 , 41 , 37 , 33 , 29 , ...	41 – 45 = -4	37 – 41 = -4	33 – 37 = -4	29 – 33 = -4
100, 95 , 90 , 85 , 80 , ...	95 – 100 = -5	90 – 95 = -5	85 – 90 = -5	80 – 85 = -5

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.13

1). *Consider the sequence* 1 , 2 , 3 , 4 , 5 , ...

a) *What is the* 6^{th} *term of this sequence* ?

b) *What is the* 7^{th} *term of this sequence* ?

c) *What is the* 8^{th} *term of this sequence* ?

d) *Which number is to be added to the first term of this sequence to get its* 10^{th} *term* ?

e)*Which number is to be added to the first term of this sequence to get its* 20^{th} *term* ?

2). *Consider the sequence* 2 , 4 , 6 , 8 , 10 , ...

a) *What is the* 6^{th} *term of this sequence* ?

b) *What is the* 7^{th} *term of this sequence* ?

c) *What is the* 8^{th} *term of this sequence* ?

d) *Which number is to be added to the first term of this sequence to get its* 10^{th} *term* ?

e) *Which number is to be added to the first term of this sequence to get its* 15^{th} *term* ?

3). *Consider the sequence* 5 , 8 , 11 , 14 , 17 .....

a) *What is the* 6^{th} *term of this sequence* ?

b) *What is the* 7^{th} *term of this sequence* ?

c) *What is the* 8^{th} *term of this sequence* ?

d) *Which number is added to the first term of this sequence to get its* 10^{th} *term* ?

e) *Which number is added to the first term of this sequence to get its* 13^{th} *term* ?

4). *Consider the sequence*100 , 98, 96 , 94 , 92 , ...

a) *What is the* 6^{th} *term of this sequence* ?

b) *What is the* 7^{th} *term of this sequence* ?

c) *What is the* 8^{th} *term of this sequence* ?

d) *Which number is to be subtracted to the first term of this sequence to get* its 10^{th} *term* ?

e) *Which number is to be subtracted to the first term of this sequence to get its* 15^{th} *term* ?

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.13 ANSWER

1). *Consider the sequence* 1 , 2 , 3 , 4 , 5 , ...

a) *What is the* 6^{th} *term of this sequence* ? Ans: 6

b) *What is the* 7^{th} *term of this sequence* ? Ans: 7

c) *What is the* 8^{th} *term of this sequence* ? Ans: 8

d) *Which number is to be added to the first term of this sequence to get its* 10^{th} *term* ? Ans: 9

e)*Which number is to be added to the first term of this sequence to get its* 20^{th} *term* ? Ans: 19

2). *Consider the sequence* 2 , 4 , 6 , 8 , 10 , ...

a) *What is the* 6^{th} *term of this sequence* ? Ans: 12

b) *What is the* 7^{th} *term of this sequence* ? Ans: 14

c) *What is the* 8^{th} *term of this sequence* ? Ans: 16

d) *Which number is to be added to the first term of this sequence to get its* 10^{th} *term* ? Ans: 18

e) *Which number is to be added to the first term of this sequence to get its* 15^{th} *term* ? Ans: 28

3). *Consider the sequence* 5 , 8 , 11 , 14 , 17 .....

a) *What is the* 6^{th} *term of this sequence* ? Ans: 20

b) *What is the* 7^{th} *term of this sequence* ? Ans: 23

c) *What is the* 8^{th} *term of this sequence* ? Ans: 26

d) *Which number is added to the first term of this sequence to get its* 10^{th} *term* ? Ans: 27

e) *Which number is added to the first term of this sequence to get its* 13^{th} *term* ? Ans: 36

4). *Consider the sequence*100 , 98, 96 , 94 , 92 , ...

a) *What is the* 6^{th} *term of this sequence* ? Ans: 90

b) *What is the* 7^{th} *term of this sequence* ? Ans: 88

c) *What is the* 8^{th} *term of this sequence* ? Ans: 86

d) *Which number is to be subtracted to the first term of this sequence to get* its 10^{th} *term* ? 18

e) *Which number is to be subtracted to the first term of this sequence to get its* 15^{th} *term* ? 28

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

Discussion – 3

Have you noticed any special feature of the sequences in the worksheet 1.10 , 1.11 , 1.12 *and* 1.13 .

In worksheet 1.0 , sequences are made by multiplying natural numbers by fixed number and added to a number or subtract a number from them .

What are the common features of those sequences ?

Here we start with a number and add or subtract a fixed number repeatedly , don't we ?

Sequence	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
2 , 8 , 14 , 20 , 26 , ...	8 – 2 = 6	14 – 8 = 6	20 – 14 = 6	26 – 20 = 6
7 , 12 , 17 , 22 , 27 , ...	12 – 7 = 5	17 – 12 = 5	22 – 17 = 5	27 – 22 = 5
1 , 5 , 9 , 13 , 17 , ...	5 – 1 = 4	9 – 5 = 4	13 – 9 = 4	17 – 13 = 4
4 , 7 , 10 , 13 , 16 , ...	7 – 4 = 3	10 – 7 = 3	13 – 10 = 3	16 – 13 = 3
45 , 40, 35 , 30 , 25 , ...	40 – 45 = - 5	35 – 40 = - 5	30 – 35 = - 5	25 – 30 = - 5
90 ,80 ,70 ,60 , 50 , ...	80 – 90 = - 10	70 – 80 = - 10	60 – 70 = - 10	50 – 60 = - 10

The difference between any two consecutive terms of these sequences are same , aren't they ?

In these sequences we start with a number and add or subtract this "difference" repeatedly to or from the first term

Haven't we done the same activity in worksheet 1.11 ?

What are the common features of the sequences in worksheet 1.12 ?

Sequence	*Difference between two consecutive terms*			
	$x_2 - x_1$	$x_3 - x_2$	$x_4 - x_3$	$x_5 - x_4$
3 , 5 , 7, 9 , 11 , ...	*5 – 3 = 2*	*7 – 5 = 2*	*9 – 7 = 2*	*11 – 9 = 2*
5 , 9 , 13 , 17 , 21 , ...	*9 – 5 = 4*	*13 – 9 = 4*	*17 – 13 = 4*	*21 – 17 = 4*
8 , 14 , 20 , 26 , 32 , ...	*14 – 8 = 6*	*20 – 14 = 6*	*26 – 20 = 6*	*32 – 26 = 6*

40 , 37 , 34, 31 , 28 , ...	37 – 40 = -3	34 – 37 = -3	31 – 34 = -3	28 – 31 = -3
26 , 24 , 22 , 20 , 18 , ...	24 – 26 = -2	22 – 24 = -2	20 – 22 = -2	18 – 20 = -2
65, 61 , 57 , 53 , 49 , ...	65 – 61 = -4	57 – 61 = -4	53 – 57 = -4	49 – 53 = -4

Here also , we start with a number and add or subtract a fixed number repeatedly , don't we ?

The difference between any two consecutive terms of these sequences are same

What have we done in worksheet 1.13 ?

The first five terms of the sequences are given and we have found other terms here .

Here also , we start with a number and add or subtract a fixed number repeatedly , don't we ?

Such number sequences are known as Arithmetic sequences .

Is the set of natural numbers an arithmetic sequence ?

Findings

- *A sequence got by starting with any number and adding a fixed number repeatedly is an arithmetic sequence .*
- *A sequence got by starting with any number and subtracting a fixed number repeatedly is an arithmetic sequence .*
- *The set of natural numbers is an arithmetic sequence .*
- *The sequences got by multiplying the natural numbers by a fixed number and add a number to this product is an arithmetic sequence .*
- *The sequences got by multiplying the natural numbers by a fixed number and subtract a number from this product is an arithmetic sequence .*
- *The multiples of a fixed number is subtracted continuously from a number is also gives an arithmetic sequence .*
- *The difference between any two consecutive terms of an arithmetic sequence is always a constant .*

Conclusion.

A sequence got by starting with any number and adding a fixed number repeatedly is called an arithmetic sequence

.

NB:

1. *A sequence got by starting with any number and subtracting a fixed number repeatedly is also an arithmetic sequence .*
2. *The difference between any two consecutive terms of an arithmetic sequence is always a constant . This constant is known as the common difference of the arithmetic sequence .*

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

NOTE - 1.13

We have already learned about the arithmetic sequences in the last worksheet .

A sequence got by starting with any number and adding a fixed number repeatedly is called an arithmetic sequence .

(A sequence got by starting with any number and subtracting a fixed number repeatedly is also called an arithmetic sequence .)

We have seen that the difference between any two consecutive terms of an arithmetic sequence is a constant . This constant is known as the common difference of that sequence .

We can describe arithmetic sequences in another manner .

An arithmetic sequence is a sequence in which we get the same number on subtracting from any term , the term immediately preceding it .

Then how do we check a given sequence is an arithmetic sequence or not ?

We find out whether a given sequence is an arithmetic sequence by checking whether the difference between the terms is constant .

NB:

We know that the terms of a sequence are denoted as $x_1 , x_2 , x_3 , x_4 , x_5 , \ldots\ldots\ldots\ldots$

Let's solve the following questions

1.a) *Write down the multiples of 3 ?*

b) *Check whether the above sequence is an arithmetic sequence or not ?*

c) *If it is an arithmetic sequence , what will be its common difference ?*

Answer .

a) 3 , 6 , 9 , 12 , 15 , ...

b) $x_2 - x_1 = 6 - 3 = 3$, $x_3 - x_2 = 9 - 6 = 3$, $x_4 - x_3 = 12 - 9 = 3$

$x_5 - x_4 = 15 - 12 = 3$

Since the difference between any two consecutive terms is a constant , the given sequence is an arithmetic sequence .

c) *Common difference* = 3

2. a)*Write down the sequence of odd numbers ?*

b) *Check whether the above sequence is an arithmetic sequence or not ?*

c) *If it is an arithmetic sequence , what will be its common difference ?*

Answer ,

a) 1 , 3 , 5 , 7 , 9 , ...

b) $x_2 - x_1 = 3 - 1 = 2$, $x_3 - x_2 = 5 - 3 = 2$, $x_4 - x_3 = 7 - 5 = 2$

$x_5 - x_4 = 9 - 7 = 2$

Since the difference between any two consecutive terms is a constant , the given sequence is an arithmetic sequence .

c) *Common difference* = 2

3.a) *Write down the squares of natural numbers ?*

b) *Check whether the above sequence is an arithmetic sequence or not ?*

c) *If it is an arithmetic sequence , what will be its common difference ?*

Answer ,

a) 1^2 , 2^2 , 3^2 , 4^2 , 5^2 , ... = 1 , 4 , 9 , 16 , 25 , ...

b) $x_2 - x_1 = 4 - 1 = 3$, $x_3 - x_2 = 9 - 4 = 5$

Since the difference between two consecutive terms is not a constant , the given sequence is not an arithmetic sequence .

(*We don't want to take the difference of more consecutive terms , since the difference of terms is not a constant*)

4.a) *Write down the sequence of prime numbers ?*

b) *Check whether the above sequence is an arithmetic sequence or not ?*

c) *If it is an arithmetic sequence , what will be its common difference ?*

Answer ,

a) 2 , 3 , 5 , 7 , 11 , ...

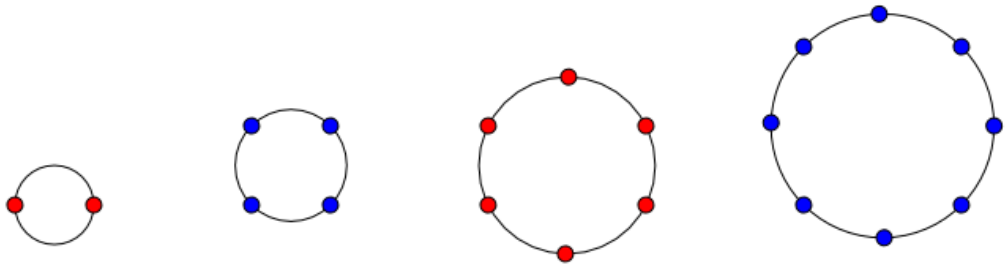
b) $x_2 - x_1 = 3 - 2 = 1$, $x_3 - x_2 = 5 - 3 = 2$

Since the difference between two consecutive terms is not a constant , the given sequence is not an arithmetic sequence .

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.14

1. *In the figure some dots are marked on the circles .*



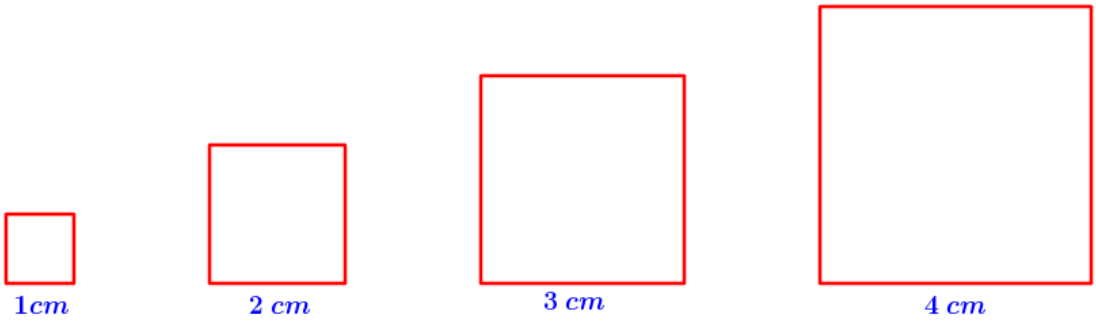
a) *How many dots are there on the first circle ?*

b) *Write down the sequence of number of dots on the circles obtained , if we continue this process ?*

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) *If it is an arithmetic sequence , what will be its common difference ?*

2. *In the figure some squares are drawn . Length of the sides of them are also shown in the figure .*



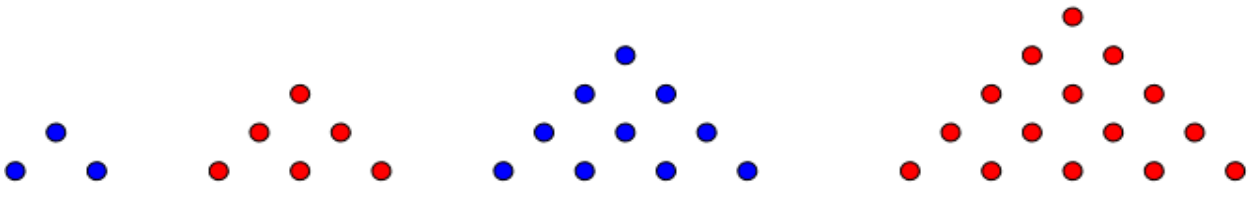
a) *What is the perimeter of the first square ?*

b) *Write down the sequence of perimeter of the squares obtained , if we continue this process ?*

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) *If it is an arithmetic sequence , what will be its common difference ?*

3. *Let's make triangles with dots .*



a) *How many dots are there in the first triangle ?*

b) *Write down the sequence of number of the dots in the triangles obtained , if we continue this process ?*

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) *If it is an arithmetic sequence , what will be its common difference ?*

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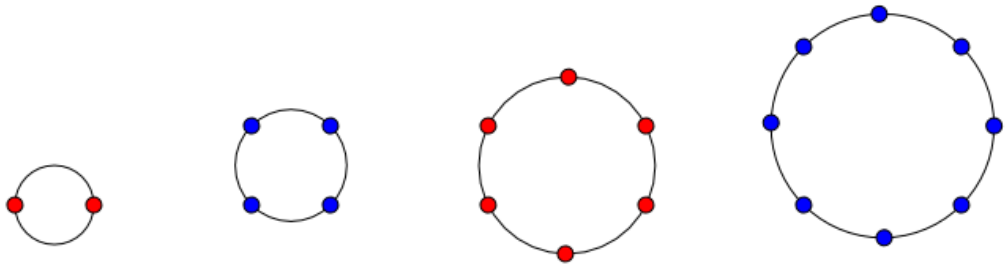
ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.14 ANSWER

1. *In the figure some dots are marked on the circles .*



a) *How many dots are there on the first circle ?*

Ans : 2

b) *Write down the sequence of number of dots on the circles obtained , if we continue this process ?*

Ans : 2 , 4 , 6 , 8 , 10 , ...

c) *Check whether the above sequence is an arithmetic sequence or not ?*

Ans :

$$x_2 - x_1 = 4 - 2 = 2 \ , \ x_3 - x_2 = 6 - 4 = 2 \ , \ x_4 - x_3 = 8 - 6 = 2$$

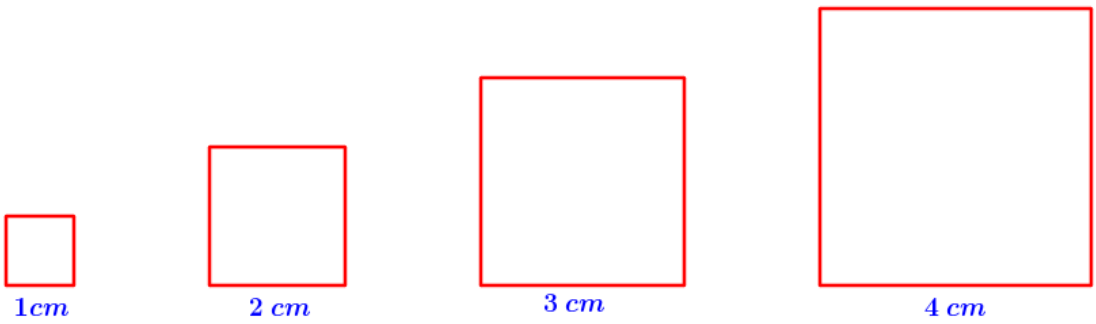
$$x_5 - x_4 = 10 - 8 = 2$$

Since the difference between any two consecutive terms of this sequence is a constant , it is an arithmetic sequence .

d) *If it is an arithmetic sequence , what will be its common difference ?*

Ans : Common difference = 2

2. *In the figure some squares are drawn . Length of the sides of them are also shown in the figure .*



a) *What is the perimeter of the first square ?*

Ans : 2

b) *Write down the sequence of perimeter of the squares obtained , if we continue this process ?*

Ans : 4 , 8 , 12 , 16 , 20 , ...

c) *Check whether the above sequence is an arithmetic sequence or not ?*

Ans :

$$x_2 - x_1 = 8 - 4 = 4 \ , \ x_3 - x_2 = 12 - 8 = 4 \ , \ x_4 - x_3 = 16 - 12 = 4$$

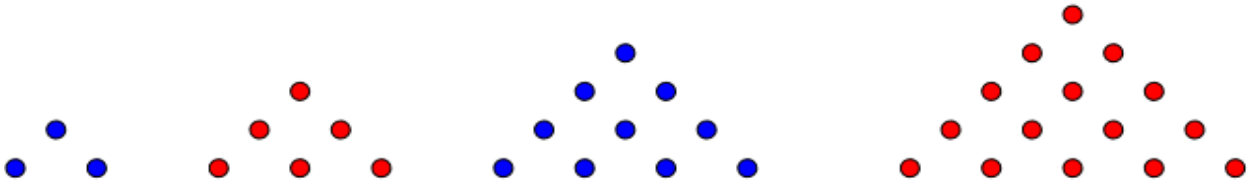
$$x_5 - x_4 = 20 - 16 = 4$$

Since the difference between any two consecutive terms of this sequence is a constant , it is an arithmetic sequence .

d) *If it is an arithmetic sequence , what will be its common difference ?*

Ans : Common difference = 4

3. *Let's make triangles with dots .*



a) How *many dots are there in the first triangle ?*

Ans : 3

b) *Write down the sequence of number of the dots in the triangles obtained , if we continue this process ?*

Ans : 3 , 6 , 10 , 15 , 21 , ...

c) *Check whether the above sequence is an arithmetic sequence or not ?*

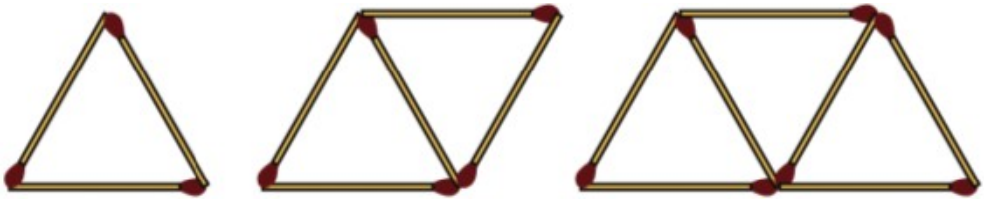
$$x_2 - x_1 = 6 - 3 = 3 \ , \ x_3 - x_2 = 10 - 6 = 4$$

Since the difference between two consecutive terms of this sequence is not a constant , it is not an arithmetic sequence .

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.15

1. *Let's make the figures shown in the figure using matchsticks .*



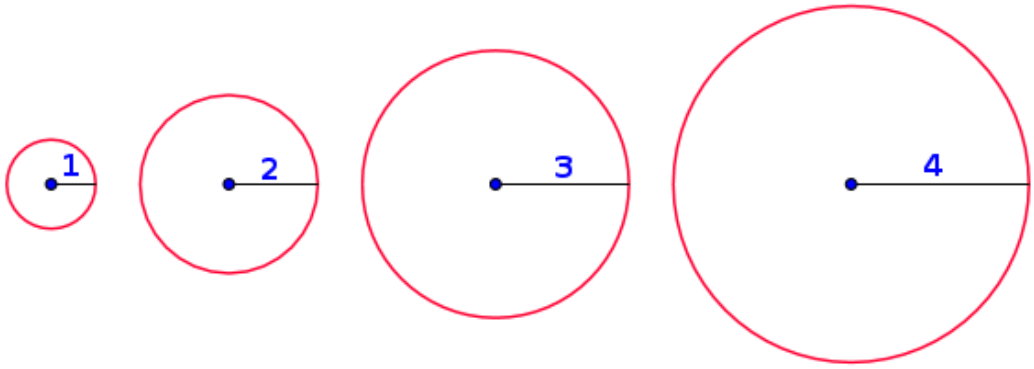
a) *How many matchsticks are there in the first figure (triangle) ?*

b) *If we continue this process , what is the sequence of numbers of matchsticks used in each figure ?*

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) *If it is an arithmetic sequence , what will be its common difference ?*

2. *In the figure circles of radii 1 cm , 2 cm , 3 cm and 4cm are drawn .*



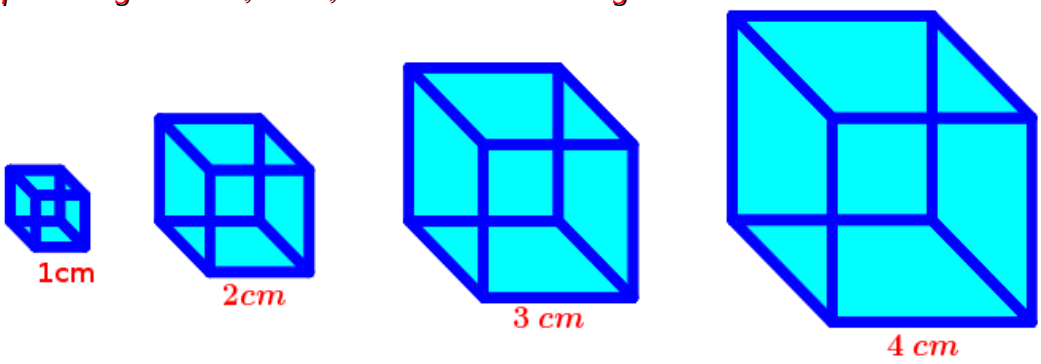
a) *What is the perimeter of the first circle ?*

b) *If we continue this process , what is the sequence of perimeter of the circles so obtained ?*

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) *If it is an arithmetic sequence , what will be its common difference ?*

3. *Cubes of base edges 1 cm , 2 cm , 3 cm and 4 cm are given below .*



a) What is the volume of the first cube ?

b) If we continue this process , what is the sequence of volume of the cubes so obtained ?

c) *Check whether the above sequence is an arithmetic sequence or not ?*

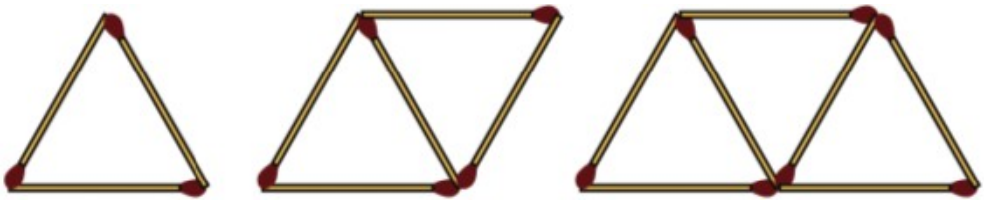
d) If it is an arithmetic sequence , what will be its common difference ?

SARATH .A .S , HST ,GHS ANCHACHAVADI

ONLINE CLASS STD - X 2020-21 : MATHEMATICS

WORK SHEET - 1.15 ANSWER

1. *Let's make the figures shown in the figure using matchsticks .*



a) *How many matchsticks are there in the first figure (triangle) ?*

b) *If we continue this process , what is the sequence of numbers of matchsticks used in each figure ?*

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) *If it is an arithmetic sequence , what will be its common difference ?*

Answer .

a) 3

b) 3 , 5 , 7 , 9 , 11 , ...

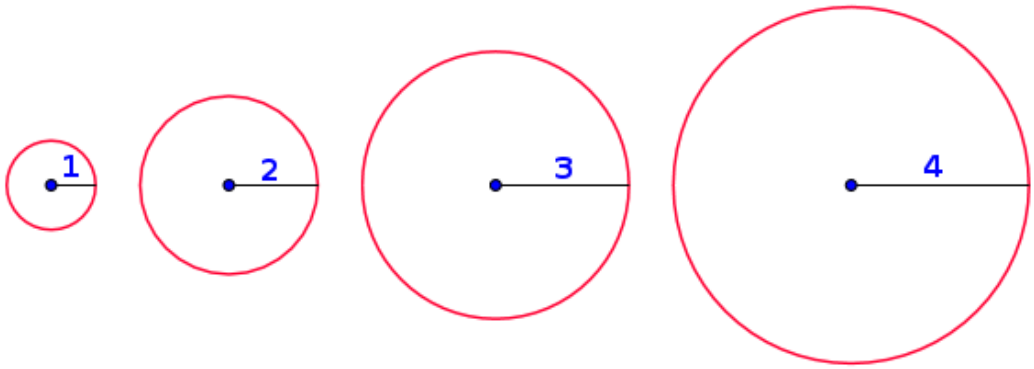
c) $x_2 - x_1 = 5 - 3 = 2$, $x_3 - x_2 = 7 - 5 = 2$, $x_4 - x_3 = 9 - 7 = 2$

$x_5 - x_4 = 11 - 9 = 2$

Since the difference between any two consecutive terms of this sequence is a constant , it is an arithmetic sequence .

d) *Common difference* = 2

2. *In the figure circles of radii 1 cm , 2 cm , 3 cm and 4cm are drawn .*



a) *What is the perimeter of the first circle ?*

b) *If we continue this process , what is the sequence of perimeter of the circles so obtained ?*

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) *If it is an arithmetic sequence , what will be its common difference ?*

Answer.

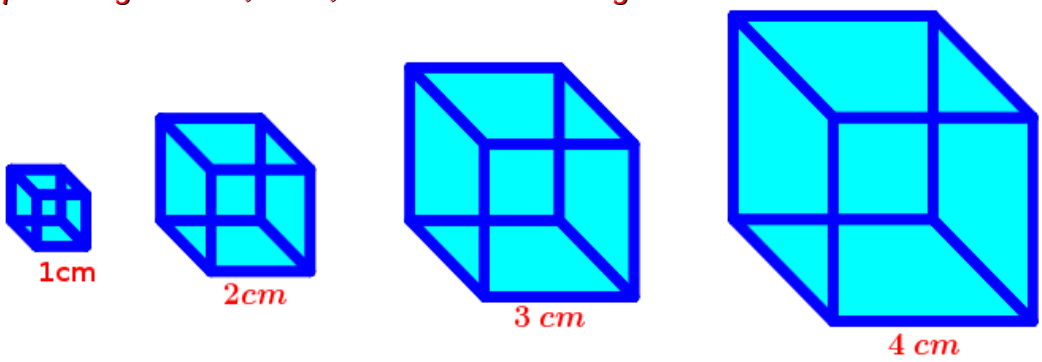
$a)\ 2\pi\ cm$

$b)\ 2\pi\ ,\ 4\pi\ ,\ 6\pi\ ,\ 8\pi\ ,\ 10\pi\ ,\ .....$

$c)\ x_2 - x_1 = 4\pi - 2\pi = 2\pi\ \ ,\ \ x_3 - x_2 = 6\pi - 4\pi = 2\pi\ \ ,\ \ x_4 - x_3 = 8\pi - 6\pi = 2\pi$

d) Common difference $= 2\pi$

3. *Cubes of base edges 1 cm , 2 cm , 3 cm and 4 cm are given below .*



a) What is the volume of the first cube ?

b) If we continue this process , what is the sequence of volume of the cubes so obtained ?

c) *Check whether the above sequence is an arithmetic sequence or not ?*

d) If it is an arithmetic sequence , what will be its common difference ?

Answer .

a) $1^3 = 1\ cm^3$

b) $1^3\ ,\ 2^3\ ,\ 3^3\ ,\ 4^3\ ,\ 5^3\ ,\ .....\ = 1\ ,\ 8\ ,\ 27\ ,\ 64\ ,\ 125\ ,\ .....$

$c)\ x_2 - x_1 = 8 - 1 = 7\ \ ,\ \ x_3 - x_2 = 27 - 8 = 19$

Since the difference between two consecutive terms of this sequence is not a constant , it is not an arithmetic sequence .