

## Interactive Supplementary Lesson One

**General Instructions:** Choose the correct answer for the following questions, which are designed for your interactive supplementary practice. The questions, correct answers, and distractive choices are linked. Attempt to answer them, and then check your response by clicking on the alternatives, which will lead you to feedback. You may attempt each question three times until you get it correct. Every time, you get it wrong, you should click on 'Try Again' to return to the same question.

### Activity 1

1. People want to plant trees in a certain pattern in the green area of a community like 20 plants in the first row, 34 plants in the second row and 48 plants in the third row, and so on. How many trees people will plant in the 5th and 6th row?
  - A. [54 and 76](#)
  - B. [82 and 90](#)
  - C. [76 and 90](#)
  - D. [82 and 102](#)
2. A library adds books to its collection each month. In January, there are 100 books, in February there are 120 books, and in March there are 140 books. How many books will there be in April and May?
  - A. [220 and 260](#)
  - B. [160 and 180](#)
  - C. [100 and 140](#)
  - D. [120 and 160](#)
3. A teacher gives her students points for homework. The first student receives 5 points, the second student receives 10 points, and the third student receives 15 points. How many points will the 10th and 11th students receive?
  - A. [50 and 55](#)
  - B. [45 and 50](#)
  - C. [20 and 25](#)
  - D. [35 and 40](#)

4. A factory produces chocolates. In the first month, it produces 200 chocolates, in the second month it produces 250 chocolates, and in the third month it produces 300 chocolates. How many chocolates will be produced in the 5th and 6th months?
- A. [400 and 450](#)
  - B. [400 and 500](#)
  - C. [500 and 600](#)
  - D. [350 and 400](#)
5. A fitness program tracks the number of steps taken each week. A participant's trucks in the first, second and third weeks were found to be 3000 steps, 4000 steps and 5000 steps respectively. How many steps will the truck records be in the 4<sup>th</sup> and 5<sup>th</sup> weeks?
- A. [8000 and 9000](#)
  - B. [9000 and 10000](#)
  - C. [7000 and 8000](#)
  - D. [6000 and 7000](#)

## Feedback:

IncorrectQ1. [Try AgainQ1.](#)

IncorrectQ2. [Try AgainQ2.](#)

IncorrectQ3. [Try AgainQ3.](#)

IncorrectQ4. [Try AgainQ4.](#)

IncorrectQ5. [Try AgainQ5](#)

Good job. Have a look at the explanation for #Q1 below if you like and then go to the [next question](#).

The pattern of planting trees in the community follows a specific sequence.

1. First row: 20 plants
2. Second row: 34 plants
3. Third row: 48 plants

So, observing the pattern gives you good hits. To find the number of plants in each row, following the pattern, we can look at the differences between the rows:

- From the 1st to the 2nd row:  $(34 - 20 = 14)$
- From the 2nd to the 3rd row:  $(48 - 34 = 14)$

The difference between consecutive rows is constant at 14. This indicates that the number of plants in each row forms an arithmetic sequence.

The general term for an arithmetic sequence can be expressed as:

$$a_n = a_1 + (n-1) \cdot d$$

Where:

- $a_1$  is the first term (20 plants),
- $d$  is the common difference (14 plants),
- $n$  is the row number.

Therefore: -

Based on the formula  $[a_n = a_1 + (n-1) \cdot d]$  we can calculate the number plants on 5th and 6th Rows respectively.

**1. 5<sup>th</sup> row:**

$$\{a_n = a_1 + (n-1) \cdot d\} = 20 + (5-1) \cdot 14 = 20 + (4) \cdot 14 = 20 + 56 = 76$$

**2. 6<sup>th</sup> row:**

$$\{a_n = a_1 + (n-1) \cdot d\} = 20 + (6-1) \cdot 14 = 20 + (5) \cdot 14 = 20 + 70 = 90$$

Therefore, on the 5<sup>th</sup> row, there will be 76 plants, and on the 6<sup>th</sup> row, there will be 90 plants.

Good job. Take a look at the explanation given for #Q2 below and then go to the [next question](#).

### Identifying the pattern:

Library Books: In January, there are 100 books, February has 120 books, and March has 140 books.

### General term formula:

$$\{a_n = a_1 + (n-1) \cdot d\}$$

Where:

- $a_1$  is the first term (100 books),
- $d$  is the common difference (20 books),
- $n$  is the row number.

First term ( $a_1$ , January): 100

Common difference ( $d$ ): 20 {since  $120 - 100 = 20$  and  $140 - 120 = 20$ }

Second term ( $a_2$ ):  $a_2 = 100 + (2-1) \cdot 20 = 100 + 20 = 120$

Third term ( $a_3$ ):  $a_3 = 100 + (3-1) \cdot 20 = 100 + 2 \cdot 20 = 100 + 40 = 140$

Next terms:

For April:

$$a_4 = 100 + (4-1) \cdot 20 = 100 + 60 = 160 \quad b_4 = 100 + (4-1) \cdot 20 = 100 + 60 = 160$$

For May:

$$a_5 = 100 + (5-1) \cdot 20 = 100 + 80 = 180 \quad b_5 = 100 + (5-1) \cdot 20 = 100 + 80 = 180$$

Answer: In April, there will be 160 books, and in May, there will be 180 books.

Good job. Have a look at the explanation given to this questions (#Q3) if you like and then go to the [next question](#).

The first student receives 5 points, the second receives 10 points, and the third receives 15 points.

**1. Identify the pattern:**

- First term ( $a_1$ ): 5
- Common difference ( $d$ ): 5 {since  $10 - 5 = 5$  and  $15 - 10 = 5$ }

**2. General term formula:**

$$a_n = a_1 + (n-1) \cdot d$$

$$a_1 = 5 + (1-1) \cdot 5 = 5 + 0 \cdot 5 = 5 + 0 = 5$$

$$a_2 = 5 + (2-1) \cdot 5 = 5 + 1 \cdot 5 = 5 + 5 = 10$$

$$a_3 = 5 + (3-1) \cdot 5 = 5 + 2 \cdot 5 = 5 + 10 = 15$$

Then the 10<sup>th</sup> student point will be:

$$a_{10} = 5 + (10-1) \cdot 5 = 5 + 9 \cdot 5 = 5 + 45 = 50$$

For the 11th student:

$$a_{11} = 5 + (11-1) \cdot 5 = 5 + 10 \cdot 5 = 5 + 50 = 55$$

Therefore, the 10<sup>th</sup> student will receive **50 points**, while the 11<sup>th</sup> will receive **55 points**.

Good job. Take a look at the following explanation for #Q4 and then go to the [next question](#).

**Widget Production:** The first month produces 200 widgets, the second produces 250 widgets, and the third produces 300 widgets.

**1. Identify the pattern:**

- First term ( $w_1$ ): 200
- Common difference ( $d$ ): 50 (since  $250 - 200 = 50$  and  $300 - 250 = 50$ )

**2. General term formula:**

$$w_n = w_1 + (n-1) \cdot d$$

$$w_n = 200 + (n-1) \cdot 50$$

**3. Next terms:**

- For the 5th month:

$$w_5 = 200 + (5-1) \cdot 50 = 200 + 200 = 400$$

- For the 6th month:

$$w_6 = 200 + (6-1) \cdot 50 = 200 + 250 = 450$$

**Answer:** In the 5th month, **400 chocolates** will be produced, and in the 6th month, **450 chocolates** will be produced.

Good job. Now you can have a look at the explanation given below if you want to.

**Truck records taken:** In the first week, a participant's truck record was 3000 steps, in the second week it was 4000 steps, and in the third week 5000 steps was recorded.

**1. Identifying the pattern:**

- First term ( $a_1$ ): 3000
- Common difference ( $d$ ): 1000 (since  $4000 - 3000 = 1000$  and  $5000 - 4000 = 1000$ )

**2. General term formula:**

$$a_n = a_1 + (n-1) \cdot d$$

$$a_1 = 3000 + (1-1) \cdot 1000 = 3000 + (0) \cdot 1000 = 3000 + 0 = 3000$$

$$a_2 = 3000 + (2-1) \cdot 1000 = 3000 + (1) \cdot 1000 = 3000 + 1000 = 4000$$

$$a_3 = 3000 + (3-1) \cdot 1000 = 3000 + (2) \cdot 1000 = 3000 + 2000 = 5000$$

Hence the 4<sup>th</sup> week's record will be: -

$$a_4 = 3000 + (4-1) \cdot 1000 = 3000 + (3) \cdot 1000 = 3000 + 3000 = 6000$$

And

$$A_5 = 3000 + (5-1) \cdot 1000 = 3000 + (4) \cdot 1000 = 3000 + 4000 = 7000$$

**Therefore: -**

**The answers are:** In the 4<sup>th</sup> week, the participant's truck record will be **6000 steps**, while in the 5<sup>th</sup> week, it will be **7000 steps**.