

## UNIT 12 *Number Patterns and Sequences*

## Overhead Slides

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- 12.1 Sequences
- 12.2 Flower Beds
- 12.3 Quadratic Sequences
- 12.4 Linear Formula
- 12.5 Quadratic Formula

## OS 12.1

*Sequences*

What are the next three terms?

1. 5, 8, 11, 14, , ,

2. 7, 11, 15, 19, , ,

3. 9, 7, 5, 3, , ,

4.  $1\frac{1}{2}$ , 4,  $6\frac{1}{2}$ , 9, , ,

5. -6, -9, -12, -16, , ,

6. 1, 4, 9, 16, , ,

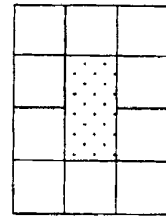
*Extension* Find the  $n$ th term.

OS 12.2

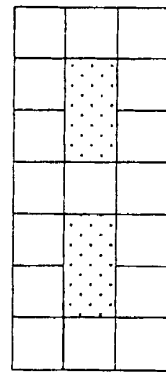
*Flower Beds*

**A**

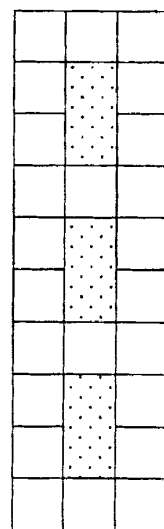
$n = 1$



$n = 2$



$n = 3$



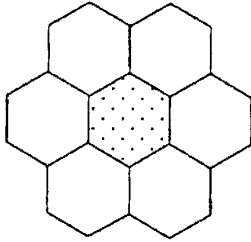
No. of paving stones?

10

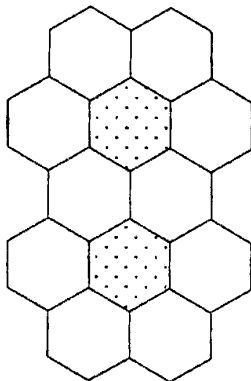


**B**

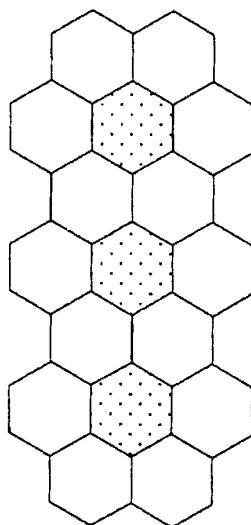
$n = 1$



$n = 2$



$n = 3$



No. of paving stones?

6



**C**

If there are 200

slabs, how many flower beds of type A can be made?

## OS 12.3

*Quadratic Sequences*

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Find the next *three* terms.

1. 5, 6, 8, 11, , ,

2. 4, 7, 13, 22, , ,

3. 50, 48, 44, 38, , ,

4. 10, 9, 7, 4, , ,

# OS 12.4

## Linear Formula

$$u_n = an + b$$

$n$	1	2	3	4	5
$u_n$	$a + b$	$2a + b$	<input type="text"/>	<input type="text"/>	<input type="text"/>
1st difference	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

### Example

$n$	1	2	3	4	5
$u_n$	7	10	13	16	19
1st difference	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	

$a =$ 
         
  $b =$

$$u_n =$$

Check:  $u_6 =$

# OS 12.5

## Quadratic Formula

$$u_n = an + b$$

$n$	1	2	3	4	5
$u_n$	$a+b+c$	$4a+2b+c$	$9a+3b+c$	<input type="text"/>	<input type="text"/>
1st diff.	$3a+b$	<input type="text"/>	<input type="text"/>	<input type="text"/>	
2nd diff.		<input type="text"/>	<input type="text"/>	<input type="text"/>	

### Example

$n$	1	2	3	4	5
$u_n$	0	1	3	6	10
1st difference	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
2nd difference		<input type="text"/>	<input type="text"/>	<input type="text"/>	

$a =$       
  $b =$       
  $c =$

$u_n =$

Check:  $u_6 =$