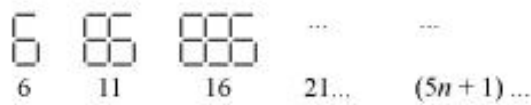




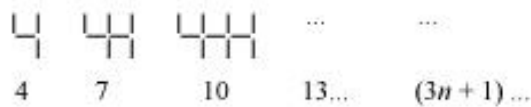
NCERT Solutions For Class 7 Maths Algebraic Expressions Exercise 12.4

**Q1.** Observe the patterns of digits made from line segments of equal length. You will find such segmented digits on the display of electronic watches or calculators.

(a)



(b)



(c)



If the number of digits formed is taken to be  $n$ , the number of segments required to form  $n$  digits is given by the algebraic expression appearing on the right of each pattern.

How many segments are required to form 5, 10, 100 digits of the kind -

, , .

**Ans:**

(a) It is given that the number of segments required to form  $n$  digits of the kind

is  $(5n + 1)$ .

Number of segments required to form 5 digits =  $(5 \times 5 + 1)$

$= 25 + 1 = 26$


Number of segments required to form 10 digits =  $(5 \times 10 + 1)$

$$= 50 + 1 = 51$$

Number of segments required to form 100 digits

$$= (5 \times 100 + 1)$$

$$= 500 + 1 = 501$$

(b) It is given that the number of segments required to form  $n$  digits of the kind  is  $(3n + 1)$ .

Number of segments required to form 5 digits =

$$(3 \times 5 + 1)$$

$$= 15 + 1 = 16$$

Number of segments required to form 10 digits =


$$(3 \times 10 + 1)$$

$$= 30 + 1 = 31$$

Number of segments required to form 100 digits

$$= (3 \times 100 + 1)$$

$$= 300 + 1 = 301$$

(c) It is given that the number of segments required to form  $n$  digits of the kind  is  $(5n + 2)$ .

Number of segments required to form 5 digits =

$$(5 \times 5 + 2)$$

$$= 25 + 2 = 27$$

Number of segments required to form 10 digits =

$$(5 \times 10 + 2)$$

$$= 50 + 2 = 52$$

Number of segments required to form 100 digits

$$= (5 \times 100 + 2)$$

$$= 500 + 2 = 502$$

**Q2.** Use the given algebraic expression to complete the table of number patterns.

S. No	Expression	Terms									
		1st	2nd	3rd	4th	5th	...	10th	...	100th	...
(i)	$2n - 1$	1	3	5	7	9	-	19	-	-	-
(ii)	$3n + 2$	2	5	8	11	-	-	-	-	-	-
(iii)	$4n + 1$	5	9	13	17	-	-	-	-	-	-
(iv)	$7n + 20$	27	34	41	48	-	-	-	-	-	-
(v)	$n^2 + 1$	2	5	10	17	-	-	-	-	10,001	-

**Ans:**

The given table can be completed as follows.

S.No	Expression	Terms									
		1st	2nd	3rd	4th	5th	...	10th	...	100th	...
(i)	$2n - 1$	1	3	5	7	9	-	19	-	199	-
(ii)	$3n + 2$	2	5	8	11	17	-	32	-	302	-
(iii)	$4n + 1$	5	9	13	17	21	-	41	-	401	-
(iv)	$7n + 20$	27	34	41	48	55	-	90	-	720	-
(v)	$n^2 + 1$	2	5	10	17	26	-	101	-	10,001	-

\*\*\*\*\* END \*\*\*\*\*