# Sequences - Digits

**Sequences**  Counting is a math skill that we learn early in life. Counting by ones, we say the numbers

$$1, 2, 3, 4, 5, 6, \ldots$$

These numbers are called **counting numbers.** We can also count by a number other than one. Below we show the first five numbers for counting by twos and the first five numbers for counting by fives.

$$2, 4, 6, 8, 10, \ldots$$

$$5, 10, 15, 20, 25, \ldots$$

An ordered list of numbers forms a **sequence.** Each member of the sequence is a **term.** The three dots mean that the sequence continues even though the numbers are not written. We can study a sequence to discover its counting pattern, or rule. The rule can be used to find more terms in the sequence.

**Example 1**  What are the next three terms in this counting sequence?

$$3, 6, 9, 12, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \ldots$$

*Solution*  The pattern is "Count up by threes." To find the next three terms, we may count up by threes, or we may count up by ones and emphasize every third term (one, two, *three,* four, five, *six,* …). Either way, we find that the next three terms are **15, 18,** and **21.**

**Example 2**  Describe the rule for this counting sequence. What is the next term in the sequence?

$$56, 49, 42, \_\_\_\_\_, \ldots$$

*Solution*  This sequence counts down. We find that the rule for this sequence is **"Count down by sevens."** Counting down by seven from 42 gives us **35.**

**Digits**  There are ten **digits** in our number system. They are 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9. The number 385 has three digits, and the last digit is 5. The number 148,567,896,094 has twelve digits, and the last digit is 4.

**Example 3**  The number 186,000 has how many digits?

*Solution*  The number 186,000 has **six digits.**

**Example 4**  What is the last digit of 26,348?

*Solution*  The number 26,348 has five digits. The last digit is **8.**

## Lesson Practice

Describe the rule for each counting sequence. Then Enter the next three terms in the sequence.

a.  4, 7, 10,___,___,___,...

b.  9, 18, 27,___,___,___,...

c.  50, 45, 40,___,___,___,...

How many digits are in each of these numbers?

d.  37,976

e.  2,467,568

What is the last digit of each of these numbers?

f.  376,985

g.  265

## Written Practice

*Distributed and Integrated*

Enter the next term in each counting sequence:

1.  20, 18, 16,___,___,___,...

2.  34, 30, 26,___,___,___,...

3.  11, 22, 33,___,___,___,...

4.  41, 47, 53,___,___,___,...

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Write the missing term in each counting sequence:

5.      33, 37,___, 45, 49,....

6.      ___,21, 22, 23, 24,....

7.      63, 56, 49,___, 35,....

8.      80,___, 60, 50, 60,....

9.      51, 41, 31, 21, ___,...

Describe the rule for each counting sequence, and write the next three terms:

10.     6, 12, 18,___,___,___,.....

11.     90, 81, 72,___,___,___,....

12.     13, 15, 17,___,___,___,....

13.     7, 10, 13,___,___,___,....

14.     What word names an ordered list of numbers?

How many digits are in each number?

15.     2,387,654

16.     6,587

17.     349,876

What is the last digit of each number?

18.     5,655

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19.  256,579