

Example 2

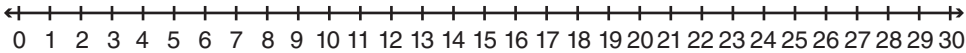
List all whole number multiples of 9 between 1 to 100. Show how to generate the multiples by listing the factors used.

Multiples of 9	Factors
9	9×1
18	9×2
27	9×3
36	9×4
45	9×5
54	9×6
63	9×7
72	9×8
81	9×9
90	9×10
99	9×11



Check Up

- On the number line below,
- a. circle all factors of 12 with a red pen.
 - b. circle all multiples of 12 with a blue pen.

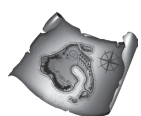
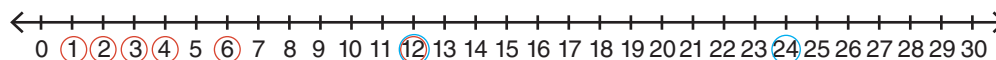




Compare your answers.

On the number line below,

- circle all factors of 12 with a red pen.
- circle all multiples of 12 with a blue pen.



Explore the Lesson

B. Prime and Composite Numbers

Information technology uses **prime numbers** to create sub-routines in cryptography. Cryptography is the practice of securing communication through the use of prime number algorithms. Some **natural numbers** greater than 1 can be classified as prime numbers.

Prime Number

a number with exactly two factors, 1 and itself

Natural Numbers

counting numbers, such as 1, 2, 3, ...

For instance, the number 3 has factors of 1 and 3 (itself) only. As such, 3 is a prime number.

$$1 \times 3 = 3$$

```

      3
     / \
    1   3
  
```

But, what if a number has factors other than 1 and itself?

Numbers with factors other than 1 and itself are classified as **composite numbers**.

Composite Numbers

numbers with more than two factors (In other words, more factors than just 1 and itself. A composite number can be written as the product of two factors, neither of which is itself.)

For instance, the number 4 is a composite number because 4 has more factors than just 1 and itself.

$$1 \times 4 = 4$$

```

      4
     / \
    1   4
  
```

$$2 \times 2 = 4$$

```

      4
     / \
    2   2
  
```

The number 4 has factors of 1, 2, and 4.