2.2 Factors and Prime Factorization

Learning Objectives:
1. Find the factors of a number.
2. Identify prime and composite numbers.
3. Find the prime factorization of a number using factor trees and the division method.
4. Key Vocabulary: natural numbers, factors, factorization, prime numbers, composite numbers, prime factorization, divisibility tests.

1. Finding Factors of Numbers

Example 1. List all the factors of each number.

1. 43
2. 144

2. Identify Prime and Composite numbers.

Natural number—is counting numbers. (1, 2, 3, 4, ....)

Prime number—is a natural number greater than 1 that has exactly two different factors, 1 and itself.

Example:

Example 2. Identify each number as prime, composite or neither.

1. 6
2. 47
3. 51
4. 1

3. Find the prime factorization of a number using factor trees and the division method

Prime Factorization of a number—is the factorization in which all the factors are prime numbers.

Divisibility Tests: A whole number is divisible by

- 2 if the last digit is even.
- 3 if the sum of the digits is divisible by 3.
- 4 if its last two digits are divisible by 4.
- 5 if the last digit is 0 or 5.
- 6 if it’s divisible by 2 and 3.
- 9 if the sum of its digits is divisible by 9.
Example 3. Use factor trees to find the prime factorization of each number. Use exponents with any repeated factors.

1. 132

2. 480

Read Sections 2.3, 2.4 and 2.5