# Section Overview

Professional Development

## Divisibility — Lesson 4-1

**Why?** You need to find factors of numbers when operating with fractions.

| A number is divisible by . . . | Example | Explanation |
|---|---|---|
| **2** if the last digit is even (0, 2, 4, 6, or 8). | 176 | **6** is even. |
| **3** if the sum of the digits is divisible by 3. | **525** | **5** + **2** + **5** = 12; 12 is divisible by 3. |
| **4** if the last two digits form a number divisible by 4. | 3,5**16** | **16** is divisible by 4. |
| **5** if the last digit is 0 or 5. | 11,27**5** | The last digit is **5**. |
| **6** if the number is divisible by both 2 and 3. | **24** | **24** is divisible by both 2 and 3. |
| **9** if the sum of the digits is divisible by 9. | **4,860** | **4** + **8** + **6** + **0** = 18; 18 is divisible by 9. |
| **10** if the last digit is 0. | 35,39**0** | The last digit is **0**. |

## Factors and Prime Factorization — Lesson 4-2

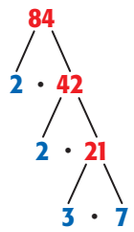
**Why?** Prime factorization is used to operate with and simplify fractions.

A **prime number** is greater than 1 and has factors of only 1 and itself: 2, 3, 5, 7, 11, . . .

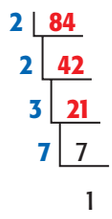
A **composite number** is greater than 1 and is not prime: 4, 6, 8, 9, 10, . . .

**Write the prime factorization of 84.**

Use a **factor tree.**




Use a **ladder diagram.**




The number 84 is **composite.**

**84** = **2** · **2** · **3** · **7** The factors 2, 3, and 7 are **prime.**

## Greatest Common Factor — Lesson 4-3

**Why?** Finding the GCF of a set of numbers is used in operations with fractions.

| Find the GCF of 24 and 60. | | |
|---|---|---|
| **Method 1** | factors of 24: 1, 2, 3, 4, 6, 8, (12), 24<br>factors of 60: 1, 2, 3, 4, 5, 6, 10, (12), 15, 20, 30, 60 | *List all the factors of each number.*<br>*Circle the greatest common factor.* |
| **Method 2** | 24 = (2) • (2) • 2 • (3)<br>60 = (2) • (2) • (3) • 5<br>2 • 2 • 3 = 12 | *Write the prime factorization of each number.*<br>*Circle the common prime factors.*<br>*Find the product of the common prime factors.* |

**The greatest common factor of 24 and 60 is 12.**