NAME_____

Module 4 **Fractions, Decimals, Percents, and Factors**
Lesson 3 **Factors and Prime Factorization**

Challenge Problems 4.3

Set 1

1. Syd and Bork wrote factor trees to find the prime factorization of 80. The first row of Syd's tree showed 20 × 4. The first row of Bork's tree showed 16 × 5. Show that each factor tree can be used to find the prime factorization.

Set 2

1. Two numbers are relatively prime if they have no common factors other than one. The numbers may be prime or composite–relatively prime just means they share no common factors except one.

   Make a true statement: 15 and ___ are relatively prime.

Set 3

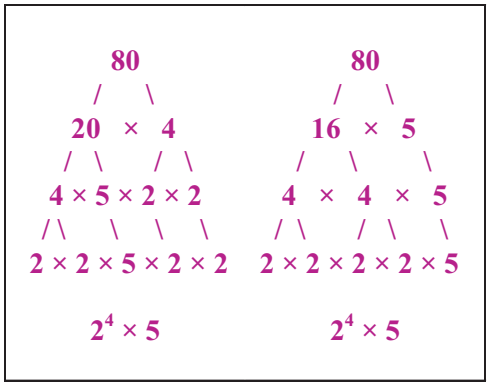
1. Use exponential form to write the prime factorizations of 108 and 162. Explain how the bases and exponents can be used to find the GCF.

2. When is the GCF of two numbers the same as the lesser of the two numbers? Explain.

Possible Answers

Set 1

1.



Set 2

1. 15 and 14 are relatively prime.
15 and 7 are relatively prime.
15 and 16 are relatively prime.

Set 3

1. $108 = 2^2 \times 3^3$
$162 = 2 \times 3^4$
The GCF is the product of the least power of each common base.
$GCF = 2 \times 3^3 = 54$
The GCF is 54.

2. The GCF of two numbers is the lesser of the two numbers when the lesser number is a factor of the greater number because the lesser number is a factor of itself and when the lesser number is a factor of the greater number. For example, the Greatest Common Factor of 45 and 90 is 45.