

Name: _____

Date: _____

GREATEST COMMON FACTORS
N-GEN MATH® 6



In the past few lessons we have worked with factoring a number and **prime factoring** with **factor trees**. In this lesson, we will find the **greatest common factor** (the **gcf**) of two numbers.

Exercise #1: Let's take the two whole numbers 24 and 40.

- (a) Write each number as the product of two whole numbers as many ways as possible. Then, list the factors of each number.

factorizations of 24:

factorizations of 40:

factors of 24:

factors of 40:

- (b) List all the common factors of 24 and 40. Which is the greatest common factor (gcf)?

common factors of 24 and 40: _____

greatest common factor of 24 and 40: _____

Students often think about the **greatest common factor** as the largest whole number that **divides both numbers** evenly (zero remainders).

Exercise #2: Find the **greatest common factor (gcf)** for each of the following pairs of numbers by considering **divisors** of both numbers.

(a) 18 and 24

(b) 25 and 30

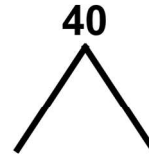
(c) 27 and 72



Finding the greatest common factor (gcf) of two numbers can be challenging. We can use prime number factoring and factor trees to help. Let's revisit the first exercise.

Exercise #3: Consider the whole numbers 24 and 40.

(a) Create a prime number factor tree for both and write down the prime factorization of both.

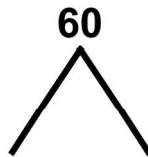
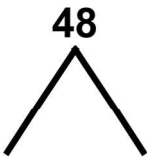


prime factorization: _____

prime factorization: _____

(b) Circle what is common and use what is circled to identify the greatest common factor. Show your work below.

Exercise #4: Use factor trees to identify the greatest common factor of 48 and 60.



greatest common factor: _____



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GREATEST COMMON FACTORS N-GEN MATH[®] 6 HOMEWORK

FLUENCY

1. For each number below, list all factorizations of the number and then use these lists to identify the greatest common factor of the number pair.

(a) 18 and 42

(b) 28 and 44

factorizations of 18:

factorizations of 28:

factorizations of 42:

factorizations of 44:

gcf of 18 and 42: _____

gcf of 28 and 44: _____

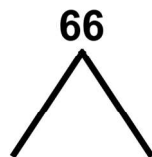
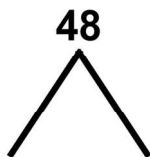
2. In this problem, try to find the greatest common factor by thinking about the **divisors** of the numbers. Find the gcf by determining the largest number that evenly divides them both.

(a) 6 and 15

(b) 16 and 40

(c) 7 and 35

3. Let's use the factor tree approach to find the gcf of two numbers. Create the factor tree for both 48 and 66 below. Then, use the prime factorization of both numbers to determine the gcf.



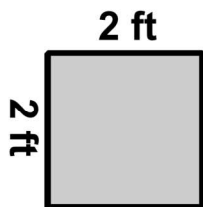
4. Find the greatest common factor of 36 and 90. Show or explain which approach you used.

USING YOUR MATH

5. Xavier has 30 apples and 54 snack bars that he is dividing up evenly in supply boxes that will contain both apples and snack bars.
- (a) What is the greatest number of boxes he can use so that each box contains the same number of apples and each box contains the same number of snack bars? Justify.
- (b) Based on your answer to (a), how many apples and how many snack bars will be in each box?

REVIEWING YOUR MATH

6. A patio is to be shaped like the rectangle shown below whose length is 12 feet and whose width is 8 feet.



How many square tiles that measure two feet by two feet will be needed to cover this patio? Explain how you found your answer.

