

Learning Objective

We will find the greatest common factor of two whole numbers.

NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12.

Activate Prior Knowledge

A **factor** is a number that is multiplied to get a product.

List the factors for the numbers below.

A **12**

B **18**



CFU

What are we going to do?

Factors of 8

1, 2, 4, 8

Make Connection

Students, you already know how to find the factors of a number. Now, we will find the greatest common factor of two whole numbers.

A **common factor** of two numbers is a **factor** both numbers **share**.

The **greatest common factor** (GCF) of two numbers is the **largest** factor **both** numbers **share**.

Find the Greatest Common Factor

Factors 12 and 18	Common Factors	Greatest Common Factor
<u>12</u> : 1, 2, 3, 4, 6, 12	<u>12</u> : 1, 2, 3, 6	6
<u>18</u> : 1, 2, 3, 6, 9, 18	<u>18</u> : 1, 2, 3, 6	

Not the Greatest Common Factor
1, 2, or 3

CFU

The following are factors of 12 and 16.
 12: 1, 2, 3, 4, 6, 12
 16: 1, 2, 4, 8, 16

What are the common factors of 12 and 16? How do you know?

Which number is the GCF of 12 and 16? How do you know?
 A 16 B 2 **C 4** D 8

What is the difference between common factor and greatest common factor? "The difference between common factor and greatest common factor is _____."

The **greatest common factor** (GCF) of two numbers is the **largest** factor **both** numbers **share**.

Find the greatest common factor of two whole numbers.

- 1 List all the factors of two whole numbers. (write)
- 2 Identify₁ the common factors for both numbers. (circle) Hint: Factors both numbers share.
- 3 Find the greatest common factor (GCF). (write)
- 4 Interpret₂ the greatest common factor.
 “The greatest common factor of ____ and ____ is ____.”

CFU

- 2 How did I/you identify the common factors for both numbers?
- 3 How did I/you find the greatest common factor?

<p>1. What is the greatest common factor of 30 and 42?</p> <p>30: 1, 2, 3, 5, 6, 10, 15, 30</p> <hr/> <p>42: 1, 2, 3, 6, 7, 14, 21, 42</p> <p>GCF _____</p>	<p>2. What is the greatest common factor of 18 and 30?</p> <p>18: _____</p> <hr/> <p>30: _____</p> <p>GCF _____</p>
<p>3. The greatest common factor of 18 and 45 is _____.</p> <p>18:</p> <p>45:</p>	<p>4. The greatest common factor of 12 and 20 is _____.</p> <p>12:</p> <p>20:</p>

Vocabulary

- ¹ find (synonym)
- ² explain

Solving Math Problems

- Determine what the question is asking.**
- Determine the math concept required.**
- Determine relevant information.**
- Solve the problem, then interpret the answer.**
- Check the reasonableness of your answer.**

CFU

- How did I/you determine what the question is asking?
- How did I/you determine the math concept required?
- How did I/you determine the relevant information?
- How did I/you solve and interpret the problem?
- How did I/you check the reasonableness of the answer?

5. Charlie is making cookie baskets for her friends. She made 14 chocolate chip cookies and 21 sugar cookies. What are the most baskets she can make, so each has the same amount of chocolate chip and sugar cookies?

14:

21:

Charlie can make _____ cookie baskets.

6. Jamal is making flower arrangements. He has 10 red roses and 35 carnations. How many baskets can he make, so each basket has an equal number of flowers?

10:

35:

Jamal can make _____ flower arrangements.

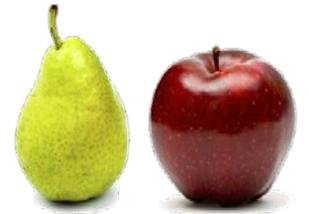
The **greatest common factor** (GCF) of two numbers is the **largest** factor **both** numbers **share**.

1 Finding the greatest common factor of two whole numbers will help you solve real-life problems.

Joanna is selling baskets of fruits at a farmer's market. She has 60 pears and 42 apples. What are the most baskets of fruit she can make so that each has the same amount of pears and apples?

Find the GCF of 60 and 42:

$$\begin{array}{l} 60 = 1, 2, 3, 4, 5, 6, 10 \\ 42 = 1, 2, 3, 6, 7 \end{array} \quad \text{GCF} = 6$$



Joanna can make **6 baskets of fruits**.
Each basket will have 10 pears and 7 apples.

2 Finding the greatest common factor of two whole numbers will help you do well on tests.

Sample Test Question:

36. What greatest common factor should be used to reduce the fraction 12/18 to its simplest form?

A 2
B 3
C 9
D 6

CFU

Does anyone else have another reason why it is relevant to find the greatest common factor of two whole numbers? (Pair-Share)

Why is it relevant to find the greatest common factor of two whole numbers?

You may give one of my reasons or one of your own.

Which reason is more relevant to you? Why?

The **greatest common factor** (GCF) of two numbers is the **largest** factor **both** numbers **share**.

Skill Closure

Find the greatest common factor of two whole numbers.

- 1 List all the factors of two whole numbers. (write)
- 2 Identify the common factors for both numbers. (circle) Hint: Factors both numbers share.
- 3 Find the greatest common factor (GCF). (write)
- 4 Interpret the greatest common factor.
"The greatest common factor of ___ and ___ is ___."

1. What is the greatest common factor of 20 and 28?

20: _____

28: _____

GCF _____

2. A teacher needs to divide 18 male students and 27 female students into teams, each with the same combination of male and female students and nobody left out. What is the greatest number of teams that can be formed?

18: _____

27: _____

The teacher can create _____ teams.

Access Common Core

The factors for 63 and 105 are listed below. What are the common factors of 63 and 105? What is the GCF of 63 and 105? How do you know?

63: 1, 3, 7, 9, 21, 63 **105:** 1, 3, 5, 7, 15, 21, 35, 105

The GCF of 63 and 105 is _____ because that is the largest factor that both share.

Summary Closure

What did you learn today about finding the greatest common factor of two whole numbers? (Pair-Share)
Use words from the word bank.

Word Bank

- find
- GCF
- common factor
- share
- largest number

The **greatest common factor** (GCF) of two numbers is the **largest** factor **both** numbers **share**.

Find the greatest common factor of two whole numbers.

- 1 List all the factors of two whole numbers. (write)
- 2 Identify the common factors for both numbers. (circle) Hint: Factors both numbers share.
- 3 Find the greatest common factor (GCF). (write)
- 4 Interpret the greatest common factor.
“The greatest common factor of ____ and ____ is ____.”

1. What is the greatest common factor of 45 and 75?

45: _____

75: _____

GCF _____

2. The greatest common factor of 16 and 32 is _____.

16:

32:

3. Lou is running for school vice president and plans to distribute some material: 36 flyers and 24 buttons. He wants each classroom to receive an identical set of materials, without having any left over. What is the greatest number of classrooms Lou can distribute to?

36:

24:

Lou can distribute _____ sets of material to each classroom.

4. Mrs. Knight is packing an equal number of apple slices and orange slices for snacks at the park. She has 36 apples slices and 15 orange slices. How many snack bags can she make without leftovers?

36:

15:

Mrs. Knight can make _____ snack bags.

<p>1. What is the greatest common factor of 30 and 66?</p>	<p>2. The greatest common factor of 48 and 28 is _____.</p>	<p>3. A club has 24 males and 28 females. The leader of the club wants to separate the club into equal groups. Each group must contain the same combination of males and females. What is the maximum number of groups the leader can create?</p> <p>The maximum number of groups the club can make is _____.</p>
--	---	--

Access Common Core

This morning in mathematics Marge was asked to reduce¹ a fraction. First, she must find the greatest common factor in order to reduce the fraction.

Below is Marge's answer for the first part of the math problem. Do you agree with her answer? Why or why not?

48: 1, 2, 3, 4, **6**, 8, 12, 16, 24, 48
60: 1, 2, 3, 4, 5, **6**, 10, 12, 15, 20, 30, 60 The GCF is **6**.