

Greatest Common Factor

Lesson 1-2

Name: _____

Date: _____

Class: _____

Key Vocabulary

Level 1 support

Picture first, then the word, then a plain-language meaning. Say each word out loud.

Factors of 12: 1, 2, 3, 4, 6, 12 — each divides 12 with no remainder

Factor

A number that divides another number with nothing left over.

Factors of 12: {1, 2, 3, 4, 6, 12}. Factors of 18: {1, 2, 3, 6, 9, 18}. Shared: 1, 2, 3, 6. GCF = 6

Greatest Common Factor

The biggest number that divides two or more numbers evenly.

8 and 12 both divide evenly by 1, 2, and 4 — those are their common factors

Common factor

A number that divides two or more numbers evenly.

$15 \div 3 = 5$ with no remainder, so 15 is divisible by 3

Divisible

A number you can divide evenly, with nothing left over.

$12 = 2 \times 2 \times 3$ and $18 = 2 \times 3 \times 3$. Shared primes: $2 \times 3 = 6 = \text{GCF}$

Prime factorization

Writing a number as prime numbers multiplied together. It helps you find the GCF.

Key Ideas & Notes

- Mission Control needs to organize 24 food packs and 36 water containers into equal groups for the crew pods.
- Each pod must get the same number of food packs AND the same number of water containers.
- What is the largest number of pods they can fill equally?
- Sort these numbers – which are factors of BOTH 24 and 36 (common factors), and which are factors of only one?

Think About It

- What two quantities need to be divided equally?
- What numbers could divide into both 24 and 36?
- What's the biggest number of equal groups we can make?

My Notes

Guided Examples

Example 1

What is the GCF of 8 and 12?

Solution: Factors of 8: 1, 2, 4, 8. Factors of 12: 1, 2, 3, 4, 6, 12. The largest common factor is 4.

Answer: A. 4

Example 2

Which pair of numbers has a GCF of 5?

Solution: $15 = 3 \times 5$, $25 = 5 \times 5$. Both share the factor 5, and 5 is the largest shared factor.

Answer: A. 15 and 25

Example 3

What is the GCF of 14 and 21?

Solution: Factors of 14: 1, 2, 7, 14. Factors of 21: 1, 3, 7, 21. The largest common factor is 7.

Answer: A. 7

Write About the Math

The Writing Revolution

I can explain how I found the GCF using the words factor, common factor, divisible, and greatest common factor.

1. Kernel Sentence subject + verb

Model: Factor is a number that divides another number with nothing left over.

Factor es un número que divide a otro sin que sobre nada.

Write a kernel sentence about factor. Use a subject and a verb.

Escribe una oración base sobre factor. Usa un sujeto y un verbo.

2. Sentence Expansion because · but · so

Kernel: Factor matters in math

Factor importa en matemáticas

Expand the kernel three ways. Add a reason, a contrast, and a result.

because
porque

Factor matters in math because ____.

Factor importa en matemáticas porque ____.

but
pero

Factor matters in math, but ____.

Factor importa en matemáticas, pero ____.

so
entonces

Factor matters in math, so ____.

Factor importa en matemáticas, entonces ____.

3. Sentence Types 4 ways to write a math idea

Statement
Afirmación

Tell one true fact about factor.
Di un hecho verdadero sobre factor.

Factor ____.

Question
Pregunta

Ask a question about factor.
Haz una pregunta sobre factor.

How does ____ ?

¿Cómo ____ ?

Exclamation
Exclamación

Show excitement about factor.
Muestra entusiasmo sobre factor.

Wow, ____ !

¡Guau, ____ !

Command
Mandato

Tell a partner what to do with factor.
Dile a un compañero qué hacer con factor.

First, ____ .

Primero, ____ .

4. Explain Your Reasoning use a sentence starter

The common factors are ____.

Los factores comunes son ____.

The greatest common factor is ____ **because** ____.

El máximo común divisor es ____ *porque* ____.

I would use the GCF to ____.

Usaría el MCD para ____.

Try It

Solve on your own. Check the answer key when you are done.

1. What is the GCF of 9 and 15?

- A. 3
- B. 1
- C. 9
- D. 45

Show your work:

2. A teacher has 36 pencils and 48 erasers. She wants to make identical supply bags with no items left over. What is the greatest number of bags she can make?

- A. 12 bags
- B. 6 bags
- C. 4 bags
- D. 36 bags

Show your work:

Stretch Your Thinking

Level 2 enrichment

Challenge task — explain your reasoning in full sentences.

A farmer has 48 apples and 32 oranges. She wants to make gift baskets where every basket has the same number of apples and the same number of oranges, with none left over. Find the greatest number of baskets and explain how you used GCF to solve this.

Sentence starter: The GCF of 48 and 32 is ____ because ____ . So the farmer can make ____ baskets, each with ____ apples and ____ oranges.

Show your work:

Reflect — Exit Ticket

What is the GCF of 18 and 27?

- A. 9
- B. 3
- C. 6
- D. 18

Your answer:

Answer Key & Teacher Guide

1. **Try It 1:** A. 3 — *Factors of 9: 1, 3, 9. Factors of 15: 1, 3, 5, 15. The largest common factor is 3.*
2. **Try It 2:** A. 12 bags — *$GCF(36, 48) = 12$. She can make 12 bags, each with 3 pencils and 4 erasers.*
3. **Exit Ticket:** A. 9 — *Factors of 18: 1, 2, 3, 6, 9, 18. Factors of 27: 1, 3, 9, 27. Common: 1, 3, 9. $GCF = 9$.*

Writing (TWR) — what to look for

- **Kernel sentence:** A complete sentence needs a subject and a verb. Example: Factor is a number that divides another number with nothing left over.
- **Expansion:** *because* gives a reason, *but* shows a contrast or exception, *so* shows a result. Answers vary; each must keep the kernel idea and add the correct kind of detail.
- **Sentence types:** Statement ends with a period, question with "?", exclamation with "!", and a command starts with an action verb (a "bossy" verb).