Composing and Decomposing Numbers

3

Least Common Multiple and Greatest Common Factor

WARM UP

Write the prime factorization of each number.

1. 21

2. 30

3. 42

4. 19

LEARNING GOALS

- Determine the greatest common factor of two whole numbers less than or equal to 100.
- Use greatest common factors and the Distributive Property to rewrite the sum of whole numbers 1 – 100.
- Determine the least common multiple of two whole numbers.

Number relationships are useful in solving everyday problems and in mental arithmetic. Understanding these relationships will deepen your knowledge of the structure of the number system. How can you use LCM and GCF to compose and decompose numbers?

We Have That in Common

You can solve real-world problems that involve common factors or common multiples by thinking about the question you are trying to answer.

Consider each scenario. Determine whether you would use either a common factor or a common multiple to solve the problem. Explain your reasoning.
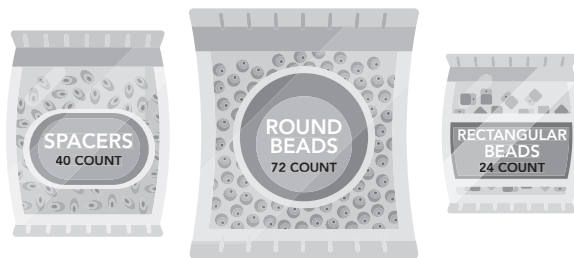
1. **Hot dogs come in packs of 8 and hot dog buns come in packs of 6. What is the least number of hot dog packs you can buy if you want to have the same number of hot dogs and buns?**

2. **Zev has 36 pencils and 45 erasers. He wants to use all of the pencils and erasers to make identical packages for his friends. What is the greatest number of packages Zev can make?**

3. **There are 40 sixth graders and 24 seventh graders in an afterschool program. The director wants to create groups where each group has the same number of sixth graders, and each group has the same number of seventh graders. What is the greatest number of groups she can make?**

4. **Every time Sariyah babysits, she saves $12 of her earnings. Every time Aaron babysits, he saves $9 of his earnings. After babysitting a number of times, Sariyah and Aaron have saved the exact same amount of earnings. What is the least possible amount of savings they could each have?**

Using GCF and LCM to Solve Problems

Read and solve each problem using either the greatest common factor or the least common multiple.

Emily has three bags of different types of beads. She wants to split up the beads into mixed packages to share with her friends. She wants each package to have exactly the same number of each type of bead with no beads left over.

SPACERS
40 COUNT

ROUND BEADS
72 COUNT

RECTANGULAR BEADS
24 COUNT

> *Common factors help you think about how to divide, or share things equally. Common multiples help you think about how things with different cycles can occur at the same time.*

1. **What is the greatest number of packages that Emily can assemble? Describe the collection of beads in each package.**

A cyclist completes a lap around a track in 12 minutes. A second cyclist completes a lap around the same track in 18 minutes.

2. **If both riders begin at the starting line at the same time and maintain their speed, after how many minutes will they meet again at the starting line? Explain your reasoning.**

TALK the TALK

Finishing Where We Started

You have used LCM and GCF to solve real-world problems. Now you can go back and solve the problems from the Started.

1. What is the least number of hot dog packs you can buy if you want to have the same number of hot dogs and buns?

2. What is the greatest number of packages Zev can make?

3. What is the greatest number of groups the director can make?

4. What is the least possible amount of savings Sariyah and Aaron could each have?