

Finding Factors, Making Multiples

Reporting Categories Computation and Estimation and Number and Number Sense

Topic Understanding the relationships between common multiples and factors

Primary SOL 4.5 The student will
a) determine common multiples and factors, including least common multiple and greatest common factor.

Related SOL 4.2a, b, c, 4.3a, b, c, d

Materials

- Grid paper
- Crayons or colored pencils
- Scissors
- Butcher paper
- Glue or clear tape
- Finding Factors, Making Multiples Recording Sheet (attached)

Vocabulary

factor, multiples, common factors, common multiples, greatest common factor (GCF), least common multiple (LCM), multiplication/division related facts

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

Note: Students should have been working with factors and multiples before taking part in this lesson.

1. Distribute grid paper. Display the target number 15, and ask students to create on the grid paper as many area models of 15 as possible. Students should create area models of 1×15 , and 3×5 . Explain that for this activity, we will consider a 1×15 model and a 15×1 model as being the same. Once students have created as many area models as they can for several target numbers, ask them how they could determine factors of a number by using area models. They should realize that making area models means working with factors of the target number.
2. Distribute scissors, and have students cut out their area models for a certain target number. Gather all the cut-out models to use to create a chart showing models of multiples of the target number. Have students glue or tape the combined area models to butcher paper to create models of $2 \times$ the target number, to $3 \times$ tn, $4 \times$ tn, $5 \times$ tn, and so on. Have them make models of all multiples up to 100 but not beyond. Point out that they *could* go on making models of multiples of the target number forever—there is no limit or end.
3. Distribute copies of the Finding Factors, Making Multiples Recording Sheet. Put students into groups of four, and assign each group a target number (e.g., 30, 45). Have individual students in each group repeat the process of creating on grid paper as many area models for their group’s target number as possible, thereby identifying the factors of the number. Direct them to write the factors on the recording sheet. Then, have students cut out and

combine all their group’s area models to show multiples of the target number and write the multiples on the recording sheet.

Factors	TARGET	Multiples
1, 15, 3, 5	15	30, 45, 60, 75, 90

- Have students in each group repeat step 3 above for two additional target numbers and complete the second and third charts on the recording sheet. Then, have students identify the GCF and LCM for the two pairs of numbers, as shown on the sheet.

Assessment

- Questions**
 - How are factors and multiples alike? How are they different? What relationships did you find through this activity?
 - Does a number have more factors or multiples? Explain your answer.
- Journal/Writing Prompts**
 - After doing the first activity under “Extensions and Connections” below, write about the GCF and LCM of these target numbers, discussing the relationships between the target numbers in each pair.

Extensions and Connections (for all students)

- Have students use a hundred chart for each pair of target numbers on the above activity’s recording sheet to color the factors and multiples to find the GCF and LCM.
- Once students have completed two number rays, have them put the factors into a Venn diagram and find the greatest common factor. Also, have them do the same with the multiples and find the least common multiple.

Finding Factors, Making Multiples Recording Sheet

Factors	TARGET	Multiples

GCF: _____ \updownarrow LCM: _____

Factors	TARGET	Multiples

GCF: _____ \updownarrow LCM: _____

Factors	TARGET	Multiples