EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

In Topic D, students work with odd and even numbers and the **divisibility rules** to find factors, multiples, **common factors**, and **common multiples** of whole numbers. Then they find the **greatest common factor** and the **least common multiple** shared by pairs of numbers. To find the greatest common factor for pairs of large numbers, students explore **Euclid's algorithm**. (See Sample Problem.)

You can expect to see homework that asks your child to do the following:

- Determine whether a sum or product is even or odd.
- Use the divisibility rules to determine whether a number is divisible by other numbers. Find a number that is divisible by other numbers.
- Identify factors and multiples of given numbers.
- Find the greatest common factor and least common multiple of pairs of numbers.
- Use Euclid's algorithm to find the greatest common factor of a pair of large numbers.

SAMPLE PROBLEM *(From Lesson 19)*

Apply Euclid's algorithm to find the greatest common factor of 30 and 45, denoted GCF (30, 45).

$$\begin{array}{r} 1 \\ 30\overline{)45} \\ \underline{-30} \\ 15 \end{array} \qquad \begin{array}{r} 2 \\ 15\overline{)30} \\ \underline{-30} \\ 00 \end{array}$$

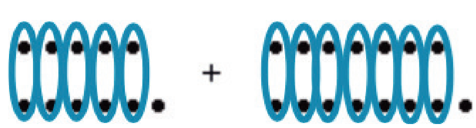
***The greatest common factor of* 30 *and* 45 *is* 15.**

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

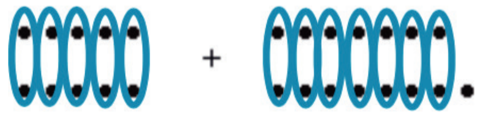
You can help at home in many ways. Here are some tips to help you get started.

- Ask your child to draw pairs of dots to explain why the sum of 11 and 15 is even. (This strategy will be familiar from our work in class.) Your child should explain the following: "There is one 'leftover' dot when circling pairs to represent 11 and one leftover dot when circling pairs for 15. These leftovers form another pair. There are no more leftover dots, so the sum is even."



HOW YOU CAN HELP AT HOME *(continued)*

- Ask your child to draw dots to explain why the sum of 10 and 15 is odd. Following the above procedure, there is one leftover dot, so the sum is odd.



- Take turns listing the factors of 42 (1, 2, 3, 6, 7, 14, 21, and 42) and 70 (1, 2, 5, 7, 10, 14, 35, and 70). Have your child circle the common factors, put a triangle around the greatest common factor (GCF), which is 14, and explain out loud how she found the GCF. Then challenge her to describe the process in writing. Review your child's writing and work with her to make one or two improvements (e.g., make the vocabulary more precise, add more details to the steps, make the explanation more concise). Your child may say something like, "I found the greatest common factor by listing the factors of each individual number. Then I found the common factors and put a circle around those numbers. I know the greatest common factor is the largest factor that both numbers have in common, so I looked for the largest common factor and put a triangle around that number."

TERMS

Common factors: Factors shared by two or more numbers. For example, 3 is a common factor of 6, 9, and 12.

Common multiples: Multiples shared by two or more numbers. For example, 30 is a common multiple of 3, 6, and 10.

Divisibility rules: Ways to tell whether one whole number is divisible by another.

Euclid's algorithm: A series of steps for finding the greatest common factor of two large numbers.

Greatest common factor (GCF): The largest number that divides evenly into all numbers in a group of two or more numbers. To determine the greatest common factor of two numbers—for example, 12 and 16—list all the whole number factors of 12 (1, 2, 3, 4, 6, 12) and all the whole number factors of 16 (1, 2, 4, 8, 16). The greatest whole number that appears on both lists is 4, so 4 is the greatest common factor of 12 and 16.

Least common multiple (LCM): The smallest whole number multiple shared by all numbers in a group of two or more numbers. To find the least common multiple of two numbers—for example, 5 and 6—list the first few multiples of each number: 5, 10, 15, 20, 25, 30, and so on for 5, and 6, 12, 18, 24, 30, and so on for 6. The first (and, thus, least) multiple they share is the least common multiple (30).

Units digit: The number in the ones place. For example, the units digit for 2,981 is 1, the units digit for 570 is 0, and the units digit for 19,823.4 is 3.