

## **Dear Family,**

The first unit in your child's mathematics class this year is **Prime Time: Factors and Multiples**. This is the first unit of the number strand in *Connected Mathematics*.

### **UNIT GOALS**

*Prime Time* focuses on the properties of whole numbers, especially those related to multiplication and division. Students will learn about factors, multiples, divisors, products, prime numbers, composite numbers, common factors and multiples, and many other ideas about numbers. Students will participate in a series of activities that reflect many of the key properties of numbers and learn how to use these properties to solve problems.

### **HELPING WITH HOMEWORK**

The goal of *Connected Mathematics* is to help students develop sound mathematical habits. You can help with homework and at the same time encourage sound mathematical habits by asking questions such as:

- Will finding factors or multiples help you solve the problem?
- What relationships will factors or multiples help you see?
- What do the factors and multiples of numbers tell you about the situation?
- How can you find the factors of a number?
- How can you find the multiples of a number?
- What common factors and common multiples do two numbers have?

In your child's notebook, you can find worked-out examples from problems done in class, notes on the unit's mathematics, and descriptions of the vocabulary words.

In this unit, your child will be asked to do a project called "My Special Number." It is introduced at the beginning of the unit, when each student is asked to choose a number and write several things about it. As students work through the unit, they apply what they have learned to write new information about their numbers. At the end of the unit, students create projects that include everything they have learned about their numbers.

### **HAVING CONVERSATIONS ABOUT THE MATHEMATICS IN PRIME TIME**

You can help your child in several ways:

- Have your child share his or her mathematics notebook with you, showing you what has been recorded about factors and multiples. Ask your child to explain why these ideas are important.
- Have your child show you the boards for playing the Factor Game and the Product Game. Ask your child to explain the rules, and, if you have time, offer to play a game.
- Have your child explain something that he or she learned from playing the game.
- Look over your child's homework and make sure all questions are answered and that explanations are clear.

A few important mathematical ideas that your child will learn in *Prime Time* are given on the back. As always, if you have any questions or concerns about this unit or your child's progress in the class, please feel free to call.

Sincerely,

Important Concepts	Examples
<p><b>Factors</b> One of two or more numbers that are multiplied to get a product.</p>	<p>All the factors of 12 are 1, 2, 3, 4, 6, 12 because  <math>1 \times 12 = 12</math>, <math>2 \times 6 = 12</math>, <math>3 \times 4 = 12</math>.</p>
<p><b>Multiples</b> The product of a given whole number and another whole number.</p>	<p>Some multiples of 12 include 12, 24, 36, 48, 60 because  <math>12 \times 1 = 12</math>, <math>12 \times 2 = 24</math>, <math>12 \times 3 = 36</math>, <math>12 \times 4 = 48</math>, and  <math>12 \times 5 = 60</math>.</p> <p>Note that any number has an infinite number of multiples.</p> <p>If a number is a multiple of 12, then 12 is a factor of that number. For example, 36 is a multiple of 12 and 12 is a factor of 36.</p>
<p><b>Prime</b> A number with exactly two different factors, 1 and the number itself.</p>	<p>Examples of primes are 11, 17, 53, and 101. The number 1 is not a prime number, since it has only one factor.</p> <p>All the factors of 11 are 1 and 11.  All the factors of 17 are 1 and 17.</p>
<p><b>Composite</b> A whole number with factors other than itself and 1 or a whole number that is not prime.</p>	<p>Some composite numbers are 6, 12, 20, and 1,001. Each of these numbers has more than two factors.</p> <p>All the factors of 6 are 1, 2, 3, 6. All the factors of 1,001 are 1, 7, 11, 13, 77, 91, 143, 1001.</p>
<p><b>Common Multiples</b> A multiple that two or more numbers share.</p>	<p>Some multiples of 5 are 5, 10, 15, 20, 25, 30, <u>35</u>, 40, 45, 50, 55, 60, 65, and <u>70</u>.</p> <p>Some multiples of 7 are 7, 14, 21, 28, <u>35</u>, 42, 49, 56, 63, <u>70</u>, and 77.</p> <p>From these lists we can see that two common multiples of 5 and 7 are 35 and 70. There are more common multiples that can be found.</p>
<p><b>Common Factors</b> A factor that two or more numbers share.</p>	<p>7 is a common factor of 14 and 35 because 7 is a factor of 14 (<math>14 = 7 \times 2</math>) and 7 is a factor of 35 (<math>35 = 7 \times 5</math>).</p>
<p><b>Prime Factorization</b> A product of prime numbers, resulting in the desired number.</p> <p>The prime factorization of a number is unique except for the order of the factors. This is the <b>Fundamental Theorem of Arithmetic</b>.</p>	<div style="display: flex; align-items: center;"> <div style="flex: 1;"> <pre>           360          /  \         15   24        /  \ /  \       3  5 3  8                         3  5 4  2             /  \        3  5 2  2                          3  2           </pre> </div> <div style="flex: 1; padding-left: 20px;"> <p>The prime factorization of 360 is <math>2 \times 2 \times 2 \times 3 \times 3 \times 5</math>.</p> <p>Although you can switch the order of the factors, every prime product string for 360 will have three 2s, two 3s, and one 5.</p> </div> </div>

On the **CMP Parent Web Site**, you can learn more about the mathematical goals of each unit, see an illustrated vocabulary list, and examine solutions of selected ACE problems. <http://PHSchool.com/cmp2parents>