

**Third Grade Math Parent Letter**  
**Unit 3: Multiplication and Division with Units of 0, 1, 6-9, and Multiples of 10**

This unit will build upon students' work with multiplication and division in Unit 1. In this unit, students will extend their study of factors to include all units from 0 to 10 as well as multiples of 10 within 100. In practicing with factors throughout the unit, students will develop their fluency with facts through the use of strategies and patterns.

Initially in the unit, students will revisit the commutative property. For example, they know that  $2 \times 8$  is the same as  $8 \times 2$  through commutativity. This begins a study of arithmetic patterns that become an increasingly prominent theme in the unit. Students will also apply the commutative property and build fluency. They will be introduced to the use of a letter to represent the unknown in various positions as well.

Next, students will use skip-counting strategies as well as the distributive property to solve problems. They will learn to compose up to, then over the next ten. For example, to solve a fact using units of 7 a student might count 7, 14, and then mentally add  $14 + 6 + 1$  to make 21. This strategy previews the associative property using addition and illuminates patterns. Afterward, students will apply the distributive property as a strategy to multiply and divide. They decompose larger unknown facts into smaller known facts to solve. For example:

$$48 \div 6 \text{ becomes } (30 \div 6) + (18 \div 6), \text{ or } 5 + 3.$$

Students will have various opportunities to analyze, model, and solve word problems, including the use of using a letter to represent the unknown in various positions within multiplication and division problems.

Students will focus on making use of structure to problem solve as they use the associative property. They will learn the conventional order for performing operations when parentheses are and are not present in an equation. With this knowledge in place, the associative property emerges as a strategy to multiply using units up to 9. For instance, rewriting 6 as  $2 \times 3$  or 8 as  $2 \times 4$  makes shifts in grouping readily apparent and also utilizes the familiar factors 2, 3, and 4 as students learn the new material. The following strategy may be used to solve a problem like  $8 \times 5$ :

$$8 \times 5 = (4 \times 2) \times 5$$

In addition, students will relate division to multiplication using units up to 9. They will begin to understand division as both a quantity divided into equal groups and an unknown factor problem for which--given the large size of units--skip counting to solve can be more efficient than dividing. Students will explore a variety of arithmetic patterns that become engaging strategies for quickly learning facts with automaticity. Furthermore, work with "nines" is placed late in the unit so that students have enough experience with multiplication and division to recognize, analyze, and apply rich patterns found in the manipulation of units of 9. Additional work with units of 0 and 1 also occurs later in the unit. The understanding of the zero is complex, and the units of 0 and 1 lend themselves to the identification of relationships and patterns.

Another component of this unit is students multiplying by multiples of 10. To solve a fact like  $2 \times 30$ , students will first model the basic fact  $2 \times 3$  on the place value chart. Place value understanding helps them notice that the product shifts one place value to the left when multiplied by 10:  $2 \times 3$  tens can be found by simply locating the same basic fact in the tens column.

hundreds	tens	ones
		○○○
		○○○
		$2 \times 3 = 6$

hundreds	tens	ones
		○○○
		○○○
		$2 \times 3 \text{ tens} = 6 \text{ tens}$
		$6 \text{ tens} = 60$

In subsequent lessons, place value understanding becomes more abstract as students model place value strategies using the associative property.

$$2 \times 30 = 2 \times (3 \times 10) = (2 \times 3) \times 10$$

Students will work on two-step word problems involving all four operations and equations with unknown quantities. They will work with equations involving unknown quantities and apply the rounding skills learned in Unit 2 to make estimations that help them assess the reasonableness of their solutions. In all, the concepts learned in this unit will add to the students' foundational mathematical knowledge and help them to connect to and understand future units of study.