


Dear Third Grade Parents,

Welcome to Third Grade! We are excited about teaching and learning math this year. For every new unit, you will receive a letter like this one, explaining what students will learn in the unit. Please see the Vocabulary link on our math website (d90parentmath.weebly.com/3rd-grade.html) to help with unfamiliar terms. Our first math unit of the year centers around multiplication and division. We begin the year by building on students' fluency with addition and knowledge of arrays (see below).

Emma collects rocks. She arranges them in 4 rows of 3. Draw Emma's array to show how many rocks she has altogether. Then write a multiplication sentence to describe the array.


 $4 \times 3 = 12$
Emma has 12 rocks.

Initially we will use repeated addition to find the total from a number of equal groups. As students notice patterns, they will let go of longer addition sentences in favor of more efficient multiplication facts. Students will use the language of multiplication as they understand factors. They will also differentiate between the size of groups and the number of groups within a given context (see below). In this unit, factors 2, 3, 4, 5, and 10 provide an entry point for moving into more difficult factors in later units.

There are 3 candies in each box. How many candies are in 6 boxes?



a) Number of groups: 6 Size of each group: 3

b) $6 \times 3 = 18$

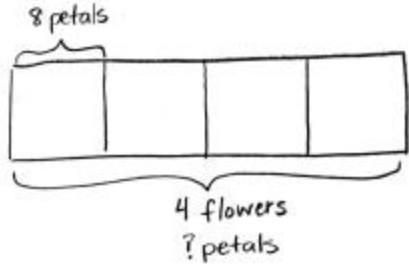
c) There are 18 candies altogether.

Students will also work to understand division as an unknown factor problem, and relate the meaning of unknown factors to either the number or the size of groups. Further, they will become aware of the fundamental connection between multiplication and division that sets the foundation for the rest of the unit.

Later in the unit, students will use the array model and skip-counting strategies to solidify their understanding of multiplication and practice related facts of 2 and 3. They will use arithmetic patterns to solve more complex multiplication problems. They will apply their skills to word problems using drawings and equations with a symbol to find the unknown factor (i.e., $3 \times b = 15$). This culminates in students using arrays to model the distributive property as they decompose units to multiply. (i.e. 7×5 is the same as $(3 \times 5) + (4 \times 5)$).

Students will also model, write, and solve measurement division problems with units of 2 and 3. Consistent skip-counting strategies and the continued use of array models are pathways for students to naturally relate multiplication and division. They will use tape diagrams (see below) to represent multiplication and division.

Grace picks 4 flowers from her garden. Each flower has 8 petals. Draw and label a tape diagram to show how many petals there are in total.

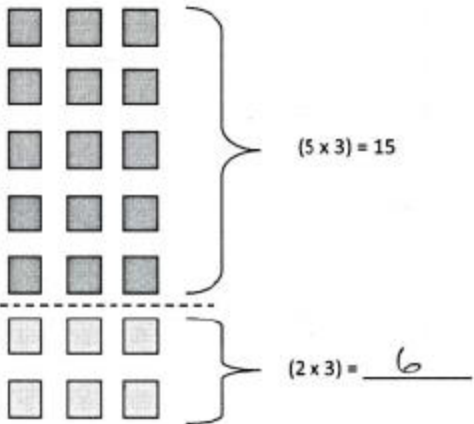


$4 \times 8 = 32$

There are 32 petals on Grace's 4 flowers.

Finally, students will shift from simple understanding to analyzing the relationship between multiplication and division. Practice of both operations is combined — this time using units of 4 — and a lesson is explicitly dedicated to modeling the connection between them. Skip-counting, the distributive property, arrays, number bonds, and tape diagrams are tools for both operations (see below). By the end of the unit, students will use any and all of the above techniques to solve multi-step word problems using all four operations. See the vocabulary page for more information and definitions of commonly used math words for this unit.

$7 \times 3 = (5 \times 3) + (2 \times 3) = \underline{21}$



$(5 \times 3) = 15$

$(2 \times 3) = \underline{6}$

$(5 \times 3) + (2 \times 3) = 15 + \underline{6}$

$15 + \underline{6} = \underline{21}$