Dear Family,

The next Unit in your child's mathematics class this year is ***Accentuate the Negative: Positive and Negative Numbers.*** Students have experienced positive and negative numbers informally in their everyday world—in temperatures, in sports scores, and in game contexts. Students have intuitively used operations on integers to make sense of these situations; now they will develop formal ways to compute with these numbers.

Unit Goals

In this Unit, the focus is on understanding and developing systematic ways to add, subtract, multiply, and divide positive and negative numbers. While working on this Unit, students will use positive and negative numbers to represent problem situations. Students will develop algorithms for computation and will use the Order of Operations, the Commutative Property, and the Distributive Property to solve problems.

Helping With Homework and Conversations About the Mathematics

You can help with homework by asking questions such as the following:

- How do negative and positive numbers help in describing the situation?
- What will addition, subtraction, multiplication, or division of positive and negative numbers tell about the problem?
- What model(s) for positive and negative numbers would help in displaying the relationships in the problem situation?

You can help your child with his or her work for this Unit in several ways:

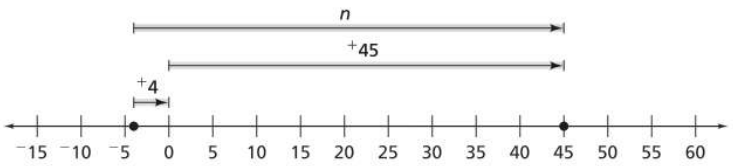
- Ask your child to describe some real-world situations in which integers are used.
- Ask your child to tell you about a problem that he or she has enjoyed solving.
- Read some of the explanations that your child has written in his or her notebook and, if they aren't clear, talk with your child about why you think the explanations may need to be reviewed.

Common Core State Standards

Students develop and use all of the Standards for Mathematical Practice throughout the curriculum. In *Accentuate the Negative*, particular attention is paid to looking for and making sense of structure as students develop algorithms for operating with positive and negative numbers. *Accentuate the Negative* focuses largely on the Number System domain in the Common Core State Standards. As students explore rational numbers, parts of the Expressions and Equations domain are also addressed.

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

Sincerely,

Important Concepts	Examples
Negative Numbers Some subsets of the positive and negative numbers have special names.	The set of the whole numbers and their opposites is called **integers.** Examples include: $-4, -3, -2, -1, 0, 1, 2, 3, 4$ The positive and negative integers and fractions are **rational numbers.** Examples include: $-2, -1.5, -1\frac{2}{3}, -1, -\frac{3}{4}, -\frac{1}{2}, 0, \frac{1}{2}, \frac{3}{4}, 1, 2, 2.5, 2\frac{3}{4}$
Addition and Subtraction Students model and symbolize problems to develop meaning and skill in addition and subtraction before developing algorithms. The **colored chip model** requires an understanding of opposites. The **number line model** helps make the connection to rational numbers as quantities. Sometimes it is helpful to restate an addition problem as a subtraction or a subtraction problem as an addition.	One color chip (black) represents positive numbers and another color (red) represents negative numbers. **Julia's Chip Board**  *Tate owes his sister, Julia, $6 for helping him cut the lawn. He earns $4 delivering papers. Is Tate "in the red" or "in the black"?* Black and red chips on a board represent income and expenses. The result is that he is "in the red" 2 dollars or has $^-2$ dollars. This problem may be represented with the number sentence $^-6 + 4 = {}^-2$. The number line below models a temperature change from $^-4°$F to $^+45°$F. The sign of the change shows the direction of the change. $^-4° + n° = {}^+45°$ or $^-4° + {}^+49° = {}^+45°$  When calculating $^+12 + {}^-8$, the result is the same as if you subtracted $^+8$ in the problem $^+12 - {}^+8$. When calculating $^+5 - {}^-7$, the result is the same as if you added $^+7$ in the problem $^+5 + {}^+7$.
Multiplication Multiplication can be explored by counting occurrences of fixed-size movement along the number line.	*If a runner passes the 0 point running to the left at 6 meters per second, where will he be 8 seconds later?* This can be represented as 8 jumps of $^-6$ on the number line. $^-6 + {}^-6 + {}^-6 + {}^-6 + {}^-6 + {}^-6 + {}^-6 + {}^-6 = {}^-48$ or $8 \times {}^-6 = {}^-48$
Division A multiplication fact can be used to write two related division facts.	You know that $5 \times {}^-2 = {}^-10$. You can write related division sentences: $^-10 \div {}^-2 = 5$ and $^-10 \div 5 = {}^-2$. By developing division based on its relationship to multiplication, students can determine the sign (positive or negative) of the answer to a division problem.
Order of Operations Mathematicians have established rules for the order in which operations $(+, -, \times, \div)$ should be carried out.	1. Compute any expressions within parentheses. 2. Compute any exponents. 3. Do all multiplication and division in order from left to right. 4. Do all addition and subtraction in order from left to right. $3 + 4 \times (6 \div 2) \times 5 - 7^2 + 6 \div 3 =$ $3 + 4 \times 3 \times 5 - 7^2 + 6 \div 3 =$ $3 + 4 \times 3 \times 5 - 49 + 6 \div 3 =$ $3 + 60 - 49 + 2 =$ $63 - 49 + 2 =$ $14 + 2 = 16$
Commutative Property This property does not hold for subtraction or division.	The order of addends does not matter. $5 + 4 = 4 + 5$ $\quad -2 + 3 = 3 + (-2)$ The order of factors does not matter. $5 \times 4 = 4 \times 5$ $\quad -2 \times 3 = 3 \times (-2)$ Order does matter in subtraction. $5 - 4 \neq 4 - 5$ $\quad -2 - 3 \neq 3 - (-2)$ Order does matter in division. $5 \div 4 \neq 4 \div 5$ $\quad -2 \div 3 \neq 3 \div (-2)$
Distributive Property This property is introduced and modeled through finding areas of rectangles.	This property shows that multiplication *distributes* over addition. $6 \times (12 + 8) = (6 \times 12) + (6 \times 8)$