MATH TRAILBLAZERS™

Teacher Resource CD

GRADE 1

Acrobat Files

Letters Home – English

LETTER HOME

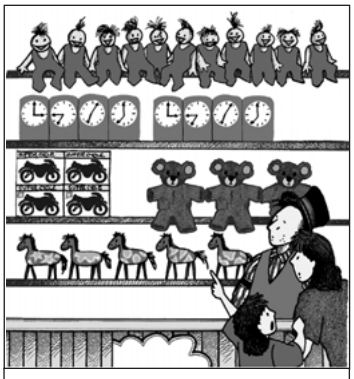
Welcome to First Grade

Date: _____

Dear Family Member:

Our classroom will use a curriculum called *Math Trailblazers™: A Mathematical Journey Using Science and Language Arts*. The curriculum meets national recommendations for improving mathematics education in our schools.

We will create a mathematics classroom where students work together on meaningful and challenging tasks and discuss their ideas with their peers, teacher, and family. You will receive a letter at the beginning of every unit that updates you on the math concepts and skills your child is learning. At times, I will ask you to participate by sending small items to school, playing a math game, or helping with homework assignments.



Count objects with your child at a local store.

In the first unit, *Welcome to First Grade,* your child will count classroom objects, use links to compare lengths of objects, and explore the math facts strategy counting on. For instance, when counting a nickel and two pennies your child might say, "Five, six, seven," instead of starting with "one." You can help by providing additional mathematics opportunities at home.

For example:

- **Numbers in Print.** Encourage your child to identify numbers on signs, in the newspaper, on the phone, and on a calendar. When your child identifies a number, ask a question about that number, for example, "What comes after eight?"

I look forward to working with your child. Please feel free to contact me with any questions, concerns, or comments.

Sincerely,

_____

LETTER HOME

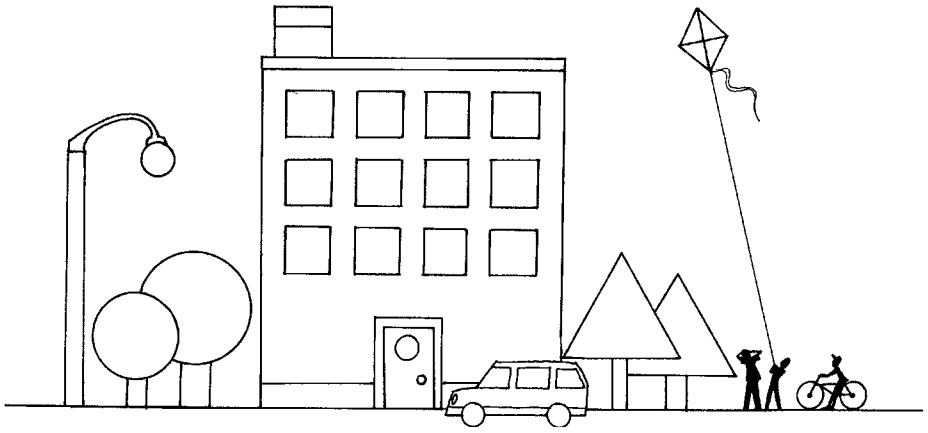
Exploring Shapes

Date: _____

Dear Family Member:

In this unit, your child will learn to visualize and find relationships among shapes. Children who explore geometry in this way are better prepared to learn other concepts related to numbers and measurement.

We will work with squares, circles, and rectangles as well as with less familiar shapes such as hexagons and trapezoids. Children will locate shapes in their everyday lives, create patterns, and investigate the results of combining shapes and breaking them into smaller parts.



Students will count shapes for homework.

As we explore these concepts in the classroom, you can help at home. For example:

- **I Spy a Shape.** Describe a shape you see that is part of an object, such as a tile on the wall. Invite your child to guess the object you are talking about.
- **Reading at Home.** Your child may enjoy finding books about shapes at the library and reading them with you. Some suggested books about shapes are *Shapes, Shapes, Shapes* by Tana Hoban and *Color Zoo* by Lois Ehlert.

Please feel free to contact me with any questions, concerns, or comments.

Sincerely,

_____

LETTER HOME

Pennies, Pockets, and Parts

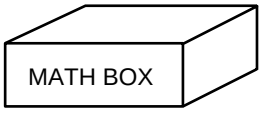
Date: _____

Dear Family Member:

Your child has been using numbers for counting and measuring. Now, your child will learn that numbers can be made from different combinations. For example, ten can be made from four and six and also from seven and three. As we explore numbers, your child will use connecting cubes and pennies to help solve problems.

Provide practice at home by:

- Encouraging your child to count and tally objects. Your child can tally road signs, trees, or houses on the street.
- Looking for quantities of ten as a whole and numbers less than ten as parts of a whole. For example, there are ten bowling pins and your child may only knock down four, or there are ten cars parked on the street and three are red.



Create a math box to store counters.

Your efforts at home will strengthen your child's understanding of the math concepts explored at school. You can help your child by providing a box to store simple math materials, such as coins and beans, to help solve problems.

Your child will use pennies for a variety of activities in this unit. If possible, please send twenty-five pennies to add to our class bank.

Sincerely,

_____

LETTER HOME

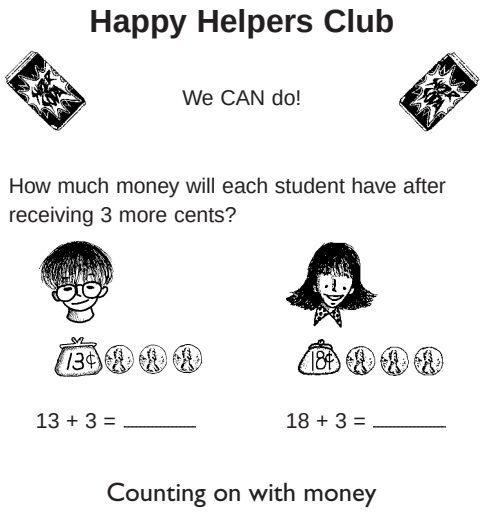
Adding to Solve Problems

Date: _____

Dear Family Member:

Your child will use knowledge of parts and wholes to make the connection between real-world situations and addition. This unit emphasizes writing addition number sentences (e.g., $4 + 2 = 6$) and developing everyday math language associated with addition.

Children use several strategies for solving addition problems. We emphasize one particular strategy, called counting on. For example, if a child has thirteen beans and is given three more, one strategy for finding the total number of beans is to count all sixteen beans, starting from one. Counting on is a more mature strategy whereby a child begins with thirteen and then counts on the three new beans ("13 . . . 14, 15, 16").



Counting on with money

Your child will also be introduced to a calculator. The calculator will not be used to replace children's command of the basic facts or other ways of doing computation. It will be used as a tool that will enhance and promote learning. If your child solves a problem at home using a calculator, ask him or her to explain which keys were pressed.

You can help your child at home by starting a coin jar. Simply stock a small jar with a few nickels and about 20–30 pennies. At homework time during the year, ask your child to take a few coins from the jar, name the coins, and count the total value.

Thank you. Your continued efforts at home make a difference.

Sincerely,

_____

LETTER HOME

Grouping and Counting

Date: _____

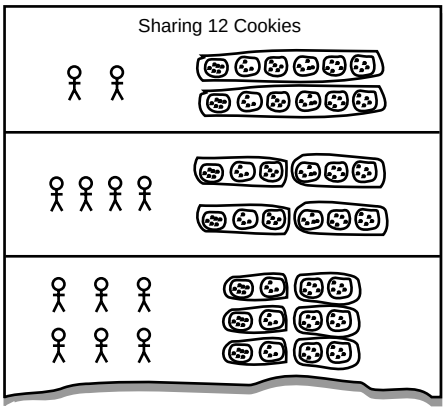
Dear Family Member:

In this unit, students group and count objects. They count by twos, fives, and tens.

Ask your child to tell you about the book *The Doorbell Rang* by Pat Hutchins. The book describes the problem of how to share twelve cookies with unexpected guests. Your child will explore similar problems involving cookies and discuss fair shares and leftovers.

The unit ends with a laboratory investigation. *Colors* is an experiment about sorting and sampling. The lab provides a real-life context for children to use grouping and counting skills.

You can extend your child's classroom activities by doing the following at home:



Ways to group 12 cookies

- **Coin Jar.** Stock a small jar with several dimes and nickels and about 20–30 pennies. Ask your child to take some coins from the jar, name the coins, and count the total value. Be sure there are enough nickels and dimes in the jar to practice counting by 5s and 10s.
- **Play Care to Share?** Give your child a small container of cereal or other small objects. Ask him or her to make a pile of 17 objects. Tell him or her to share this pile fairly with three people. Allow time for your child to solve the problem. Ask how many objects each person should get and how many objects will be left over. Repeat sharing objects with two, four, or five people.

Thank you for your continued efforts to help your child with math ideas through discussion and games.

Sincerely,

_____

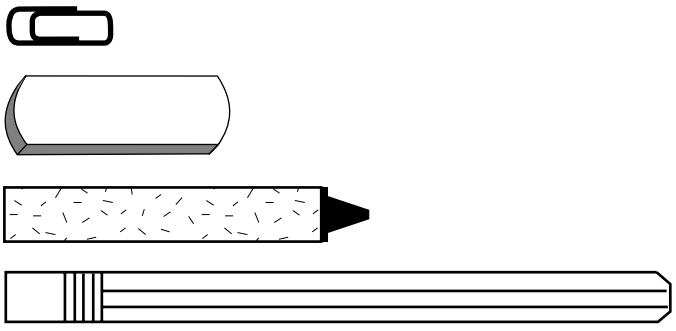
LETTER HOME

Measurement: Length

Date: _____

Dear Family Member:

This unit focuses on measurement concepts. We will measure classroom items, predict and explore the length of some very delightful dachshunds, measure the distance a toy car rolls, and read a story about Betty who builds a better wooden racing car. Your child will use different objects, such as paper clips and pencils, as well as inches, as units of measure. Your child will also explore proper measuring techniques.



Using common objects as units of measure

As we investigate concepts related to measuring length in school, you can provide additional support at home with the following:

- **String Measurement.** Help your child cut a piece of string that is about five inches long. Work with your child to measure various objects around the house using the string. As you measure use appropriate words such as *long, tall, short, longer, shorter, longest,* and *shortest* where appropriate.

Thank you for supporting our math activities at home.

Sincerely,

_____

In one of our activities, your child will measure the lengths that toy cars, roller skates, and other objects roll. If you have a small toy car or roller skate you are willing to lend to our class collection, please send it to school.

LETTER HOME

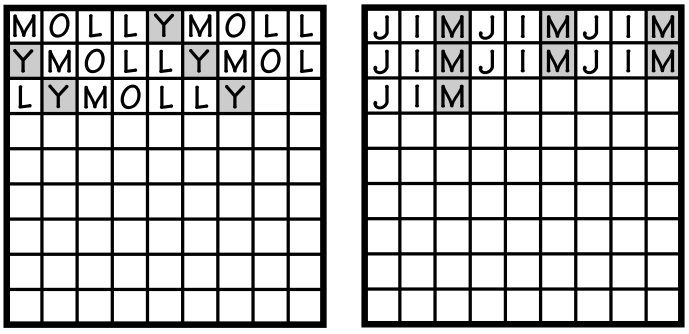
Patterns and Designs

Date: _____

Dear Family Member:

Patterns surround us. We find patterns in our daily schedules, in the music we enjoy, and even in the tiles of the kitchen floor. Recognizing and working with patterns is an important part of mathematics.

Over the next few weeks, your child will strengthen his or her problem-solving skills by identifying and building patterns and designs. For example, your child will use his or her name to complete a name grid and look for patterns in the grid.



Your child will use his or her name to fill in a name grid.

As we identify and build patterns at school, you can provide additional opportunities to work with patterns at home by doing the following activities:

- **Coin Patterns.** Use coins to start a pattern such as: nickel, penny, penny, nickel, penny, penny, nickel.... Then, invite your child to continue the pattern or build a pattern for you to extend. Look for ways to enrich patterns such as asking your child to predict which will be the tenth or fifteenth coin in the pattern.
- **Pretty Patterns.** Invite your child to use beads, buttons, star stickers, or other household objects to build patterns. (Or, your child might like to use shapes cut out of colored paper.) Help your child preserve a favorite pattern by stringing the objects on a piece of yarn.

Thank you for your continued assistance with your child's growth in mathematics.

Sincerely,

_____

Quilts often use repeating patterns. An excellent alphabet book based on American patchwork patterns is *Eight Hands Round* by Ann Whitford Paul. Your child may enjoy finding this book or other books with quilt illustrations at the library.

LETTER HOME

Subtracting to Solve Problems

Date: _____

Dear Family Member:

In this unit, your child will make the connection between real-world situations and subtraction. The *Math Trailblazers™* curriculum places emphasis on understanding the problem itself, not on memorizing addition and subtraction facts. So, as you listen to your child's explanations, be prepared to be surprised and often delighted by the creative approaches your child employs to solve problems.

You can help at home by creating subtraction stories.

- **Bye-bye, Birdie.** Look for subtraction stories in everyday situations. For example, you might see birds sitting on a telephone wire. Invite your child to count the birds with you. Make up a subtraction story like the following: I see seven birds sitting on a wire. If three fly out of sight, how many will I see? Take turns making up and solving the subtraction stories.
- **Subtraction Starters.** Give your child a key word to use in a subtraction story. Some everyday take-away words you can use to create subtraction stories include *dropped, ate, drove away, sat down, disappeared, fell down,* and *ran away.*

Thank you for providing reinforcement of math ideas at home.

Sincerely,

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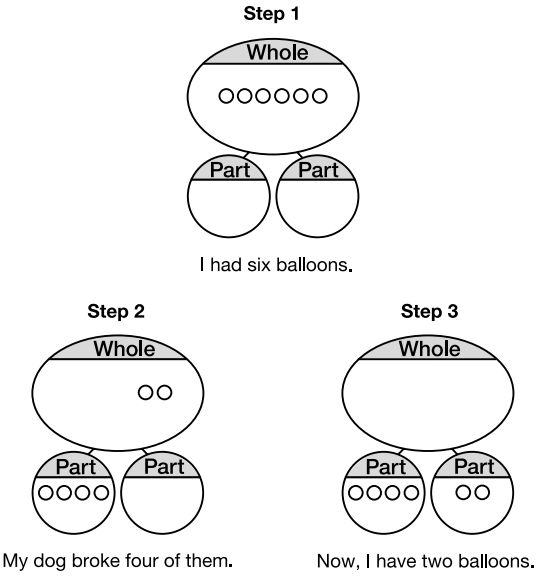


Using the whole-part-part method to solve a subtraction problem

LETTER HOME

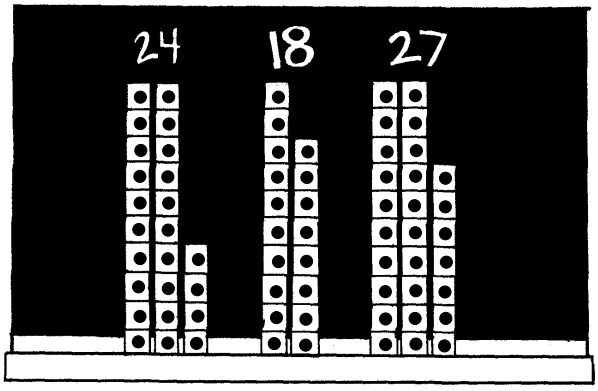
Grouping by Tens

Date: _____

Dear Family Member:

In this unit, your child will continue to explore number relationships. For example, for the number 42, your child will form 4 groups of ten cubes and have two cubes left over. As a class, we will talk about the groupings as 4 tens and 2 ones. Building numbers in groups of ten helps in the understanding of our number system.

We also will work with story problems that include addition and subtraction with multiples of ten. Solving problems in different contexts helps give students meaning to mathematics.



Building numbers with connecting cubes to show tens and ones

You can provide additional support at home by doing activities such as the following:

- **Buzz.** Play a variation of the game *Buzz.* Choose an even number from 2 through 8, such as 6. Players count by twos. Anytime the number has a 6 in it, the player says, "Buzz." So, the counting would go: 2, 4, BUZZ, 8 . . . 14, BUZZteen, 18, and so on. Repeat, choosing another "buzz" number.
- **Numbers in Print.** Look for numbers in print such as in the newspaper, on calendars, and on packaging. Use beans (cereal pieces, etc.) to build those numbers in groups of ten. For example, 34 is three groups of ten and four ones.
- **Spin for Beans.** During this unit, your child will play the game *Spin for Beans.* If your child brings the game home, play it together.

Thank you for your continued interest in your child's mathematics development.

Sincerely,

_____

LETTER HOME

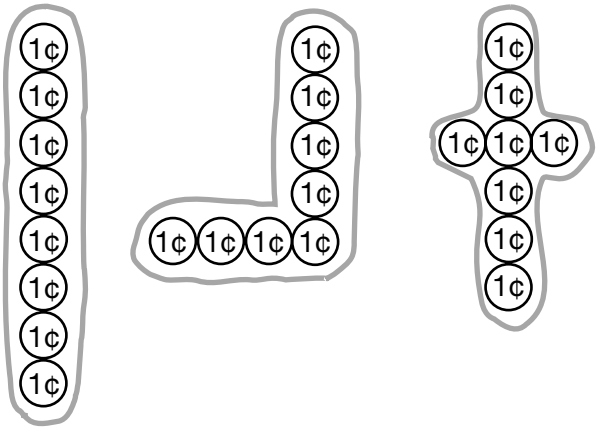
Measurement: Area

Date: _____

Dear Family Member:

Area measurements are often important in everyday life. Many adults learned about area as a series of formulas like length × width and $\frac{1}{2}$ × base × height. If, however, one forgets what the formulas are for, how to use them, or when they are appropriate, measuring area becomes a mystery.

Beginning in first grade, students find area as the amount of space an object covers. Students estimate the areas of shapes by covering the shapes with pennies. Later they use a standard unit for area measure—square inches.



Pennies can be used to estimate the area of shapes.

Students also explore another important idea about area: that different shapes can have the same area. As we explore measurement in the classroom, you can help at home by doing activities such as the following:

Storybook Math. Invite your child to retell the story of *Goldilocks and the Three Rectangles* or *The Midnight Visit.* Suggest your child use pennies or some other object to cover the objects in the stories to estimate their areas.

Thank you for your continued efforts to bring math into your child's everyday world.

Sincerely,

_____

LETTER HOME

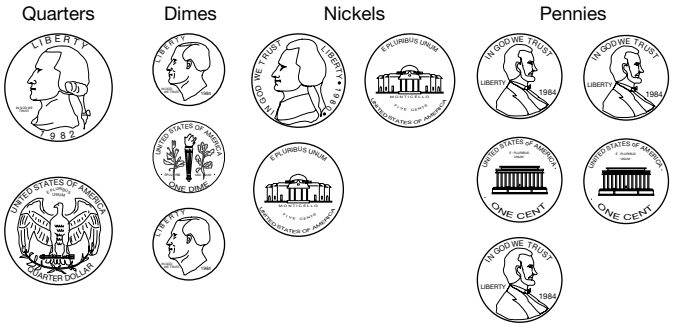
Looking at 100

Date: _____

Dear Family Member:

In this unit, we focus on the number 100 as we explore number relationships in a variety of contexts.

Your child will use different manipulatives to "see" the number 100 and to solve addition and subtraction problems. For example, your child will group and count coins and find ways of combining them to make 100. Your child will also have experiences with 100 links, 100 seconds, and the *100 Chart*.



Using coins to make 100

In the lab *Weather 2: Winter Skies,* our class will use the TIMS Laboratory Method to observe daily weather conditions for a winter month.

As we continue to investigate number relationships, you can provide additional support at home by doing some of the following activities:

- ***Arrow Dynamics* Game.** To develop your child's knowledge of number relationships, he or she will play this game in school and bring it home for more practice.
- **Money Counter.** Ask your child to count your loose change each night.
- **Reading Books.** *Picking Peas for a Penny* by Angela Shelf Medaris and *26 Letters and 99 Cents* by Tana Hoban are books featuring coins and their values. Your child may enjoy finding these or other books about coins at the library to read at home.

Thank you for supporting our math activities at home.

Sincerely,

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INFORMATION FOR PARENTS

Grade 1 Math Facts Philosophy

The goal of the math facts strand in *Math Trailblazers* is for students to learn the basic facts efficiently, gain fluency with their use, and retain that fluency over time. In first grade, students focus on addition and subtraction facts strategies. By the end of second grade, students are expected to demonstrate fluency with the addition and subtraction facts.

A large body of research supports an approach in which students develop strategies for figuring out the facts rather than relying solely on rote memorization. This not only leads to more effective learning and better retention, but also to the development of mental math skills which will be useful throughout life. In fact, too much drill before conceptual understanding may actually interfere with a child's ability to understand concepts at a later date. Therefore, the teaching of the basic facts in *Math Trailblazers* is characterized by the following elements:

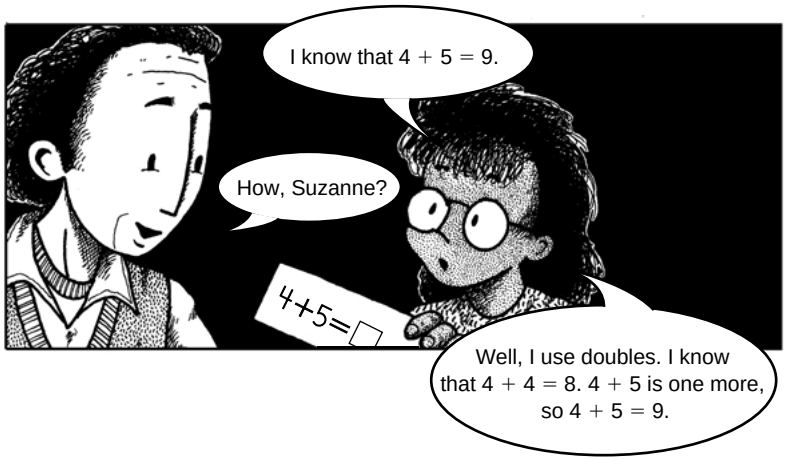
Use of Strategies. Students approach the basic facts as problems to be solved rather than as facts to be memorized. In all grades we encourage the use of strategies to find facts and de-emphasize rote memorization, so students become confident that they can find answers to fact problems that they do not immediately recall. In this way, students learn that math is more than memorizing facts and rules which "you either get or you don't."

Distributed Fact Practice. Students study small groups of facts that can be found using similar strategies. Practice of these organized groups of facts begins in the Daily Practice and Problems in Unit 11 and continues for the remainder of the year.

Practice in Context. Students continue to practice all of the facts as they use them to solve problems in the labs, activities, and games.

Appropriate Assessment. Units 11–20 include Daily Practice and Problems items that together provide assessment of all the addition facts. Students must solve addition fact problems and describe their strategies. Students' progress with the math facts can also be assessed as they complete activities, labs, and games.

Facts Will Not Act as Gatekeepers. Students are not prevented from learning more complex mathematics because they do not have quick recall of the facts. Use of strategies and calculators allows students to continue to work on interesting problems and experiments while they are learning the facts.



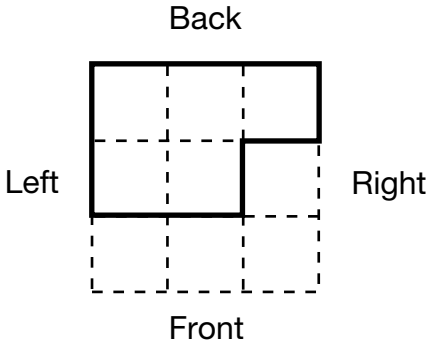
LETTER HOME

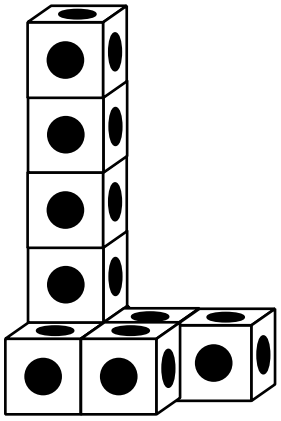
Cubes and Volume

Date: _____

Dear Family Member:

What kind of structures has your child made with building blocks? houses? towers? skyscrapers? This unit *Cubes and Volume* extends students' experiences with building blocks and poses additional challenges. While constructing models made of cubes, students will make building floor plans and explore the concept of volume. They will use counting strategies for finding the volume of cube structures. As we explore spatial relationships and ways to communicate them, you can provide additional support at home by:





A floor plan for a cube model

- **Comparing Objects.** Find objects around your home for your child to compare. Ask your child which object is taller, which is longer from left to right and front to back, and which has more volume.
- **Copycat Buildings.** You and your child can take turns creating an original building from building blocks or sugar cubes and then copying each other's structure. After each pair of buildings—the original and the copy—are completed, discuss with your child why the structures exactly match or do not match.

Thank you for helping develop your child's mathematical skills.

Sincerely,

_____

LETTER HOME

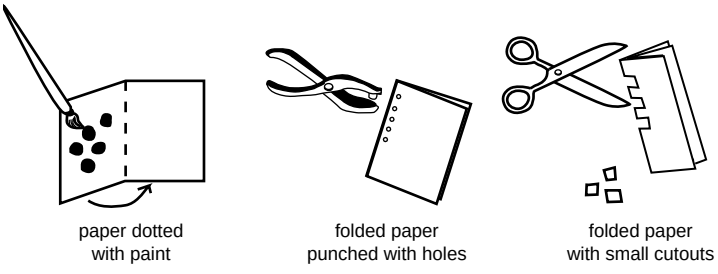
Thinking About Addition and Subtraction

Date: _____

Dear Family Member:

What do twins, feet, gloves, and wings all have in common? These are just some examples of familiar things that come in pairs, or doubles. Over the next two weeks, your child will double numbers to solve a variety of problems.

This unit continues the emphasis on developing strategies for learning basic math facts and computing larger numbers. We focus on two strategies—doubling and halving. Doubling is a natural strategy that many children easily develop. Children tend to remember doubles (5 + 5, 12 + 12, and so on) with little difficulty. Your child can use his or her knowledge of 12 + 12, for example, to solve a problem that is almost a double, such as 12 + 11. Halving, or finding half of a number, is a strategy closely related to doubling. Knowing that 12 + 12 is 24 helps your child figure out that half of 24 is 12. Doubling and halving numbers also help prepare your child to learn multiplication and division.



Three ways to create doubles

You can provide additional support at home by playing games that will be introduced in this unit.

- **Play *Doubles Railroad.*** Players double and halve numbers to determine where to move along the game board. Encourage your child to bring home the directions.
- **Play *Make Ten.*** Your child will bring home the rules for this game. You can use a regular deck of playing cards. Remove the kings, queens, and jacks, and use the aces to represent the number 1. Have beans, toothpicks, or other small objects handy for your child to use in solving problems that arise during the game. Players draw cards to "make ten" in a variety of ways.

Thank you for taking time to play games that will help your child develop a better understanding of math.

Sincerely,

_____

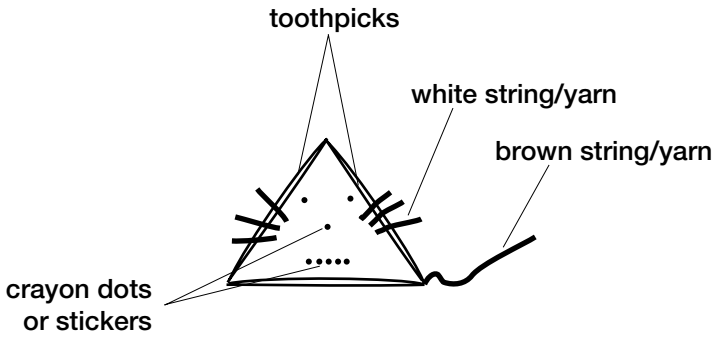
LETTER HOME

Exploring Multiplication and Division

Date: _____

Dear Family Member:

Creating a math mouse, as shown in the picture, is just one of the activities in this unit that will help your child associate quantities, such as the number of materials needed to construct the mouse, with multiplication and division. Children as young as five or six years old are able to solve problems involving multiplication and division if the problems relate to familiar situations and can be solved using manipulatives or pictures.



A math mouse

You can help your child continue exploring multiplication and division at home by doing the following activities:

- **Multiplying Sandwich Recipes.** Make sandwiches using recipes that require multiplying amounts. For example, to make one sandwich, you might need 2 slices of bread and 3–4 thin slices of turkey. Have your child figure out how many slices of bread and turkey you would need to make enough sandwiches for your entire family.
- **Sharing Carrot and Celery Sticks.** Prepare a dozen carrot and celery sticks. Ask your child to figure out how many celery and carrot sticks each family member will get if the sticks are shared equally.

Thank you for your interest in your child's math. Your efforts at home make a difference.

Sincerely,

_____

For some of the activities in a later unit, your child will need materials from your home. Please help your child collect the following items to bring to school: five to ten cylindrical-shaped objects, such as food containers or cans; one or two boxes; and newspaper clippings of food ads.

LETTER HOME

Exploring 3-D Shapes

Date: _____

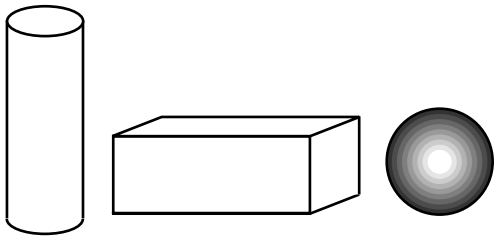
Dear Family Member:

Our class has already explored two-dimensional shapes such as circles, triangles, rectangles, and squares. Now, we will investigate some familiar three-dimensional shapes.

In class, we will work with shapes such as cylinders, rectangular prisms (boxes), and spheres. Children find examples of these shapes in our classroom, in their homes, and in newspapers and magazines. They will describe and measure various shapes.

As we explore three-dimensional shapes and their properties, you can provide additional support at home by doing some of the following activities:

- **Finding Cylinders, Boxes, and Spheres.** Your child will have several homework assignments to find examples of different three-dimensional shapes in your home. Please assist your child in bringing examples of cylinders and boxes to school.
- **Sorting Groceries.** After your next trip to the supermarket, invite your child to sort some of the groceries according to these three-dimensional shapes: cylinders and almost cylinders, rectangular prisms and almost rectangular prisms, and spheres and almost spheres.



Familiar three-dimensional shapes found in children's everyday world

- **Make a Cartoon Gift Box.** Find a box that can be recycled into a gift box. Have your child trace each side and end of the box on pages from the comics section of the newspaper. He or she can cut the traced pieces out and paste them on the box. Ask your child to describe the cartoon gift box. Your child is welcome to bring the gift box to school.

Thank you for supporting our math activities at home.

Sincerely,

_____

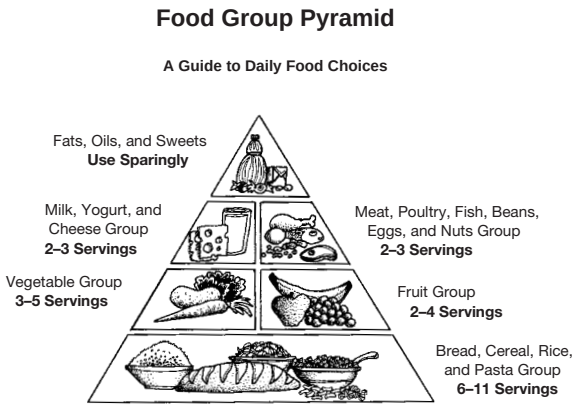
LETTER HOME

Collecting and Organizing Data

Date: _____

Dear Family Member:

The United States Department of Agriculture (USDA) has published guidelines for sound eating habits as shown in the model called the Food Group Pyramid. This unit features a lab in which your child uses the classification system depicted in the Food Group Pyramid to sort foods he or she has eaten during one day into the six food groups. Your child will analyze the data to evaluate whether or not he or she has made healthy food choices. To set the stage for the lab, your child will read a story about Martians who collect data about the diets of Earthling children to find out why they are so full of energy.



The Food Group Pyramid

As we survey food choices and practice collecting and organizing data at school, you can provide additional support at home by doing some of the following activities:

- **Favorite Foods List.** Write a list of your ten favorite foods, and ask your child to classify them according to the six categories shown in the Food Group Pyramid. Then, invite your child to draw conclusions about the nutritional value of the foods you listed.
- **Sorting Groceries.** After your next trip to the supermarket, invite your child to sort some of the groceries you purchased according to the six categories shown in the Food Group Pyramid.

Thank you for your continued interest in your child's mathematics development.

Sincerely,

_____

LETTER HOME

Moving Beyond 100

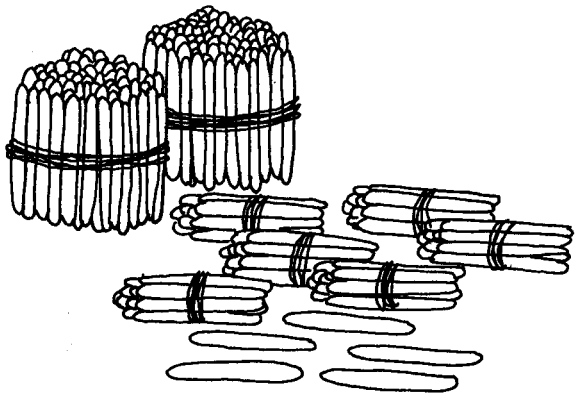
Date: _____

Dear Family Member:

This unit focuses on representing three-digit numbers and extending addition strategies to larger numbers. Your child will group and count an assortment of classroom objects. He or she will also use different manipulatives to represent three-digit numbers and extend familiar mental math strategies for adding ones (4 + 2) and tens (40 + 20) to adding multiples of 100 (400 + 200).

You can provide additional support at home by doing some of the following activities:

- **Discuss Strategies.** When your child brings problems home during this unit, ask for an explanation of the strategies he or she used. The problem-solving method is as important as the answer itself.
- **Snacks Count.** Show your child a small or mid-sized package of popcorn, chips, nuts, raisins, or other snack food. Ask how he or she would count the number in the package. If possible, have your child demonstrate this counting method.



Grouping 265 sticks by tens and hundreds

Thank you for your continued interest in your child's mathematics development.

Sincerely,

_____

LETTER HOME

Pieces, Parts, and Symmetry

Date: _____

Dear Family Member:

Scored graham crackers and chocolate bars are foods that clearly show fractional parts of a whole. As we explore the meaning of fractions and the relationship between parts and wholes, your child will recognize that a fraction can represent part of a whole and that each fractional part into which the whole is divided must be equal. We will also investigate fractions of sets, represented by classmates and objects.

Your child will fold various figures in halves and fourths and describe their size and shape. Your child will also construct and solve fraction puzzles.

You can help your child explore fractions by doing some of the following activities:

Two-fourths (one-half) of the students in a set of four wear glasses.

- **Fair Share.** Cut two sandwiches differently—one into two equal parts and the other into two unequal parts. Ask your child to tell you which sandwich was cut in half and which was not and to explain why. Cut the sandwiches again to show four equal parts and four unequal parts. Ask your child which sandwich was cut in fourths and which was not and to explain why.
- **Flatware Fractions.** Use teaspoons and soup spoons to illustrate fractional parts of sets. For example, place one teaspoon and three soup spoons on the table. Ask your child what fraction in the set of four spoons is represented by the teaspoon (one-fourth). Continue with other combinations of spoons.

Thank you for your efforts to bring math into your child's everyday world.

Sincerely,

_____

Eating Fractions by Bruce McMillan illustrates how food can be divided into fractional parts—halves, thirds, and fourths. Your child may enjoy finding this book or other books about fractions at the library to read with you.

LETTER HOME

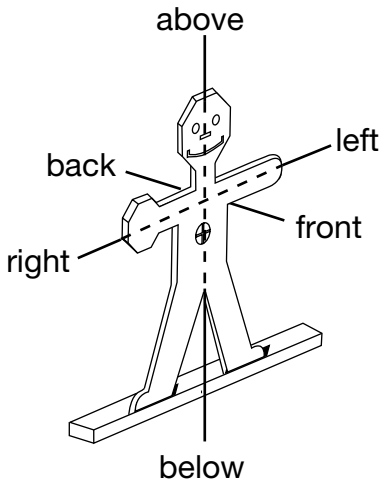
Measurement and Mapping

Date: _____

Dear Family Member:

In this unit your child will become acquainted with a plastic figure called Mr. Origin. Using Mr. Origin will help your child learn how right and left directions and distances can be plotted on a one-dimensional number line map.

Your child will also read the story *Buried Treasure.* Ask him or her to tell you about the adventure of Helen and Johnny, two clever children who use Mr. Origin and their map-reading skills to discover valuable Native American objects.



Meet Mr. Origin

As we explore mapping and coordinates in our classroom, you can help provide additional support at home by doing the following activity:

- **Play *Mr. Origin Says.*** Your child will learn how to play the game. He or she will bring home the directions. By playing the game with your child, you will be helping develop skills in understanding the directions right/left and front/back.

Thank you for taking the time to support our math activities at home.

Sincerely,

_____

LETTER HOME

Looking Back at First Grade

Date: _____

Dear Family Member:

In this unit, we reflect on what we have done in math during the past year. Your child will look back and use concepts and skills in geometry, estimation, fractions, and whole number computation. Your child's work on the problems in this unit will provide one indication of his or her progress in mathematics over the course of the year.

As the class looks back at math concepts they have learned, you can provide additional support at home by doing the following activity:

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	1 $\frac{1}{2}$ inch	2	3	4	5 $\frac{1}{2}$ inch	6
7	8	9	10	11	12 $1\frac{1}{2}$ inches	13
14	15	16	17 $\frac{1}{2}$ inch	18	19	20
21	22	23	24	25	26 $\frac{1}{2}$ inch	27
28	29	30	31 3 inches			

Children will use this calendar to solve problems about the rainfall during October.

- **Math Memories List.** Invite your child to recall and discuss some of the math activities he or she did during the year. Then, have your child write a numbered list of these activities, beginning each sentence with the words "I remember." Some examples follow: (1) I remember using my footprints to measure distance. (2) I remember rolling toy cars down ramps and measuring their distance. (3) I remember making buildings out of cubes. Encourage your child to draw a picture illustrating each memory listed.

Thank you for supporting our math activities at home.

Sincerely,

_____