NUMBER® CORNER

SECOND EDITION

TEACHERS GUIDE

SEPTEMBER

GRADE 3

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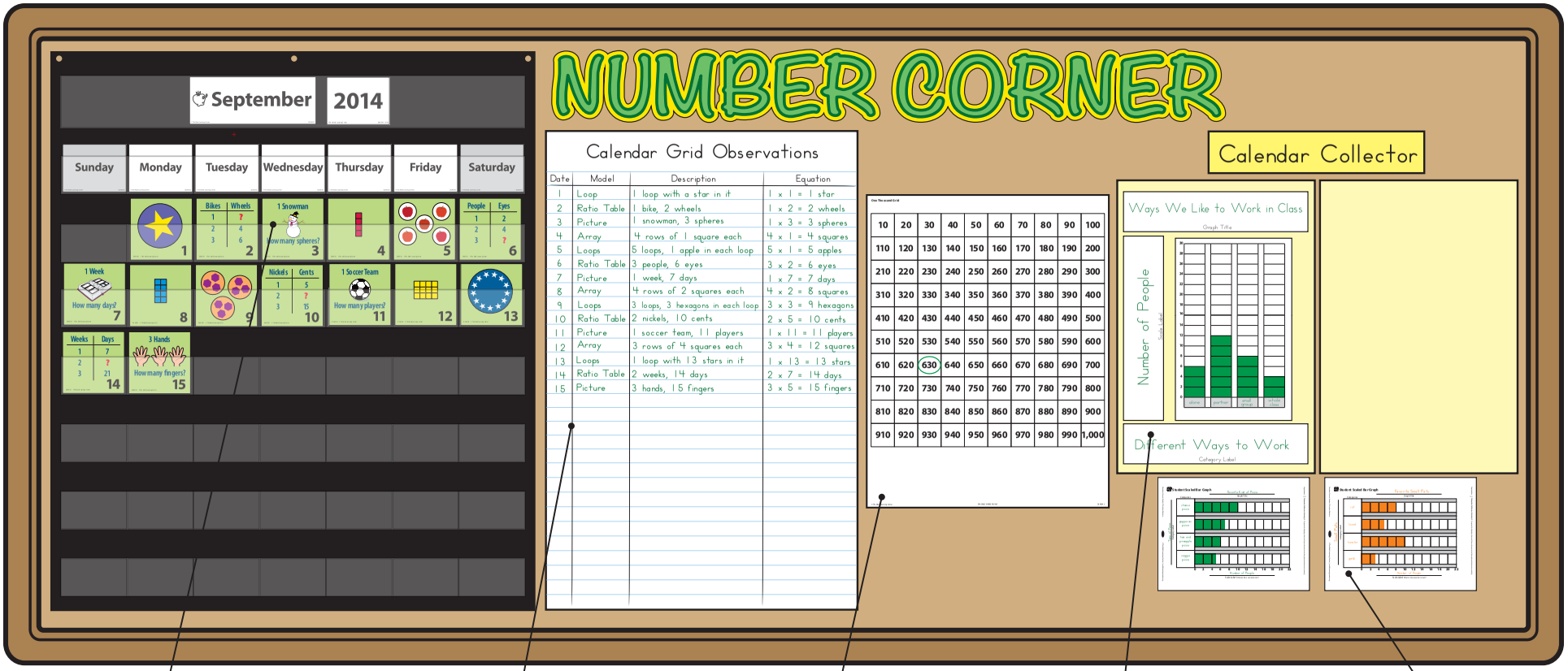
September Sample Display

Of the items shown below, some are ready-made and included in your kit; you'll prepare others from classroom materials and the included teacher masters. Refer to the Preparation section in each workout for details about preparing the items shown. The display layout shown fits on a 10′ × 4′ bulletin board or on two 6′ × 4′ bulletin boards. Other configurations can be used according to classroom needs. If you have extra space to work with, a Number Corner header may be made from bulletin board letters, student-drawn letters, or other materials.



Calendar Grid Pocket Chart

Remember to consult a calendar for the starting day for this month and year.

Calendar Grid Observations Chart

You might use 24″ × 36″ chart paper. If you laminate the paper before writing on it, you can reuse it in future months.

One Thousand Grid

The One Thousand Grid is 17″ wide by 22″ tall. Remember to use an erasable marker.

Calendar Collector Graphs

These graphs are made from copies of teacher masters with half sentence strips or other strips of paper for labels. If you laminate these elements before writing on them, you can reuse them in future years. You'll post the first graph during Activity 1 and a second graph during Activity 4.

Student Scaled Bar Graphs

You'll record data on these copies of teacher masters while students conduct surveys of their classmates during Activity 3 on days 6 and 11.

☑ September Daily Planner

Day	Date	Calendar Grid	Calendar Collector	Computational Fluency	Number Line	Solving Problems	Assessment
1		**Activity 1** Introducing the September Calendar Markers (p. 8)	**Activity 1** Introducing the Calendar Collector (p. 18)				
2		*Update*	**Activity 2** What Would You Like to Know About Our Class? (p. 22)				
3		*Update*		**Activity 1** Introducing Loops & Groups (p. 30)			
4		**Activity 2** Charting Observations (p. 9)				**Activity 1** Using Doubles to Solve Near Doubles (p. 45)	
5		*Update*			**Activity 1** Introducing Spud—the Counting Game (p. 36)		
6		**Activity 2** Charting Observations (p. 9)	**Activity 3** Student Surveys (p. 24)				
7		*Update*					Baseline Assessment, Part 1 (p. 52)
8		**Activity 2** Charting Observations (p. 9)				**Activity 2** Jumping by Friendly Numbers (p. 48)	
9		*Update*					Baseline Assessment, Part 2 (p. 54)
10		*Update*			**Activity 2** Spud Revisited (p. 38)		
11		**Activity 3** Making Predictions & Writing Equations (p. 11)	**Activity 3** Student Surveys (p. 24)				
12		*Update*			**Activity 3** From Grid to Line (p. 41)		
13		*Update*		**Activity 2** Loops & Groups Rematch (p. 33)			
14		**Activity 3** Making Predictions & Writing Equations (p. 11)					
15		*Update*			**Activity 4** Number Riddles (p. 42)		
16		**Activity 3** Making Predictions & Writing Equations (p. 11)				**Activity 3** Jumping to Get to a Friendly Number (p. 49)	
17		*Update*	**Activity 4** Which Read-Aloud? (p. 26)				
18		*Update*		**Activity 3** Loops & Groups with a Partner (p. 34)			
19		**Activity 4** Completing the Multiplication Models Page (p. 13)					
20		**Activity 3** Making Predictions & Writing Equations (p. 11)					

Note *On days when the Calendar Grid is not featured in an activity, a student helper will update it before or after Number Corner. Summaries of the update routines appear below.*

Calendar Grid — If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Number Corner
September

Overview

The workouts in the first month of school introduce key multiplication concepts and give students opportunities to use surveys to learn a little about their new classmates. September's workouts also provide a review of place value through 1,000 and strategies for adding 2- and 3-digit numbers.

Activities

Workouts	Day	Activities	D	G	SB
Calendar Grid Multiplication Models The Calendar Grid markers this month introduce key multiplication concepts and models. Each day, a student helper adds a marker to the Calendar Grid pocket chart and records the day's date on the board. Students make observations about the markers, generate equations to match the visuals, search for and describe emerging patterns in the sequence, and make predictions about future markers based on their observations.	1	**1** Introducing the September Calendar Markers	●		
	4, 6, 8	**2** Charting Observations	●		
	11, 14, 16, 20	**3** Making Predictions & Writing Equations	●		
	19	**4** Completing the Multiplication Models Page			●
Calendar Collector Class Data The Calendar Collector focuses on collecting information about the class in the form of survey data. During the first activity, the teacher reviews what surveys are, why people conduct them, and how the results can be displayed. She does a quick survey with the class and works with student input to display the results on a scaled bar graph. Next, the class brainstorms ideas for surveys and each student plans a survey to conduct with classmates. Later, the teacher selects two of the students' plans and works with the authors to conduct those particular surveys with the class. During the last activity, the teacher conducts one final survey and leads the class in creating a scaled picture graph to show the results.	1	**1** Introducing the Calendar Collector	●		
	2	**2** What Would You Like to Know About Our Class?	●		●
	6, 11	**3** Student Surveys	●		
	17	**4** Which Read-Aloud?	●		
		Extension (Optional) More Student Surveys	●		●
Computational Fluency Loops & Groups Students play a game to find the product of two numbers between 1 and 6. They sketch equal groups and write equations to represent the results. After four turns, they find the sum of the products. Over the course of the month, the teacher plays the game twice with the whole class, and then has students play it again in pairs.	3	**1** Introducing Loops & Groups		●	
	13	**2** Loops & Groups Rematch		●	●
	18	**3** Loops & Groups with a Partner		●	●
Number Line Up to One Thousand Students learn to play a new counting game, make their own number lines, and use their lines to solve a variety of number riddles. Throughout these activities, the focus is on reading numbers to 1,000 using base ten numerals and expanded form, and looking for and describing patterns in the multiples of 10 and 100 to 1,000 as they appear on a grid and on a number line.	5	**1** Introducing Spud—the Counting Game	●	●	
	10	**2** Spud Revisited	●	●	
	12	**3** From Grid to Line	●		●
	15	**4** Number Riddles	●		
Solving Problems Adding Two- & Three-Digit Numbers Students are introduced to problem strings and use them to review strategies for adding 2- and 3-digit numbers.	4	**1** Problem String 1	●		●
	8	**2** Problem String 2	●		●
	16	**3** Problem String 3	●		●
Assessment Baseline The teacher administers a written assessment to the entire class, half in place of Number Corner workouts one day, and the other half in place of workouts a couple of days later.	7	**Baseline Assessment, Part 1** Completing Pages 1 & 2			
	9	**Baseline Assessment, Part 2** Completing Pages 3–5			

D – Discussion, **G** – Game, **SB** – Student Book

Teaching Tips

September is the month to establish procedures that ensure Number Corner runs smoothly all year. Third graders still need specific instruction on many classroom routines, including how to move quietly between their tables and the Number Corner discussion area, pick up and put away materials, respond to one another's thinking respectfully, and discuss in pairs effectively. Plan to spend a bit more time on the Number Corner workouts this month while students are learning these routines.

Pacing & Routines

Please see the Implementation section of the Bridges Educator site for more detailed advice about routines, planning, teaching strategies, and pacing.

Target Skills

The table below shows the major skills and concepts addressed this month. It is meant to provide a quick snapshot of the expectations for students' learning during this month of Number Corner.

Major Skills/Concepts Addressed	CG	CC	CF	NL	SP
2.NBT.1 Demonstrate an understanding that the digits in a 3-digit number represent amounts of hundreds, tens, and ones				●	
2.NBT.2 Skip-count by 10s and 100s up to 1,000				●	
2.NBT.3 Read numbers to 1,000 using base-ten numerals and expanded form				●	
2.NBT.6 Add up to four 2-digit numbers using strategies based on place value and properties of operations			●		
3.OA.1 Interpret products of whole numbers	●		●		
3.OA.1 Write story problems or describe problem situations to match a multiplication expression or equation	●		●		
3.OA.3 Solve multiplication story problems with products to 100 involving situations of equal groups and arrays	●				
3.OA.9 Identify arithmetic patterns among multiples of 10 to 1,000				●	
3.NBT.2 Use strategies based on place value, properties of operations, or the relationship between addition and subtraction to add fluently with sums to 1000					●
3.MD.3 Make a scaled bar graph or picture graph to represent a data set with several categories		●			
3.MD.3 Solve one- and two-step comparison problems using data shown on a scaled bar or picture graph with several categories		●			
3.MP.1 Make sense of problems and persevere in solving them					●
3.MP.2 Reason abstractly and quantitatively		●	●	●	●
2.MP.3 Construct viable arguments and critique the reasoning of others					●
3.MP.4 Model with mathematics	●	●	●		
3.MP.7 Look for and make use of structure	●			●	

CG – Calendar Grid, **CC** – Calendar Collector, **CF** – Computational Fluency, **NL** – Number Line **SP** – Solving Problems

Assessments

This month you will administer a five-page written Baseline Assessment in two parts: the first two sheets during one Number Corner period, and the last three during Number Corner a couple of days later. The table below lists the skills assessed in each part of the Baseline Assessment. Note that these are all skills students should have mastered in second grade. This assessment, then, should serve as an early warning system, enabling you to quickly identify students who may need extra support or special services if they haven't been identified for such in first or second grade.

The Baseline Assessment is a one-time tool, designed to inform your instruction rather than gauge students' growth over time. Quarterly checkups that appear in October, January, March, and May serve a similar purpose: each provides a snapshot of individual students at that particular time of year, with regard to the skills that have been emphasized in Number Corner the couple of months prior to the checkup. If you want to gauge students' growth and progress over time with regard to the Common Core State Standards, you can use the optional Comprehensive Growth Assessment, located in the Grade 3 Number Corner Assessment Guide.

Skills/Concepts Assessed in the Baseline Assessment

- Solve two-step addition and subtraction story problems with sums and minuends to 100 involving situations of adding to, putting together, taking from, taking apart, and comparing, with unknowns in all positions (2.OA.1)
- Recall from memory all sums of two 1-digit numbers (2.OA.2)
- Find the total number of objects in an array with up to 5 rows and 5 columns, using addition, and write an equation to represent the total number (2.OA.4)
- Add and subtract within 1,000, using concrete models or drawings and strategies based on place based on place value, properties of operations, or the relationship between addition and subtraction; relate the strategy to a written method (2.NBT.7)
- Add and subtract with sums and minuends to 1,000 using strategies that involve adding or subtracting hundreds to or from hundreds, tens to or from tens, and ones to or from ones, composing or decomposing a hundred or a ten as necessary (2.NBT.7)
- Explain why strategies for adding and subtracting 2- and 3-digit numbers work, using place value and the properties of operations (2.NBT.9)
- Measure the length of an object in centimeters using a ruler (2.MD.1)
- Estimate length in centimeters (2.MD.3)
- Determine exactly how much longer one object is than another; express the difference between two lengths in terms of a standard unit of length (2.MD.4)
- Solve addition and subtraction story problems with sums and minuends to 100 involving lengths given in the same units (2.MD.5)
- Represent whole numbers as lengths, as well as whole number sums and differences on a number line (2.MD.6)
- Partition a rectangle into rows and columns of same-size squares, and count to find the total number (2.G.2)
- Partition a circle [rectangle] into 2 or 3 equal parts (2.G.3)
- Use the terms halves and half of, thirds and a third of, fourths, quarters, fourth of, and quarter of to talk about the 2, 3, or 4 equal parts into which a circle [rectangle] has been partitioned (2.G.3)
- Demonstrate an understanding that equal parts of identical wholes do not have to be the same shape (2.G.3)

Materials Preparation

Each workout includes a list of required materials by activity. You can use the table below to prepare materials ahead of time for the entire month.

Task		Done
Copying	Run copies of Teacher Masters T1–T7, T9–T18, and T8 (optional) according to the instructions at the top of each master.	
	Run a single display copy of Number Corner Student Book pages 1–2.	
	If students do not have their own Number Corner Student Books, run a class set of pages 1–3.	
Charts	Prepare the Calendar Grid Observations Chart according to preparation instructions in the Calendar Grid workout.	
	Prepare the Scaled Bar Graph and Scaled Picture Graphs according to preparation instructions in the Calendar Collector workout.	
	Post the One Thousand Grid from your Number Corner kit on your display board before Number Line Activity 1 (day 5).	
Classroom Materials	Before conducting the Baseline Assessment, organize colored tiles and base ten materials (optional) according to preparation instructions.	
Special Tasks	Set up a classroom area to teach problem strings, following preparation suggestions in the Solving Problems workout.	

September Calendar Grid

Multiplication Models

Overview

The Calendar Grid markers this month introduce key multiplication concepts and models. Each day, a student helper adds a marker to the Calendar Grid pocket chart and records the day's date on the board. On days devoted to discussing the Calendar Grid, students make observations about the markers, generate equations to match the visuals on the markers, search for and describe emerging patterns in the sequence, and make predictions about future markers based on their observations.

Skills & Concepts

- Interpret products of whole numbers (3.OA.1)
- Use and explain additive strategies (e.g., repeated addition and skip-counting) to demonstrate an understanding of multiplication (supports 3.OA)
- Model with mathematics (3.MP.4)
- Look for and make use of structure (3.MP.7)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Introducing the September Calendar Markers	1		• Calendar Grid pocket chart (used in all September Calendar Grid activities) • Multiplication Models Calendar Markers (used in all September Calendar Grid activities) • Month, Day, and Year Cards (used in all September Calendar Grid activities)	• whiteboard and markers
Activity 2 Charting Observations	4, 6, 8			• 2 sheets of lined chart paper (see Preparation) • erasable markers
Activity 3 Making Predictions & Writing Equations	11, 14, 16, 20			• student whiteboards, markers, erasers (class set)
Activity 4 Completing the Multiplication Models Page	19	**NCSB 1–2*** Multiplication Models	• colored tiles (optional, see Support suggestion)	

TM – Teacher Master, **NCSB** – Number Corner Student Book
Copy instructions are located at the top of each teacher master. ** Run 1 copy of these pages for display.*

Vocabulary

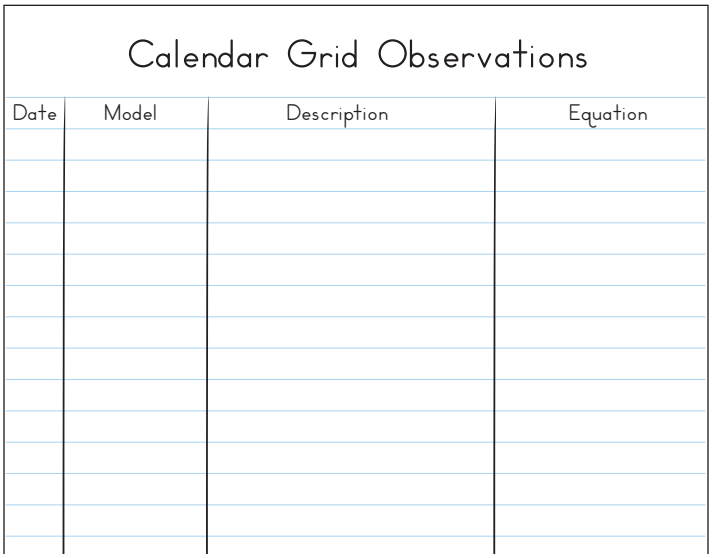
An asterisk [*] identifies those terms for which Word Resource Cards are available.

array*
column
date
day
equation*
even number*
group
month
multiply*
observe/observation
odd number*
pattern*
product*
ratio table*
rectangular array
row
week
year

Preparation

Calendar Grid Observations Chart

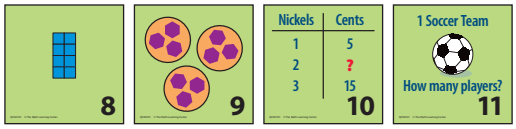
Make the Calendar Grid Observations Chart from two sheets of lined chart paper. Label the top of one piece "Calendar Grid Observations." Laminate both sheets. Next, use an erasable marker and yardstick to draw four columns on each sheet. Label the columns at the top of the first sheet, as illustrated.



Use the second piece of chart paper to extend the chart midway through the month. Use an erasable marker to record students' observations so that you can reuse the chart each month.

Mathematical Background

In second grade, students used addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and 5 columns. They wrote equations to express the total as a sum of equal addends. The Calendar Grid activities this month pick up from that point, extending repeated addition into the realm of multiplication. Multiplication requires the learner to think in terms of groups of things rather than individual things. Students accustomed to writing $2 + 2 + 2 + 2 = 8$ to describe an array such as the one shown at left now learn to symbolize the display using multiplication instead. Having already learned to describe an array in terms of rows and columns, students discover that 4 rows of 2 can be written as 4×2, and 2 columns of 4 can be expressed as 2×4, or 2 groups of 4.



Along with the familiar arrays, the Calendar Grid markers model multiplicative situations using equal groups of items in loops, ratio tables, and familiar objects that come naturally grouped. In the markers above, for example, we see 3 groups of 3 hexagons (or 3×3), a ratio table indicating that if there are 5 cents in 1 nickel, there must be double that number in 2 nickels (or 2×5), and a question that gets at the fact that there are 11 players on a soccer team (or 1×11). By using words and numbers to describe the markers through the month, students learn that multiplication is a means to determine the total number of objects when there are a specific number of groups, and each group has the same number of objects. Furthermore, they learn that the multiplication symbol $\times$ means *groups of*, and expressions such as 3×3 refer to *3 groups of 3*.

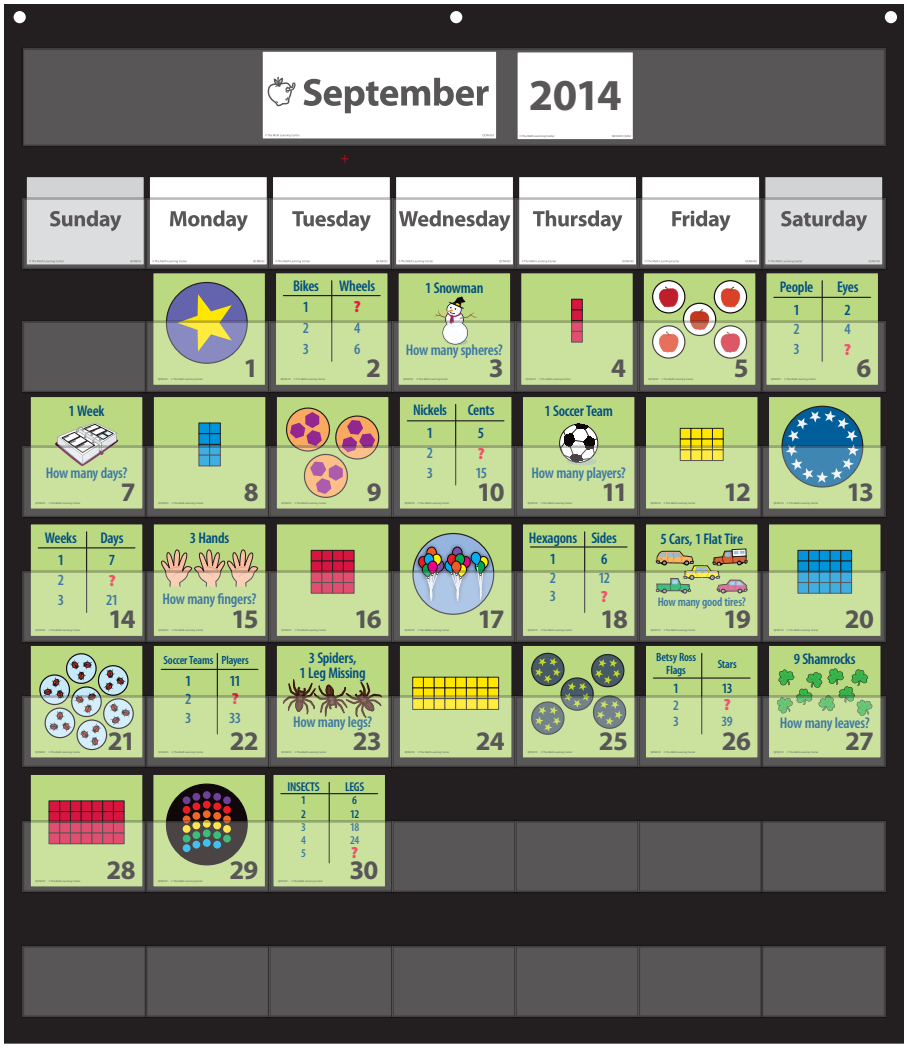
About the Pattern

The patterns featured this month are described below. Revealing one calendar marker each day allows students to make and test predictions, discovering patterns as new markers are added and their predictions are confirmed or proven false. Don't tell them what the patterns are; instead, allow them to pursue their own ideas and investigations.

- The first pattern students will likely become aware of is the ABCD pattern in the types of visuals/models shown on the markers: looped groups, ratio table, picture, rectangular array.
- Another pattern students might observe within the first week or two is the fact that the product always matches the date. The rectangular array on the marker for the 8th is composed of 8 squares. There are 3 hexagons in each of 3 loops on the 9th. The number of cents in 2 nickels corresponds to the date on the marker for the 10th, and there is 1 group of 11 on the marker for the 11th.
- The arrays are patterned by color: red, blue, yellow; red, blue, yellow.
- The arrays of squares on Markers 4, 8, 12, 16, 20, and so on, are arranged into 4 rows, 4 rows, 3 rows; 4 rows, 4 rows, 3 rows (i.e., 4×1, 4×2, 3×4; 4×4, 4×5, 3×8).
- The rectangular arrays are all multiples of 4: 4, 8, 12, 16, 20, 24, and so on. It might be noted that all of these numbers are even.

Note

The Betsy Ross flag referred to on Marker 26 was designed during the American Revolution and features 13 white stars arranged in a circle on a blue background (similar to the display on Marker 13). Each star represents 1 of the original 13 colonies.



Key Questions

Learning to search for, describe, and extend patterns facilitates algebraic thinking. Use these questions to help your students investigate this month's pattern.

- What will today's marker look like? What number and model will it show? How do you know?
- When will you see the next set of looped groups (the next ratio table, the next everyday object, or the next rectangular array)? How do you know?
- Can you make more detailed predictions about today's marker? We know it will have 9 (13, 17, 21, 25, 29) items, and they'll be grouped into loops. Can you predict how many loops there will be, and how many items we will see in each loop?
- We know tomorrow's marker will show an array. Can you predict how many rows and how many columns the array will have? Can you use some of our colored tiles to build your prediction?
- We know the marker for today will show objects that come in groups, like the hands on the 15th each show 5 fingers. The date today is the 19th. Can you imagine how that might be pictured? Can you think of anything that comes in groups of 19, or in equal groups that add up to 19?
- What multiplication equation(s) can we write to represent the model on today's marker?

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

September

Date	Model	Description	Equation
1	Loop	1 loop with 1 star	1 × 1 = 1 star
2	Ratio Table	1 bike with 2 wheels	1 × 2 = 2 wheels
3	Picture	1 snowman with 3 spheres	1 × 3 = 3 spheres
4	Array	4 rows with 1 square each	4 × 1 = 4 squares
5	Loop	5 loops with 1 apple in each loop	5 × 1 = 5 apples
6	Ratio Table	3 people with 2 eyes each	3 × 2 = 6 eyes
7	Picture	1 week with 7 days each	1 × 7 = 7 days
8	Array	4 rows with 2 squares each	4 × 2 = 8 squares
9	Loop	3 loops with 3 hexagons each	3 × 3 = 9 hexagons
10	Ratio Table	2 nickels equal 10 cents	2 × 5 = 10 cents
11	Picture	1 soccer team with 11 players	1 × 11 = 11 players
12	Array	4 rows with 3 squares each	4 × 3 = 12 squares
13	Loop	1 loop with 13 stars	1 × 13 = 13 stars
14	Ratio Table	2 weeks equal 14 days	2 × 7 = 14 days
15	Picture	3 hands with 5 fingers each	3 × 5 = 15 fingers
16	Array	4 rows with 4 squares each	4 × 4 = 16 squares
17	Loop	1 loop with 17 balloons	1 × 17 = 17 balloons
18	Ratio Table	3 hexagons with 6 sides each	3 × 6 = 18 sides
19	Picture	5 cars with a total of 1 flat tire and 19 good tires	5 × 4 - 1 = 19 tires
20	Array	4 rows with 5 squares each	4 × 5 = 20 squares
21	Loop	7 loops with 3 bugs each	7 × 3 = 21 bugs
22	Ratio Table	2 soccer teams have 22 players	2 × 11 = 22 players
23	Picture	3 spiders with 8 legs each, except one spider has a missing leg	3 × 8 – 1 = 23 legs
24	Array	3 rows with 8 squares in each	3 × 8 = 24 squares
25	Loop	5 loops with 5 stars in each	5 × 5 = 25stars
26	Ratio Table	2 Besty Ross flags with 13 stars each	2 × 13 = 26 stars
27	Picture	9 shamrocks with 3 leaves each	9 × 3 = 27 leaves
28	Array	4 rows of 7 squares each	4 × 7 = 28 squares
29	Loop	1 loop with 29 dots	1 × 29 = 29 dots
30	Ratio Table	5 insects with 6 legs each	5 × 6 = 30 legs
31	Picture	October has 31 days	1 × 31 = 31 days

About the Pattern

The patterns featured this month are described below. Revealing one calendar marker each day allows students to make and test predictions, discovering patterns as new markers are added and their predictions are confirmed or proven false. Don't tell them what the patterns are; instead, allow them to pursue their own ideas and investigations.

- The first pattern students will likely become aware of is the ABCD pattern in the types of visuals/models shown on the markers: looped groups, ratio table, picture, rectangular array.
- Another pattern students might observe within the first week or two is the fact that the product always matches the date. The rectangular array on the marker for the 8th is composed of 8 squares. There are 3 hexagons in each of 3 loops on the 9th. The number of cents in 2 nickels corresponds to the date on the marker for the 10th, and there is 1 group of 11 on the marker for the 11th.
- The arrays are patterned by color: red, blue, yellow; red, blue, yellow.
- The arrays of squares on Markers 4, 8, 12, 16, 20, and so on, are arranged into 4 rows, 4 rows, 3 rows; 4 rows, 4 rows, 3 rows (i.e., 4×1, 4×2, 3×4; 4×4, 4×5, 3×8).
- The rectangular arrays are all multiples of 4: 4, 8, 12, 16, 20, 24, and so on. It might be noted that all of these numbers are even.

Notes:

CALENDAR GRID OBSERVATIONS

DATE	MODEL	DESCRIPTION	EQUATION

September Calendar Collector

Class Data

Overview

This month's Calendar Collector focuses on collecting information about the class in the form of survey data. The teacher reviews what surveys are, why people conduct them, and how the results can be displayed. She does a quick survey with the class and works with student input to display the results on a scaled bar graph. The class brainstorms ideas for surveys, and each student plans a survey to conduct with his or her classmates. Later in the month, the teacher selects the plans of two students and works with them to conduct their surveys in class. In the last activity, the class creates a scaled picture graph to show the results of a final survey. An optional extension suggests how to have all the students conduct their surveys at another time.

Skills & Concepts

- Make a scaled bar graph or picture graph to represent a data set with several categories (3.MD.3)
- Solve one- and two-step comparison problems using data shown on a scaled bar or picture graph with several categories (3.MD.3)
- Reason abstractly and quantitatively (3.MP.2)
- Model with mathematics (3.MP.4)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Introducing the Calendar Collector	1	**TM T1** Scaled Bar Graph Sheet **TM T2** Scaled Bar Graph Extension Sheet		• crayon or water-based marker • 3 sentence strips (see Preparation) • whiteboard or chart paper and marker
Activity 2 What Would You Like to Know About Our Class?	2	**TM T3** Student Survey Planning Sheet		• whiteboard or chart paper and marker • grocery or gift bag
Activity 3 Student Surveys	6, 11	**TM T4** Student Scaled Bar Graph		• completed Student Survey Planning Sheets in a grocery or gift bag • crayon or water-based marker • whiteboard or chart paper and marker
Activity 4 Which Read-Aloud?	17	**TM T5** Scaled Picture Graph Sheet **TM T6** Scaled Picture Graph Extension Sheet **TM T7** Picture Graph Markers		• sentence strips (see Preparation) • 4 read-alouds (see Preparation) • glue stick • pair of scissors • whiteboard or 2 pieces of chart paper • student whiteboards,markers, and erasers (class set) • envelope or zip-top bag
Extension (Optional) More Student Surveys		**TM T4** Student Scaled Bar Graph **TM T8** Survey Report Sheet		• crayons for student use

TM – Teacher Master, **NCSB** – Number Corner Student Book
Copy instructions are located at the top of each teacher master.

Vocabulary

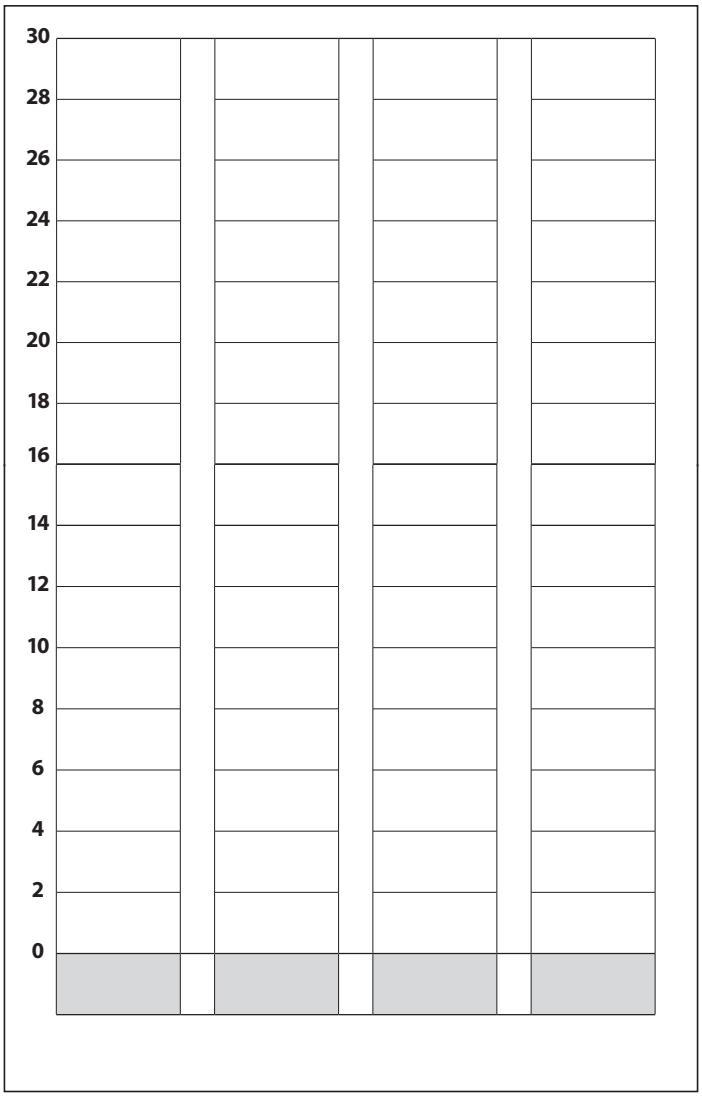
An asterisk [*] identifies those terms for which Word Resource Cards are available.

bar graph*
category/categories
collect
compare
data*
display
fewer/fewest
information
least
more
most
picture graph*
popular
results
scale*
survey
title

Preparation

Blank Graphs for Activities 1 and 4

You will conduct surveys with the class during Calendar Collector Activities 1 and 4 this month. To prepare the graphs for recording students' responses to your survey questions, run 1 copy each of the Scaled Bar Graph and the Scaled Picture Graph Teacher Masters. If your class is large or you think you might have more than 14 students make the same choice on the bar graph or 10 students on the picture graph, run copies of Graph Extension Teacher Masters for one or both graphs and either trim and attach them ahead of time, as shown below, or keep the extension sheets on hand in case you need them during the activities. Consider laminating both blank graphs for use in future years.



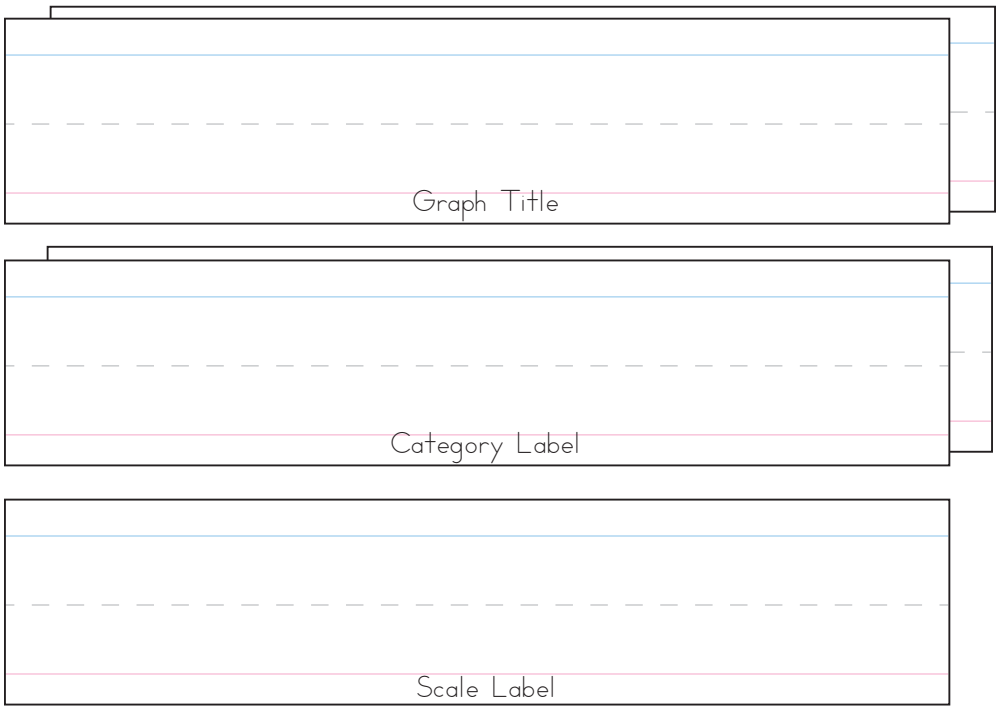
Blank Scaled Bar Graph for Activity 1

KEY:

Blank Scaled Picture Graph for Activity 4

Graph Labels

Cut three sentence strips (or three strips of 3" × 24" paper) in half, and use them to create a set of labels as shown below for each of the two graphs you will make with the class this month. You will need one of each type of label for the bar graph in Activity 1, and one each of the top two labels for the picture graph in Activity 4. If you laminate these, you can re-use them in years to come.



Books and Picture Graph Markers for Activity 4

Choose four books you particularly enjoy reading to students early in the school year, and have them available to display during the fourth Calendar Collector activity this month. You might choose picture books that you could read in a single sitting, or use the survey as a way to choose a chapter book to read to them. Also, run a copy of the Picture Graph Markers Teacher Master, cut the graph markers apart, and put them in a small envelope or zip-top bag.

Mathematical Background

This month's workout revolves around data collected by conducting surveys. A *survey* is a method of collecting a sample of data by asking people questions. To conduct a survey, one must choose a topic and develop the questions to be asked or the choices to be given. In most situations, the people conducting the survey must also choose what type of people to ask, and then identify an exact group of participants. In this setting, however, the population is already given—the group of students in the classroom.

Once a survey is conducted and data collected, it is generally organized and displayed in a format that is quick and easy to read—often in the form of a table or a graph of some type. In the case of the surveys conducted this month, the steps of gathering, organizing, and presenting the data in visual form are collapsed into one, because the students will respond to survey questions by show of hands, and the information will be recorded directly onto a graph. You will create two different types of graphs with the class: picture and bar graphs. A *picture graph*, sometimes called a pictograph, uses pictures or symbols to represent data. A *bar graph* uses bars to show quantities or numbers for easy comparison.

Students may remember working with both types of graphs in second grade. The idea of making and reading a *scaled graph*, or a graph in which each increment or picture stands for more than one person or object, will be new, however. Third graders are also ready to learn to use the accepted conventions for creating and labeling graphs:

- Bar graphs should include a title, a scale, a scale label, categories, a category label, and data.
- Picture graphs should include a title, categories, a category label, a key, and data.

Update

There are no updates for this month's Calendar Collector. However, if interest is high, consider implementing one or more of the extension suggestions at the end of the workout.

Key Questions

Use the following questions to guide students in creating, reading, and interpreting scaled graphs this month.

- What is this survey about? What choices does it offer the people who participate?
- What would a good title for the graph on which we're going to display the results of this survey?
- Let's look at the scale for this graph. What does each box or each picture stand for?
- Which of the choices offered by the survey was the most or the least popular?
- How many more students chose ____ than ____?
- How many fewer students chose ____ than ____?
- What is the difference between the number of people who voted for the most popular choice and the number of people who voted for the least popular choice?
- How many students participated in their survey?
- Who would find these results interesting or useful?
- Do you think the results would be the same or similar if this survey was conducted in another third grade in our school? What about a third grade in another town, state, or country? What about a different grade level?

September Computational Fluency

Loops & Groups

Overview

Students play a game in which they find the product of two numbers between 1 and 6. They sketch equal groups and write equations to represent the results. After four turns, they find the sum of the products. Over the course of the month, the teacher plays the game twice with the whole class and then has students play it again in pairs.

Skills & Concepts

- Add up to four 2-digit numbers using strategies based on place value and properties of operations (2.NBT.6)
- Interpret products of whole numbers (3.OA.1)
- Use and explain additive strategies (e.g., repeated addition and skip-counting) to demonstrate an understanding of multiplication (supports 3.OA)
- Reason abstractly and quantitatively (3.MP.2)
- Model with mathematics (3.MP.4)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Introducing Loops & Groups	3	**TM T9** Whole Class Loops & Groups Game Sheet	• 1 spinner overlay	• student whiteboards, markers, and erasers (class set)
Activity 2 Loops & Groups Rematch	13	**TM T9** Whole Class Loops & Groups Game Sheet **NCSB 3** Loops & Groups Record Sheet		
Activity 3 Loops & Groups with a Partner	18	**TM T10** Partner Loops & Groups Game Sheet	• spinner overlays (half-class set)	

TM – Teacher Master, **NCSB** – Number Corner Student Book
Copy instructions are located at the top of each teacher master.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

equation*
group/groups
multiply*
product*
repeated addition
sum or total*

Mathematical Background

Loops & Groups is a simple but effective game that helps incoming third graders begin to extend what they know about repeated addition to the operation of multiplication. The game introduces and reinforces the following basic multiplication concepts:

- Multiplication is a way to determine the total number of objects when there are a specific number of groups with the same number of objects in each group.
- Multiplication requires thinking in terms of groups of things rather than individual things.
- The multiplication symbol means "groups of" and expressions such as 4×6 refer to 4 *groups of* 6.

September Number Line

Up to One Thousand

Overview

In the September Number Line workout, students learn to play a new counting game, make their own number lines, and use their lines to solve a variety of number riddles. Throughout these activities, the focus is on reading numbers to 1,000 using base ten numerals and expanded form, and looking for and describing patterns in the multiples of 10 and 100 to 1,000 as they appear on a grid and on a number line.

Skills & Concepts

- Demonstrate an understanding that the digits in a 3-digit number represent amounts of hundreds, tens, and ones (2.NBT.1)
- Skip-count by 10s and 100s up to 1000 (2.NBT.2)
- Read numbers to 1000 using base-ten numerals and expanded form (2.NBT.3)
- Identify arithmetic patterns among multiples of 10 to 1,000 (3.OA.9)
- Reason abstractly and quantitatively (3.MP.2)
- Look for and make use of structure (3.MP.7)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Introducing Spud—the Counting Game	5		• One Thousand Grid (see Preparation)	• pointer • marker
Activity 2 Spud Revisited	10			• pointer • erasable markers in 2 different colors • a piece of chart paper
Activity 3 From Grid to Line	12	**TM T11** Individual Student Number Line 10 to 1,000 **TM T12** Number Line Clues		• scissors (class set) • glue sticks (class set) • crayons (class set) • small envelopes (half-class set) • a piece of copy paper to mask portions of the display master • Number Corner Student Books
Activity 4 Number Riddles	15		• One Thousand Grid	• students' individual number lines from Activity 3

TM – Teacher Master, **NCSB** – Number Corner Student Book
Copy instructions are located at the top of each teacher master.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

after
before
between
digit
hundreds
ones
place value
tens
thousand

Preparation

Find the One Thousand Grid in your Number Corner Kit, and post it on your Number Corner display board.

Mathematical Background

It is interesting to note that the Common Core State Standards ask second graders to learn to read and write numbers to 1,000 using base ten numbers, number names, and expanded form. Fourth graders are expected to do the same for numbers up to 1,000,000. There is, however, no parallel expectation in third grade. Third graders are asked to round numbers to the nearest 10 or 100, as well as add and subtract fluently within 1,000, but there is no prescribed work with place value per se. Nevertheless, it seems prudent to review and extend place value concepts periodically in third grade, partly to support upcoming work in fourth

grade, but also because this is an area that takes some students longer than others to master, and one that is critical to success in multi-digit computation. The Number Line workout this month provides a review of key place value concepts students were to have mastered in second grade, including reading numbers and counting by 10s and 100s to 1,000, and understanding the relationship between 100s and 10s. Specifically, students will review the fact that a number such as 250 is 2 hundreds and 5 tens, but it can also be expressed as 25 tens.

Key Questions

Use the folowing questions to guide students' discussion during Number Line this month.

- What comes before ___?
- What comes after ____?
- What is in between ___ and ____?
- How many tens are there in 70? How do you know?
- How many hundreds and tens are there in 150? If you traded in the hundred for tens, how many tens would there be in 150? How did you figure it out?
- If you have to trade in all the hundreds for tens, how many tens are there in 230 (380, 410, 500, 670, and so on)? How do you know?

September Solving Problems

Adding Two- & Three-Digit Numbers

Overview

This month, students are introduced to problem strings and use them to review strategies for adding 2- and 3-digit numbers.

Skills & Concepts

- Use strategies based on place value, properties of operations, or the relationship between addition and subtraction to add fluently with sums to 1,000 (3.NBT.2)
- Make sense of problems and persevere in solving them (3.MP.1)
- Reason abstractly and quantitatively (3.MP.2)
- Construct viable arguments and critique the reasoning of others (3.MP.3)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Problem String 1	4	**NCSB Appendix** Problem String Work Space **TM T13** Problem String Work Space		• chart paper (1–3 pieces, optional, see Preparation)
Activity 2 Problem String 2	8			
Activity 3 Problem String 3	16			

TM – Teacher Master, **NCSB** – Number Corner Student Book
Copy instructions are located at the top of each teacher master.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

add/addition
digit
hundreds
jumping strategy
ones
open number line
splitting strategy
strategy
sum or total*
tens

Preparation

The Solving Problems workout changes from month to month. During some months, students will work on problem solving skills such as interpreting and solving story problems, making estimates, writing equations, and checking work. In other months, students will participate in a special activity called Problem Strings. Problem strings help students develop skills in all operations for whole numbers, fractions, and decimals. They focus in particular on relationships between numbers and operations. This month focuses on problem strings.

Decide where you want to do the problem string and set up that area—you'll need plenty of space to write where everyone can see. This can be on a whiteboard, document camera or projector, or on chart paper. The writeup that follows presumes you will gather students in the discussion area, as sitting close together in a circle or semicircle encourages the kind of talking and sharing you want to happen. If this is not possible in your classroom, figure out what works best for you.

To review how to introduce and teach problem strings, read the Solving Problems section of the Grade 3 Number Corner Introduction.

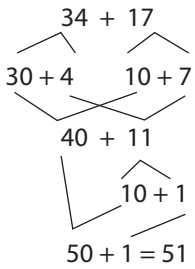
Mathematical Background

The strings this month have a two-fold purpose: accustom students to the problem string process and deepen their understanding of efficient strategies for adding 2- and 3-digit numbers. Use this month to set high expectations for students to share in strings, whether through sharing a strategy, asking questions, or using something learned during a string in a new context.

Mathematically, the strings this month build on the splitting and jumping strategies for 2- and 3-digit addition introduced and developed in second grade. These strategies, along with the models best used to represent them, are described below. They should be familiar to students who worked with Number Corner in first and second grade.

Splitting

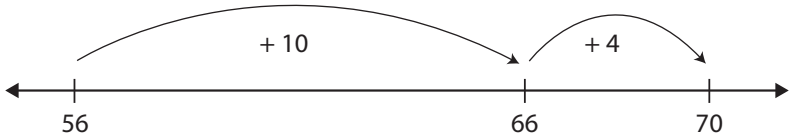
As students calculate with 2- and 3-digit numbers, they often make sense of such problems by splitting (or "decomposing") the number into its component parts based on place values. For example, consider the problem 34 + 17. A student using the splitting method will split 34 into 30 and 4, and then split 17 into 10 and 7. Next, the student combines the tens (30 + 10 = 40), then combines the ones (4 + 7 = 11), and finally adds the tens and ones to get 51. As second graders, students had many opportunities to use base ten pieces and sketches, which allowed them to see the different units (in this case, tens and ones), and then group and add like parts. At this point, you can use a splitting diagram like the one below to represent students' thinking when they volunteer strategies that involve combining the tens, the ones, and then finding the total.



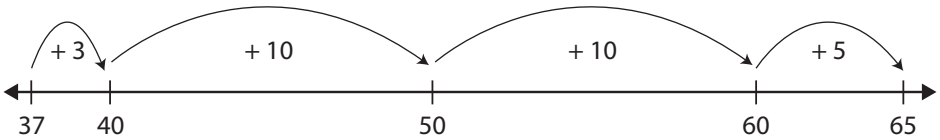
The splitting strategy works equally well when adding 3-digit numbers. Students combine the hundreds, the tens, and then the ones, and then go back to find the grand total. While not always as efficient as jumping strategies, place value splitting is valuable strategy. Because it puts the place value of each digit in the forefront, we can think of it as a precursor to understanding the standard algorithm.

Jumping

- **Keeping One Addend Whole—Add Friendly Numbers**
  As students develop confidence with adding by (and via) tens, they recognize the value of keeping one number whole and operating from there. They can use the place value patterns to jump by friendly numbers, often multiples of 10. Consider the problem 56 + 14. A student might start on 56 and then decompose (split) the 14 into a group of 10 and 4. Then she adds 10 to 56 to arrive at 66. Next, she adds 4 more to arrive at a total of 70.



- **Keeping One Addend Whole—Get to a Friendly Number**
  With this variant of the jumping strategy, students keep one addend whole and then add enough to get to a friendly number (usually 10, or a multiple of 10, but sometimes a landmark number like 25). From this new friendly number, they can then jump by a multiple of 10 or some other fruitful number. Consider the combination 37 + 28. A student might start at 37 and add 3 to get to a friendly number of 40. From 40, he must add 25 more, which might be done in a number of ways (e.g., jump by 20, then 5 more; jump by 10, 10, and 5; and so on).



Key Questions

Use these questions to help your students investigate this month's strings.

- What do you know that could help you solve this problem?
- What strategy could you use?
- How can you show your thinking?
- What model could you use to show your thinking?
- How can solving one problem in a string help you solve another problem, later in the string?
- What is the big idea of this string?
- How can your work with this string help you with other problems?

September Assessment

Baseline Assessment

Overview

During the second week of school, the teacher administers a written assessment to the entire class, half in place of Number Corner workouts one day, and the other half in place of workouts a couple of days later. This Baseline Assessment is designed to help teachers ascertain students' current skills with story problems, addition facts, adding and subtracting 3-digit numbers, measuring length in standard units, rectangular arrays, and fractions.

Skills & Concepts

- Solve two-step addition and subtraction story problems with sums and minuends to 100 involving situations of adding to, putting together, taking from, taking apart, and comparing, with unknowns in all positions (2.OA.1)
- Recall from memory all sums of two 1-digit numbers (2.OA.2)
- Find the total number of objects in an array with up to 5 rows and 5 columns, using addition, and write an equation to represent the total number (2.OA.4)
- Add and subtract within 1,000, using concrete models or drawings and strategies based on place value, properties of operations, or the relationship between addition and subtraction; relate the strategy to a written method (2.NBT.7)
- Add and subtract with sums and minuends to 1,000 using strategies that involve adding or subtracting hundreds to or from hundreds, tens to or from tens, and ones to or from ones, composing or decomposing a hundred or a ten as necessary (2.NBT.7)
- Explain why strategies for adding and subtracting 2- and 3-digit numbers work, using place value and the properties of operations (2.NBT.9)
- Measure the length of an object in centimeters using a ruler (2.MD.1)
- Estimate length in centimeters (2.MD.3)
- Determine exactly how much longer one object is than another; express the difference between two lengths in terms of a standard unit of length (2.MD.4)
- Solve addition and subtraction story problems with sums and minuends to 100 involving lengths given in the same units (2.MD.5)
- Represent whole numbers as lengths, as well as whole number sums and differences on a number line (2.MD.6)
- Partition a rectangle into rows and columns of same-size squares, and count to find the total number (2.G.2)
- Partition a circle [rectangle] into 2 or 3 equal shares; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape (2.G.3)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Baseline Assessment, Part 1 Completing Pages 1 & 2	7	**TM T14–T15** Baseline Assessment, pages 1 & 2		• red crayons (1 per student) • rulers marked in centimeters (1 per student) • scratch paper (class set) • base ten materials (optional, see Preparation)
Baseline Assessment, Part 2 Completing Pages 3–5	9	**TM T16–T18** Baseline Assessment, pages 3–5	• colored tiles (see Preparation)	• scratch paper (class set) • rulers (optional, for student use) • base ten materials (optional, see Preparation)

TM – Teacher Master, **NCSB** – Number Corner Student Book
Copy instructions are located at the top of each teacher master.

Vocabulary

An asterisk [*] identifies those terms for which Word Resource Cards are available.

add
addition
centimeter (cm)*
column
difference*
divide*
equal shares
equation*
estimate*
fraction*
length
long/longer/longest
measure
number line*
number
partition*
pictures
row
short/shorter/shortest
solve
same-sized squares
subtract

Preparation

- Organize your square-inch colored tiles into tubs or other containers so that each student will have easy access to at least 12 tiles during the second part of the assessment.
- If you have or can borrow base ten materials, such as base ten pieces in the Bridges kit, or base ten blocks, you may want to organize them into tubs or other containers, 1 per table or cluster of desks, so students will have easy access to these manipulatives during both parts of the assessment if they want to use them for support. Plan to provide these tools during the October Checkpoint as well.

Assessment Guide

See the Grade 3 Assessment Guide for scoring and intervention suggestions.

Mathematical Background

The Baseline Assessment gives you an opportunity to gauge incoming students' proficiency with essential numeracy, geometry, and measurement skills that should have been mastered in second grade. The Baseline Assessment is intended to guide your instruction by providing information about which students can (and cannot) solve addition and subtraction story problems within 100, add single-digit numbers fluently; add and subtract 2- and 3-digit numbers; estimate, measure, and compare length in centimeters; and work with arrays and early fractions. The assessment is five pages long, designed to be administered in two 20-minute periods.

After conducting this assessment, you will be in a better position to plan daily instruction and make the minute-to-minute instructional decisions so crucial to good teaching. On the basis of students' strengths and weaknesses, you might decide to emphasize certain aspects of Number Corner instruction while minimizing others, and you will have at least some of the information needed to pitch questions and prompts at levels appropriate to different students. The Baseline Assessment may also be considered an early warning system. While it is risky to make hard-and-fast judgments about incoming third-graders, you will want to keep a close eye on students who are unable to perform more than a few of the assessment tasks, as some of these children may emerge as candidates for special services this year if they haven't been identified previously.

Day 1

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 1 – Introducing the September Calendar Markers	**Activity 1 –** Introducing the Calendar Collector	
Number Line	**Solving Problems**	**Assessment**

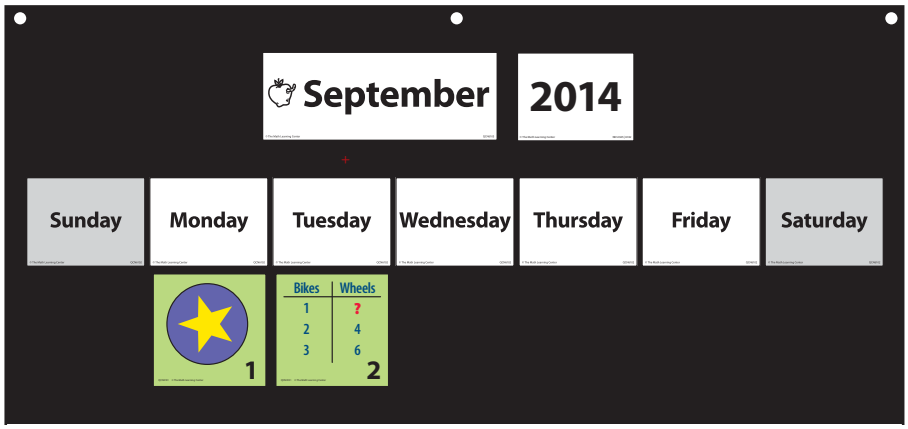
Activity 1

Introducing the September Calendar Markers

1 Introduce the Calendar Grid.

- Invite students to join you in the Number Corner area.
- Post today's calendar marker and any markers that come before it if you are not start-ing on the first of the month.
- Explain that starting tomorrow, you will select a helper each day to post the new calen-dar marker for that day (and for Saturday and Sunday if it is a Monday) and record the day's date on the whiteboard.

2 Read the date aloud while pointing to the labels for the day of the week, the month, the date shown on the day's marker, and the year.



"Today is Tuesday, September second, 2014."

3 Write the date on the class whiteboard, using the abbreviation for September. Then review the fact that there is an abbreviated or shortcut way to write the date.

- Ask students to name the months, January through September, as you keep count.
- Explain that September is the ninth month of the year, and use the information to record the short form of the date.

4 Discuss the markers posted so far.

- Point to the markers and ask students to look at them quietly and show thumbs up when they have something to share.
- Have students share their observations with a partner and then as a class.

> ***Students*** *The first one has a star inside a circle.*
> *That next one is kind of weird. It's like a little chart.*
> *Oh, I get it! It's how many wheels there are on different numbers of bikes. Like 2 bikes have 4 wheels, and 3 bikes have 6 wheels.*
> *There's a line in the first row. We're probably supposed to figure out the missing number.*
> *The things match the numbers. There's 1 star on the marker with a 1 on it. And the answer on the second one is 2.*
> *I bet tomorrow is going to have 3 things or something about 3.*

Activity 1

Day 1

Introducing the Calendar Collector

Before you conduct this activity, post the blank bar graph you have prepared on your Number Corner display wall or on an easel you can pull into your discussion area. Label the columns at the bottom of the graph with four different work preferences: alone, with a partner, in a small group, and with the whole class. You will also need a crayon or erasable marker in a single color (choose something that will show up easily but not obscure the lines on the graph, such as green, red, blue, or orange). You will also need the sentence strip labels you prepared.

1 To introduce the new Calendar Collector, explain that this month's collection will focus on data.

- Write the word *data* on the board. Read it with the class, and ask students to share anything they already know about the term, first in pairs and then as a class. Here are some questions to spark students' thinking:
  - » What is data?
  - » How do people collect data?
  - » Why do people collect data?

2 After a brief discussion, let students know that this month, the class will collect data by conducting surveys.

- Then review the fact that a *survey* is a way to collect data by asking people questions. Perhaps some students remember conducting surveys with their classmates last year, or seeing survey results in a book, a newspaper, or online.
- Explain that groups conduct surveys about all sorts of things, usually to help make decisions of one sort or another. For example, during election years, groups often conduct surveys to find out which candidate people like best. Companies that make and sell things including food, clothing, toys, tools, cars, and so on, frequently conduct surveys to help decide how to make those things in such a way that more people will buy them.

3 Then let the students know that you want to conduct a survey today about their work preferences.

4 Explain that the first thing people have to do when they want to conduct a survey is to ask a question. Your question for the class today is: When working in class on a challenging math problem or an interesting science experiment, do you most prefer to do the work alone, with a partner, in a small group, or with the whole class?

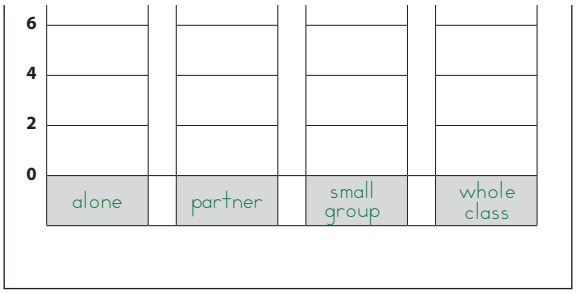
This is an interesting question, and the students' responses will almost certainly vary from one year to the next. Sometimes in our eagerness to promote collaboration or autonomy, we make decisions about groupings with little or no regard for students' preferences, and most do have a definite preference. While we will still require our students to work independently on some assignments and in pairs or groups on others, it can be very helpful to know which of them would actually prefer to work alone rather than with others and which students need the security, support, and relative anonymity of working in small group or even whole-class settings.

Key Questions

Use the following questions to guide students in creating, reading, and interpreting scaled graphs this month.

- What is this survey about? What choices does it offer the people who participate?
- What would a good title for the graph on which we're going to display the results of this survey?
- Let's look at the scale for this graph. What does each box or each picture stand for?
- Which of the choices offered by the survey was the most or the least popular?
- How many more students chose ____ than ____?
- How many fewer students chose ____ than ____?
- What is the difference between the number of people who voted for the most popular choice and the number of people who voted for the least popular choice?
- How many students participated in their survey?
- Who would find these results interesting or useful?
- Do you think the results would be the same or similar if this survey was conducted in another third grade in our school? What about a third grade in another town, state, or country? What about a different grade level?

5 Draw students' attention to the graph you have posted, blank, except for the four preferences listed at the bottom. Then explain the process you will follow to conduct the survey.



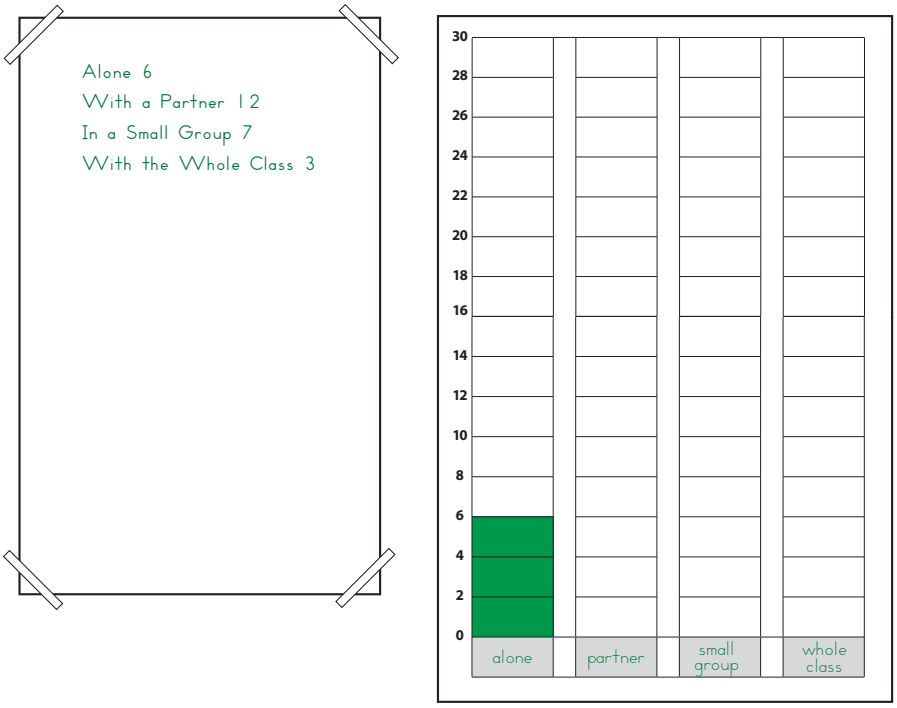
- In a few moments, you will ask the students to close their eyes while you read the list of possibilities again.
- Then you'll read the list one more time and ask them to make their choice without telling anyone. As they choose, they should remember that you're talking about situations where they're working on a challenging math problem or doing an interesting science experiment, rather than reading a book or writing a story.
- While their eyes are still closed so their choice and their vote will be private, you will name each way of working and ask them to raise their hand when you name their favorite.
- You will count the number of hands raised for each work preference and record those numbers on the board.

6 When students understand the procedure, have them close their eyes. Conduct the survey with the class, and record the results where everyone can see them.

7 Have them open their eyes and look at the results. Then work with their input to display the results on the blank graph you've prepared.

- Explain that this is a *scaled* graph, and each of the boxes stands for more than 1 person or 1 vote.
- Give them a few moments to examine the graph, and then ask them to talk in pairs about the number of boxes you should shade in to show how many people chose working alone as their most preferred way of working in class on a challenging math problem or an interesting science experiment.
- Call on a couple of volunteers to share and explain their answers.

> ***Marco*** *Six people said they like working alone, so you should color in 3 of those boxes.*
>
> ***Teacher*** *How are you thinking about that, Marco?*
>
> ***Marco*** *Well, each box is for 2 people, so 2, 4, 6. You need 3 boxes.*
>
> ***Teacher*** *Janelle, what do you think?*
>
> ***Janelle*** *I agree that it should be 3 because 3 and 3 is 6.*



8 Repeat this process to display the rest of the data on the graph. Then work with the students to label the graph using the sentence strips you prepared for this activity.

9 Explain that there are certain conventions people follow when they make graphs so everyone understands the information. The first is to give the graph a title.

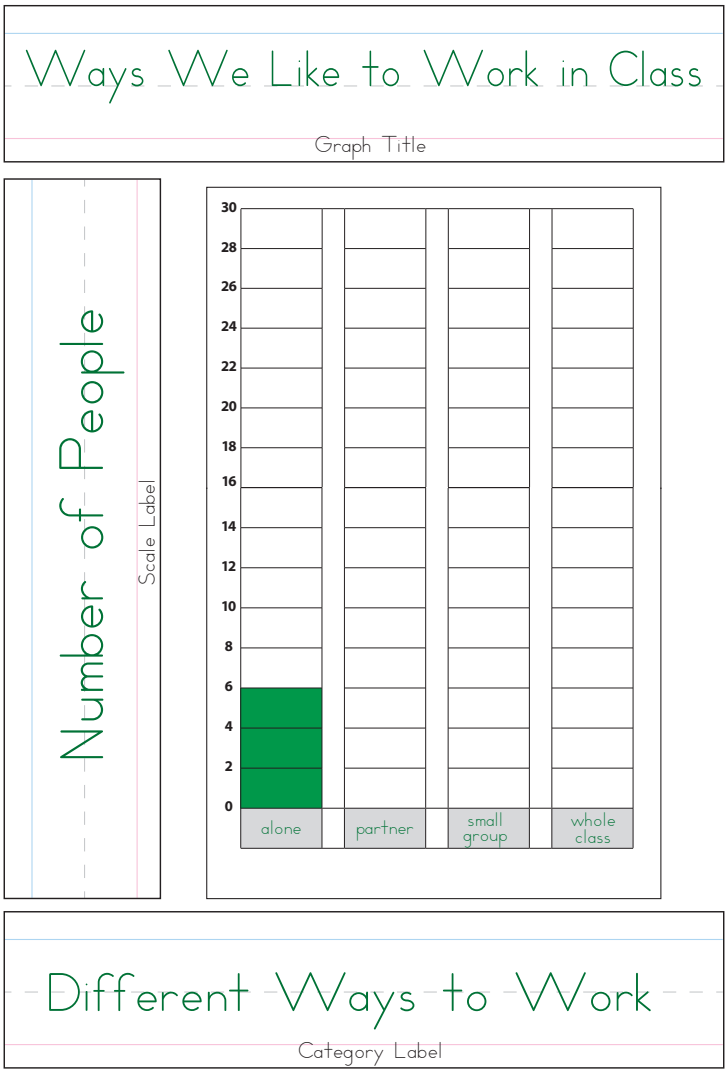
10 Give students a few moments to discuss ideas for graph titles. Call on a few volunteers and select one of the ideas shared. Record it on one of the sentence strips, and post it above the graph.

11 Then draw students' attention to the bottom of the graph. Explain that the choices offered in a survey are called *categories*. Read the four categories with the students, and work with them to come up with a general name for the four, such as *ways to work*, or *ways of working in class*, or *work preferences*.

12 Record and post the general name below the graph, and explain that this is called a *category label*.

13 Finally, draw students' attention to the numbers running up the side of the graph. Explain that these numbers form a *scale* for the graph, and they need to be labeled so people know what they mean.

- Solicit agreement from the class that the numbers indicate the number of people that chose each way of working.
- Record the information on the third label, post it to the left of the graph, and explain that it's called a *scale label*.



14 When the graph is complete, thank the class for participating in your survey. Let them know that you'll spend a little more time discussing this survey with them tomorrow, and that they will have a chance to think of other survey questions they'd like to ask their classmates.

Note

Leave the graph on display in the Number Corner for use tomorrow. After that, move it to a different location in the room if you like.

Day 2

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	**Activity 2 –** What Would You Like to Know About Our Class?	
Number Line	**Solving Problems**	**Assessment**

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 2

What Would You Like to Know About Our Class? Day 2

1 Spend a few minutes discussing the graph the class made in Activity 1.

2 Draw students' attention to the display and give them a few moments to examine it quietly. Then ask them to respond to the following questions:

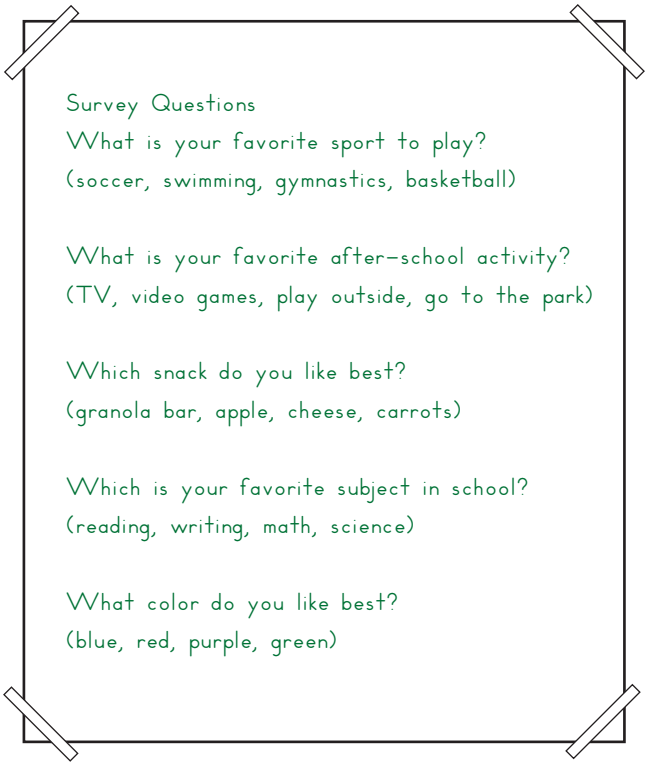
- What does this graph tell you about our class?
- Which of these four different ways of working is most popular in our class?
- Which is least popular?
- Did more people choose working alone or working in a small group? How many more? How do you know?
- Did fewer people choose working with the whole class or working in pairs? How many fewer? How can you use the graph to help find the answer?
- Who might find this information useful, and why?
- If you conducted the same survey in another third grade classroom in the school, would you get the same results? Why or why not?
- What if you conducted the same survey in a third grade classroom in a school in another town, state, or country?

3 Let the class know that you would like to conduct at least a couple of student-posed surveys this month. Today, they will brainstorm some good survey topics and questions and each fill out a survey planning form.

4 Ask them to discuss ideas for surveys in pairs. What kinds of topics would interest people their age? What sorts of things would they like to know about their new classmates?

5 After a minute or two, call on volunteers to share their ideas with the class as record them on a piece of chart paper.

6 As you list each idea, or after you have listed several, go back and have students generate four choices they would give their classmates if they were to pose that particular survey question. Record those as well.



7 Show students a copy of the Student Survey Planning Sheet Teacher Master.

- Read and explain the instructions to the class.
- When you review item 3, be sure students understand that the mini-graph is just for planning purposes, and not something they'll use to record data. They need to use it to plan their graph title and labels; that's all.

SUPPORT If necessary, complete one of these sheets with the class, using one of the survey questions they just brainstormed, before students complete their own sheets.

8 When students understand what to do, give them each a copy of the Planning Sheet and send them back to their desks or table spots to fill it in.

9 As they finish, have them check to be sure their name is on their planning sheet, fold it in half, and place it in the lunch sack or gift bag you've prepared.

10 Let students know that the next time the class does Calendar Collector together, you'll pull one of their sheets out of the bag and have that student conduct his or her survey right then and there.

Note

Consider going through the students' planning sheets before you conduct the next Calendar Collector activity to make sure their questions make sense and that they have specified four choices. If you find plans that aren't complete, return them to the students and assist them to complete the forms (or see whether a classmate can assist them).

Day 3

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		**Activity 1 –** Introducing Loops & Groups
Number Line	**Solving Problems**	**Assessment**

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 1

Introducing Loops & Groups — Day 3

1 Place a copy of the Whole Class Loops & Groups Game Sheet on display, and give students a few moments to examine it quietly.

2 Then explain that you're going to play a new game today that will help students learn more about multiplication.

Let students know that they'll work together as one team, and you'll play as the other team.

3 Briefly explain the game.

You will take turns with the class spinning both spinners. The first spinner shows how many loops you get to draw; the second shows how many shapes you get to draw in each loop. After you spin and draw, you multiply to find the total number of shapes in the loops. Each team takes four turns, and then they add up their products to find the total sum. The team with the greater sum wins the game.

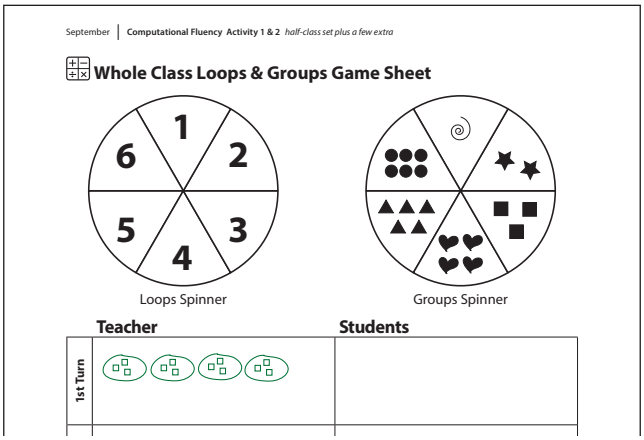
4 Let students know that you'll take the first turn so they can see how the game works.

- Explain that you'll keep track of the action for both teams on your game sheet, and they'll do the work for their team on their individual whiteboards today.
- Have helpers give each student a whiteboard, marker, and eraser.

5 Take your turn.

- Place the spinner overlay on top of the Loops Spinner. Spin, and draw the designated number of loops in your 1st Turn box.
- Move the overlay to the Groups Spinner, and spin to see how many of which shape you'll draw in each loop.
- After you have drawn the designated number of shapes in each loop, engage the students in a discussion to determine the product of your spins.

> ***Teacher*** *Let's see, my first spin is a 4 so I'll draw 4 loops. My second spin landed on the section that shows 3 squares. That means I get to draw 3 little squares in each loop. Now I have 4 loops with 3 little squares in each loop. How many little squares do I have in all?*



> ***Tyler*** *There are 4 threes, so that's 3 plus 3 plus 3 plus 3 equals 12, because 3 and 3 is 6, and 6 plus 6 is 12.*

Key Questions

Use questions such as these to keep student engagement high while playing the Loops & Groups game.

- I spun a 3 on the Loops spinner, and I landed on the triangles when I spun the Groups spinner. How many triangles will I get in all? How did you figure it out?
- The class just got a spin of 4 on the Loops spinner. What would you have to get on the Groups spinner to wind up with a product greater than mine?
- How does your product for the second turn compare with mine? Which of the two is greater? By how much?
- Now that both teams have had three turns, let's figure out who's ahead. If you add my three products, what's the total? What is the total of your three products? Which team is ahead? By how much?
- What will you need to spin on your last turn to beat me? Is there more than one possibility?

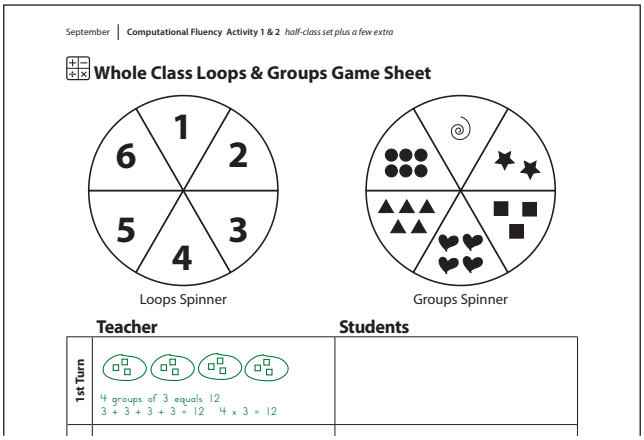
Teacher *Talk to the person sitting next to you about my sketch. Where can you see 4 in the picture? What does the 3 represent? Can you both see the 12?*

Camila *We saw that there are 4 circles and each circle has 3 in it. That makes 12 in all.*

Teacher *OK, I'm going to record some of our ideas right here under my drawing. We can see 4 groups of 3. We know it's 12 in all. How could we use an equation to represent this situation of 4 loops with 3 squares in each loop?*

Cole *You could write 3 + 3 + 3 + 3 = 12.*

Teacher *That's true, and I'll record that. And I'm also going to record a multiplication equation, 4 × 3 = 12, or 4 groups of 3 is 12 in all.*

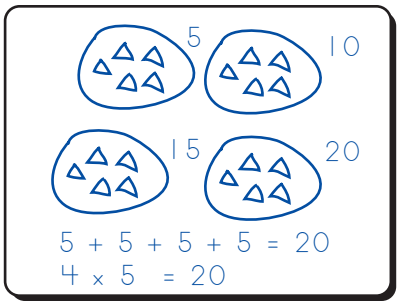


6 Take turns with the students spinning and sketching the loops and groups for a total of four rounds. Continue to sketch and record for both teams on the game sheet, while students record the loops and groups for their team on their whiteboards.

- Invite a different volunteer up to spin the spinners each time it's the students' turn.
- Have students erase their boards between each of their turns so they have plenty of room to work.
- On students' first and second turns, record the loops and groups on the students' side of the Loops & Groups Game Sheet as the they work on their boards. Have them talk to each other about where they see the results of each spin and the total (the product) in their drawings. Record the results with repeated addition and then multiplication as students do so on their boards.
- On students' third and fourth turns, have them take the lead in sketching and recording the results of their spins. As they finish, ask them to share and compare their work with the people sitting nearest them, and then invite a volunteer to bring her whiteboard up to the front of the class so she can share and explain her work as you record on the game sheet.

Teacher *Hannah, do you want to bring your work up to share with the class?*

Hannah *Sure! OK, when Sam spun the first spinner, he got 4, so I made 4 loops. Then he landed on the 5 triangles, so I put 5 triangles in each loop. I saw I could count the triangles by 5s, like 5, 10, 15, 20. Then I added the numbers up, and then I wrote 4 × 5 = 20.*



Teacher *Thumbs up if you agree with Hannah's work. OK, I see most thumbs up, so I'll record the same thing on your side of the game sheet. But tell me something. The last thing Hannah wrote was a multiplication equation—4 × 5 = 20. What does the 4 in that equation mean?*

Students *Groups!*

Groups of something!

That's how many loops we made.

Teacher *What does the 5 in this equation mean?*

Students *It's how many there are in each group.*

There are 4 loops, and we put 5 little triangles in each one.

Teacher *And where do you see the 20 in Hannah's sketch?*

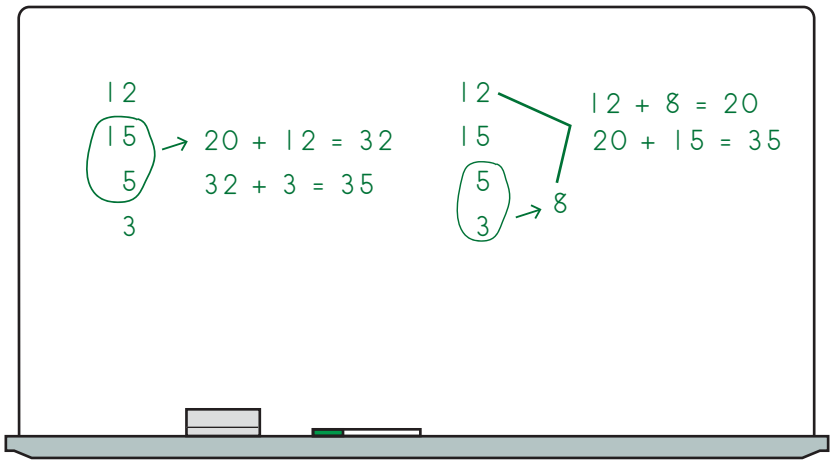
Students *It's all the triangles!*

You can count them and see—5, 10, 15, 20. It's 20 in all.

Teacher *And when we record 20 as the result of 4 groups of 5, we call it the* product.

7 When both teams have taken four turns, ask students to share how they would find the sum of your four products.

- Write the products separately on the board to make it easier for students to see which numbers they'll need to add.
- As students share their strategies for finding the total, record on the board so everyone can follow along.



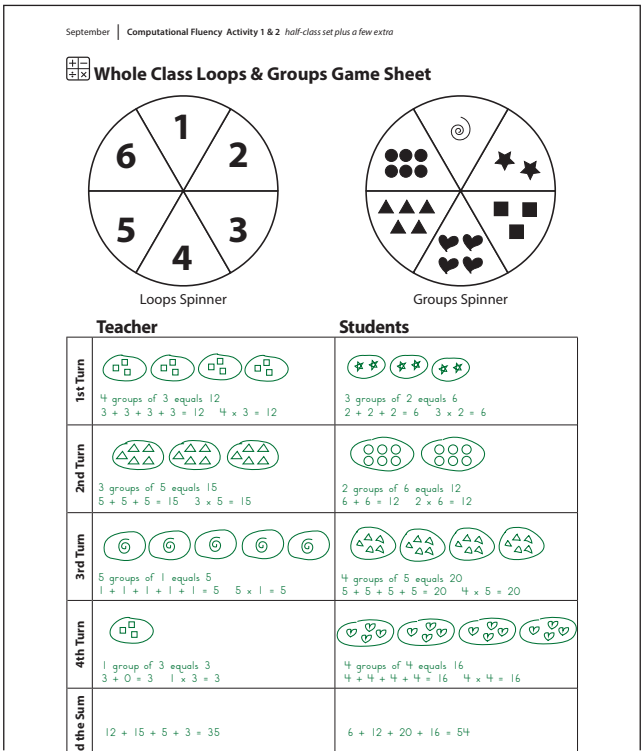
8 Then give students a minute or two to find the sum of their products.

- Have them erase their whiteboards as you record their products on the board so everyone can see them clearly.
- Then have them write the four products on their boards and add them in the easiest way they can find, looking for combinations that result in friendly numbers.

- As they finish, have them share and compare their answers with the people sitting nearest, and then have a volunteer or two share their sums with the class and explain the strategies they used for finding their answers.

9 Finally, have students compare your sum to theirs. Whose sum was greater? By how much?

The team with the greater sum wins the game of Loops & Groups.



September | **Computational Fluency Activity 1 & 2** *half-class set plus a few extra*

Whole Class Loops & Groups Game Sheet

	Teacher	Students
1st Turn	4 groups of 3 equals 12 3 + 3 + 3 + 3 = 12 4 x 3 = 12	3 groups of 2 equals 6 2 + 2 + 2 = 6 3 x 2 = 6
2nd Turn	3 groups of 5 equals 15 5 + 5 + 5 = 15 3 x 5 = 15	2 groups of 6 equals 12 6 + 6 = 12 2 x 6 = 12
3rd Turn	5 groups of 1 equals 5 1 + 1 + 1 + 1 + 1 = 5 5 x 1 = 5	4 groups of 5 equals 20 5 + 5 + 5 + 5 = 20 4 x 5 = 20
4th Turn	1 group of 3 equals 3 3 + 0 = 3 1 x 3 = 3	4 groups of 4 equals 16 4 + 4 + 4 + 4 = 16 4 x 4 = 16
d the Sum	12 + 15 + 5 + 3 = 35	6 + 12 + 20 + 16 = 54

Day 4

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 2 – Charting Observations		
Number Line	**Solving Problems**	**Assessment**
	Activity 1 – Using Doubles to Solve Near Doubles	

Activity 2

Charting Observations

1 Before posting the new marker for the day, ask students to pair up to make predictions about the marker.

2 After students have had a few moments to make predictions in pairs, choose two or three students to share their predictions with the class.

Press students to explain or justify their predictions.

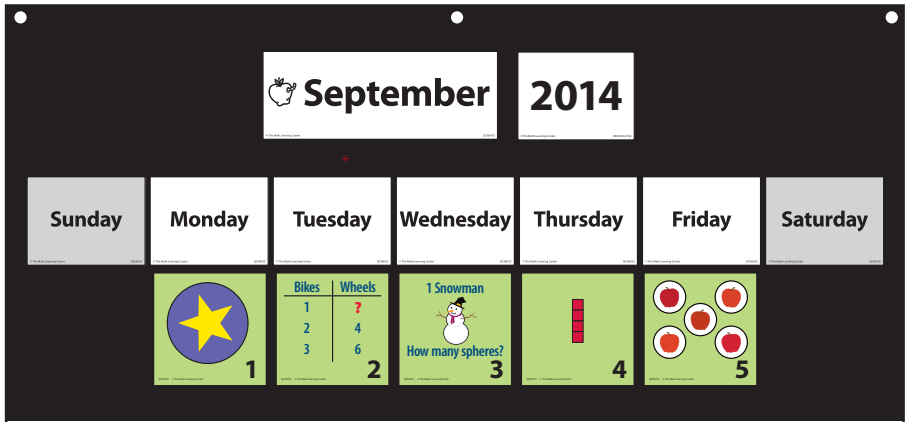
> ***Anita*** *I think it's going to have something about 5 on it.*
>
> ***Teacher*** *Can you say more about that, Anita? Why do you think we'll see something about 5 on today's marker?*
>
> ***Anita*** *So far, every marker has something about its number. There's 1 star on 1, a chart where 2 is the missing number on 2, a snowman made out of 3 circles on 3, and a line of 4 squares on 4. So I think it has to be something with 5 today.*
>
> ***Teacher*** *Thumbs up if you agree with Anita. Max, what's your prediction about today's marker?*
>
> ***Max*** *I agree with Anita that it's going to be something about 5. Maybe a line of 5 squares, or maybe 5 stars in a circle.*
>
> ***Theo*** *I was thinking that too! Maybe it's going in a pattern and it's going to start over, so it'll be 5 stars in a circle, and the next marker after that will be a chart.*
>
> ***Teacher*** *Let's have one more prediction. Jose,what do you think?*
>
> ***Jose*** *It'll be something about 5 for sure. Maybe it'll be a hand or a foot with 5 toes, or something like that.*

3 When a few students have shared their predictions, have your helper post the marker and record the date on the whiteboard. Then introduce the Calendar Grid Observations Chart.

- Show students the Calendar Grid Observations Chart you prepared for this month.
- Explain that this chart will help them keep track of the information on the calendar markers. They can use this information to learn more about the models and find pat-terns in the sequence of markers during the month.

4 With students' help, fill in the Calendar Grid Observations Chart for all the markers that have been posted so far this month, using an erasable marker.

- Fill in the date column on the chart up through today, recording just a number for each day.
- Next, explain that this month's markers feature several different ways to model or show multiplication. Have a helper point to the first marker as you describe the model briefly and record it on the chart.
- Then work with input from the students to write a brief description of the visual on the marker and write a multiplication equation to represent the visual.



Teacher *The first model is loops and groups, just like in the game we played yesterday during Number Corner. The rule with this model is that you can have any number of loops you like, but there have to be exactly the same number of objects in each loop. Do you see any other example of the loops and groups model in the markers posted so far?*

Students *Yes! It's on today's marker!*

There are 5 loops, and there's 1 apple in each loop.

Teacher *How would you describe the first marker to someone who couldn't see it?*

Molly *It's just 1 star in 1 loop.*

Teacher *OK, so what multiplication equation could we write for our first marker?*

Students *It would have to be 1 group of 1.*

It's just 1 loop with 1 thing in it.

Teacher *I can write $1 \times 1 = 1$ to show that. Let's read it together, ready? One group of 1 equals—is the same as—1.*

- Continue this type of dialog with the class for each of the markers displayed.

Teacher *The second marker shows an example of a ratio table. A* ratio *tells us how much or many of one thing there is compared to another thing. For example, the information on Marker 2 tells us how many wheels there are compared with the number of bikes. If we have 1 bike, how many wheels will we see?*

Students *Two!*

And it keeps going like that. On 2 bikes there are 4 wheels.

It just doubles the number, like 3 and 3 is 6.

Teacher *Yes, ratio tables are really interesting. We could probably talk lots about this one, but let's go ahead and record the information on the chart. You mentioned that 1 bike has 2 wheels—let's use that for our description. And what multiplication equation should we write for Marker 2?*

Shawn *I think it should be 1 times 2 because a bike is like 1 group of 2.*

Your chart will look something like this when you've completed it up through the present date.

Calendar Grid Observations

Date	Model	Description	Equation
1	Loop	1 loop with a star in it	1 x 1 = 1 star
2	Ratio Table	1 bike, 2 wheels	1 x 2 = 2 wheels
3	Picture	1 snowman, 3 spheres	1 x 3 = 3 spheres
4	Array	4 rows of 1 square each	4 x 1 = 4 squares
5	Loops	5 loops, 1 apple in each loop	5 x 1 = 5 apples

5 When you conduct this activity again on Days 6 and 8, work with the class to bring the Observations Chart up to date.

.....

Activity 1

Using Doubles to Solve Near Doubles — Day 4

1 Gather students in your discussion area with their Number Corner Student Books and a pencil, and tell them that they will have a Solving Problems workout as part of Number Corner. The Solving Problems activities this month feature sets of problems called *problem strings*. Briefly explain what a problem string is and how they work:

- A problem string is a series of related problems that students will solve and discuss one at a time.
- Strings often start out with an easier problem, and then the problems get harder as the string continues.
- The problems at the beginning of the string often help solve the problems toward the end of the string.
- Solving the problems in a string involves thinking like a mathematician because students want to find smart and efficient ways to solve the problem. Efficient strategies are quick and can be explained clearly and easily.
- There is a process the class will use to solve each problem, share strategies and answers, and discuss each other's thinking.
- Students will do their work in the back of their Number Corner Student Books. Show students a sample Problem String Work Space page.
- When students explain their thinking, the teacher will usually represent their work for everyone to see.

2 Display a copy of the Problem String Work Space as students find the first of these pages in the back of their Number Corner Student Books.

3 Explain that each time they do a problem string in Number Corner, they will use these pages to show their work. When starting a new string, students should always find the next unused Problem String Work Space page and write the date.

4 Introduce the first string with the first problem, 25 + 25.

- Ask students to write the problem on the first Problem String Work Space page in their books, and to put their thumb up in front of their chest when they have an answer.
- Tell them that if they just know the answer, they don't need to show any work, but remind them that you will ask them to show their thinking in other problems.

5 When you see several thumbs up, invite a few students to share the answer.

Record all answers without comment or indication that any of them are correct or incorrect.

> ***Teacher*** *I see lots of thumbs up. Who can tell me the sum of 25 and 25?*
>
> ***Students*** *I got 50.*
>
> *Me too.*
>
> ***Teacher*** *Did anyone get an answer that was different than 50? No?*

6 Then, ask several volunteers to explain how they figured it out.

Record students' thinking on the board (or a piece of chart paper) for everyone to see. Use equations and a splitting diagram as well, if anyone shares a strategy that involves adding the tens, then the ones, and then finding the total.

Math Practices in Action 3.MP.3

By recording all answers without comment, you are inviting all students to keep thinking, as they evaluate other answers and think again about whether their answer is correct. You are also setting the stage for authentic communication. When more than one answer is reported, students have reason to explain and justify their thinking and try to understand the explanations their classmates give.

Teacher *OK, now, who would like to explain how you got the answer?*

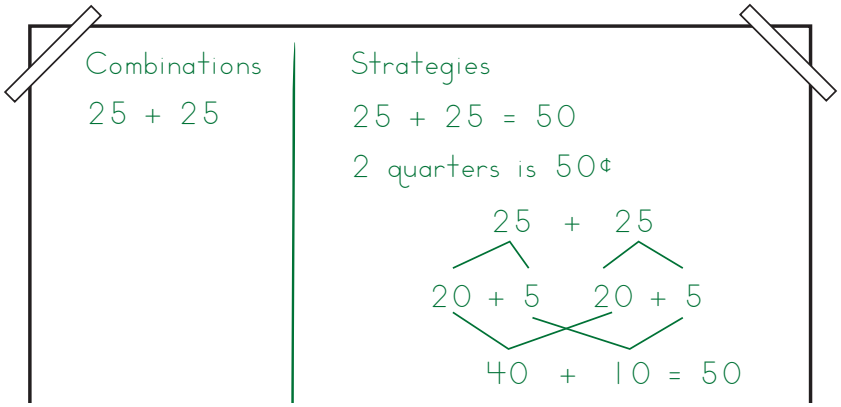
Andrea *I just already knew it.*

Vincent *I know 25 and 25 is 50 because 25 is like a quarter. If you have 2 quarters, that's 50 cents.*

Teacher *Sounds like some of you already knew the answer, and at least a few people thought about money to help. Did anyone have a different strategy?*

George *I just added 20 and 20 to get 40, and then 5 and 5 is 10, so the answer is 50.*

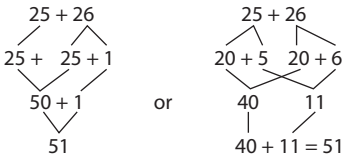
Teacher *So, George, you used what we can call a splitting strategy, where you added the tens, and then the ones, and then added those two numbers to get the total. I'm going to use a splitting diagram to represent your thinking so everyone can see what you did.*



7 Use the following charts to help deliver the rest of the string.

- After posing each problem, give students time to solve it in their Number Corner Student Books.
- Remind students to use their strategies for past problems to solve new problems.
- Record students' strategies with splitting diagrams and equations.

Problem String Using Doubles to Solve Near Doubles

Problems	Sample Strategies & Recording	Connections
25 + 25	Students will probably be familiar with this doubles combination from using money and will simply recall that 25 doubled is 50. You might encourage them to think about quarters if they have trouble getting started.	Draw out students' strategies that involve using 25 + 25 = 50 to solve these related combinations in which the one addend is 25 and the other is very close to 25. Students might also break each addend into tens and ones, add the tens, add the ones, and then find the total. You can use splitting diagrams or equations to show either kind of strategy. **Big Idea** If a combination is close to a doubles combination that you know, you can use the doubles combination to help find the sum.
25 + 26	 25 + 26 = 51	
25 + 24	See splitting diagrams above. You can record strategies like these using equations as well. 25 + 24 = 25 + (25 – 1) 50 – 1 = 49 or 25 + 24 = 20 + 5 + 20 + 4 = 20 + 20 + 5 + 4 = 40 + 9= 49	
25 + 28	See splitting diagrams above. You can record strategies like these using equations as well. 25 + 28 = 25 + (25 + 3) = 50 + 3 = 53 or 25 + 28 = 20 + 5 + 20 + 8 = 20 + 20 + 5 + 8 = 40 + 13 = 53	
40 + 40	Students who know that 4 + 4 = 8 and who have a solid sense of place value will know that 40 doubled is 80.	Draw out students' strategies that involve using 40 + 40 = 80 to solve these related combinations in which the addends are each very close to (or equal to) 40. Students might also break each addend into tens and ones, add the tens, add the ones, and then find the total. You can use splitting diagrams, as well as equations, to show either kind of strategy. **Big Idea** If a combination is close to a doubles combination that you know, you can use the doubles combination to help find the sum.
38 + 40	See the splitting diagrams and equations above for examples of how you can record students' strategies.	
39 + 41		
39 + 39		

CHALLENGE Invite students to write their own problem string in which a doubles combination can help them find the sums of other closely related pairs of numbers.

8 Ask students to summarize a big idea that came out of doing this string.

9 Conclude by letting students know that as they do more strings this month and next, they will become more familiar with the process.

Day 5

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		
Number Line	**Solving Problems**	**Assessment**
Activity 1 – Introducing Spud – The Counting Game		

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 1

Introducing Spud—the Counting Game — Day 5

1 Draw students' attention to the One Thousand Grid you posted on the Number Corner display in preparation for this workout. Ask them to share, first in pairs, and then as a whole class, any observations they can make about the grid.

- When they've had about a minute to make observations in pairs, call on volunteers to share observations with the class.
- Invite each volunteer to come up to the grid and use the pointer to show as well as describe their observation.
- Guide the discussion in such a way that students see and understand that as they read each row from left to right the numbers increase by 10, and as they read each column from top to bottom, the numbers increase by 100. This information is likely to come from the students, but if it doesn't, you'll need to elicit it from them.

10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
110	**120**	**130**	**140**	**150**	**160**	**170**	**180**	**190**	**200**
210	**220**	**230**	**240**	**250**	**260**	**270**	**280**	**290**	**300**
310	**320**	**330**	**340**	**350**	**360**	**370**	**380**	**390**	**400**
410	**420**	**430**	**440**	**450**	**460**	**470**	**480**	**490**	**500**
510	**520**	**530**	**540**	**550**	**560**	**570**	**580**	**590**	**600**
610	**620**	**630**	**640**	**650**	**660**	**670**	**680**	**690**	**700**
710	**720**	**730**	**740**	**750**	**760**	**770**	**780**	**790**	**800**
810	**820**	**830**	**840**	**850**	**860**	**870**	**880**	**890**	**900**
910	**920**	**930**	**940**	**950**	**960**	**970**	**980**	**990**	**1,000**

Dylan *The numbers go by tens, starting on 10, see? Ten, 20, 30, 40, 50, and it keeps on going like that.*

Nick *If you look at the last row going down, it starts with 100 and goes by hundreds—100, 200, 300, 400, and it goes all the way to 1,000.*

Danielle *If you go down any column on the whole chart, it's counting by hundreds. Like on this column that starts with 30, if you go down, it's 130, then 230, then 330, then 430.*

Teacher *Thumbs up if you agree with Danielle's observation.*

Kristi *What did she say?*

Teacher *Who can restate what Danielle just noticed about the number chart?*

Shana *She said that if you go down any column, the numbers add 100 every time.*

Teacher *Is that true? Does it work with every column? Talk to the person sitting next to you about this.*

Demarco *We think it's true. If you look at the last column, it just goes by hundreds—100, 200, 300, all the way to 1,000. If you look at any other column, like the one that starts with 70, you can see that the next number down is a hundred more because 70 plus 100 is 170. Then 170 plus 100 is 270. Then 270 plus 100 is 370, and it just keeps going.*

Key Questions

Use the folowing questions to guide students' discussion during Number Line this month.

- What comes before ___?
- What comes after ____?
- What is in between ___ and ____?
- How many tens are there in 70? How do you know?
- How many hundreds and tens are there in 150? If you traded in the hundred for tens, how many tens would there be in 150? How did you figure it out?
- If you have to trade in all the hundreds for tens, how many tens are there in 230 (380, 410, 500, 670, and so on)? How do you know?

2 Now explain that you're going to play a new counting game called Spud, using the One Thousand Grid to provide a little help.

- Tell students that in a minute, they will stand up and make a circle in the Number Corner discussion area in order to play the game.
- In the game of Spud, they will take turns counting by 10s clockwise around the circle.
- There is one rule about counting in this game that they will have to remember, however. When a multiple of 100 is reached—that is, 100 and then every hundred thereafter—that person needs to say "spud" instead of the actual number.

3 While they are still seated, have the whole class practice counting by 10s, using the word "spud" in place of each multiple of 100.

- Start at 10 and point to each number on the One Thousand Grid as students count by 10s with you—10, 20, 30, 40, 50, and so on.
- When you get to 100, remind everyone to say "spud" and keep going—110, 120, 130, 140, 150, 160, 170, 180, 190, spud, 210, 220, and so on.
- Continue through 300 or 400; long enough so that most students have the idea.

SUPPORT Before you play the game, work with input from the students to circle each of the "spud" numbers on the grid: 100, 200, 300, 400, 500, and so on, up through 1,000.

4 When it appear that most students understand what to do, have them stand up and join hands to form a circle in the Number Corner discussion area.

Once the circle is formed, have them remain standing but drop hands.

5 Quickly review the rules of the game.

- Tell students they will take turns counting clockwise around the circle with the first person starting the count at 10, the next person calling out 20 and so on around the circle.
- When 100 is reached, and then every multiple of 100 thereafter, that person needs to say "spud" instead of the actual number.
- The next person must then take up the count for the number that comes directly after the multiple of 100.
- If the person accidentally says the name for 100 or a multiple of 100 instead of "spud," he or she must sit down.
- If the person who says the next number after a "spud" number doesn't know what number comes next, he or she must also sit down.

6 Start the game and continue playing until the count reaches 990, and then the final "spud" on 1,000.

- Remind students that they can use the One Thousand Grid on the wall if they are having any problems remembering what comes before or after a number.
- At the conclusion of the game, let students know you'll play it again later this month.

CHALLENGE If this game is very easy for your class and time allows, play it a second time. This time, start with a number in the hundreds such as 125, or 137, or 141. Students still count by tens from the starting number, but the first "spud" number is the starting number plus 100. The second "spud" number is the starting number plus 200; the third is the starting number plus 300, and so on. For example, if the first student starts with 125, the count around the circle would go 135, 145, 155, 165, 175, 185, 195, 205, 215, spud, 235, 245, 255, and so on. The count stops at the starting number plus 1,000, so in this case, it would end with the last person saying "spud" in place of 1,125.

Day 6

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 2 – Charting Observations	**Activity 3 –** Student Surveys	
Number Line	**Solving Problems**	**Assessment**

Activity 2

Charting Observations

1 Before posting the new marker for the day, ask students to pair up to make predictions about the marker.

2 After students have had a few moments to make predictions in pairs, choose two or three students to share their predictions with the class.

Press students to explain or justify their predictions.

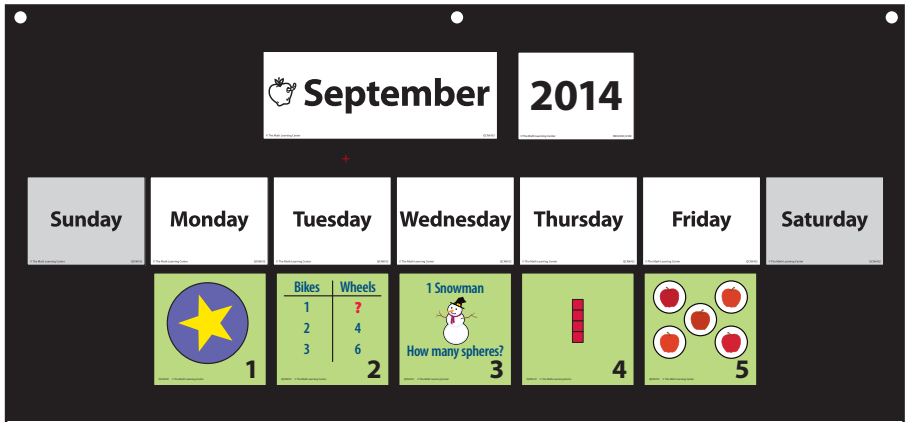
> ***Anita*** *I think it's going to have something about 5 on it.*
>
> ***Teacher*** *Can you say more about that, Anita? Why do you think we'll see something about 5 on today's marker?*
>
> ***Anita*** *So far, every marker has something about its number. There's 1 star on 1, a chart where 2 is the missing number on 2, a snowman made out of 3 circles on 3, and a line of 4 squares on 4. So I think it has to be something with 5 today.*
>
> ***Teacher*** *Thumbs up if you agree with Anita. Max, what's your prediction about today's marker?*
>
> ***Max*** *I agree with Anita that it's going to be something about 5. Maybe a line of 5 squares, or maybe 5 stars in a circle.*
>
> ***Theo*** *I was thinking that too! Maybe it's going in a pattern and it's going to start over, so it'll be 5 stars in a circle, and the next marker after that will be a chart.*
>
> ***Teacher*** *Let's have one more prediction. Jose,what do you think?*
>
> ***Jose*** *It'll be something about 5 for sure. Maybe it'll be a hand or a foot with 5 toes, or something like that.*

3 When a few students have shared their predictions, have your helper post the marker and record the date on the whiteboard. Then introduce the Calendar Grid Observations Chart.

- Show students the Calendar Grid Observations Chart you prepared for this month.
- Explain that this chart will help them keep track of the information on the calendar markers. They can use this information to learn more about the models and find pat-terns in the sequence of markers during the month.

4 With students' help, fill in the Calendar Grid Observations Chart for all the markers that have been posted so far this month, using an erasable marker.

- Fill in the date column on the chart up through today, recording just a number for each day.
- Next, explain that this month's markers feature several different ways to model or show multiplication. Have a helper point to the first marker as you describe the model briefly and record it on the chart.
- Then work with input from the students to write a brief description of the visual on the marker and write a multiplication equation to represent the visual.



Teacher *The first model is loops and groups, just like in the game we played yesterday during Number Corner. The rule with this model is that you can have any number of loops you like, but there have to be exactly the same number of objects in each loop. Do you see any other example of the loops and groups model in the markers posted so far?*

Students *Yes! It's on today's marker!*

There are 5 loops, and there's 1 apple in each loop.

Teacher *How would you describe the first marker to someone who couldn't see it?*

Molly *It's just 1 star in 1 loop.*

Teacher *OK, so what multiplication equation could we write for our first marker?*

Students *It would have to be 1 group of 1.*

It's just 1 loop with 1 thing in it.

Teacher *I can write $1 \times 1 = 1$ to show that. Let's read it together, ready? One group of 1 equals—is the same as—1.*

- Continue this type of dialog with the class for each of the markers displayed.

Teacher *The second marker shows an example of a ratio table. A* ratio *tells us how much or many of one thing there is compared to another thing. For example, the information on Marker 2 tells us how many wheels there are compared with the number of bikes. If we have 1 bike, how many wheels will we see?*

Students *Two!*

And it keeps going like that. On 2 bikes there are 4 wheels.

It just doubles the number, like 3 and 3 is 6.

Teacher *Yes, ratio tables are really interesting. We could probably talk lots about this one, but let's go ahead and record the information on the chart. You mentioned that 1 bike has 2 wheels—let's use that for our description. And what multiplication equation should we write for Marker 2?*

Shawn *I think it should be 1 times 2 because a bike is like 1 group of 2.*

Your chart will look something like this when you've completed it up through the present date.

Calendar Grid Observations

Date	Model	Description	Equation
1	Loop	1 loop with a star in it	1 x 1 = 1 star
2	Ratio Table	1 bike, 2 wheels	1 x 2 = 2 wheels
3	Picture	1 snowman, 3 spheres	1 x 3 = 3 spheres
4	Array	4 rows of 1 square each	4 x 1 = 4 squares
5	Loops	5 loops, 1 apple in each loop	5 x 1 = 5 apples

5 When you conduct this activity again on Days 6 and 8, work with the class to bring the Observations Chart up to date.

.....

Activity 3

Student Surveys — Days 6, 11

1 When students join you in the Number Corner area, explain that you are going to pick one of their planning sheets out of the bag and help that student conduct his or her survey right now.

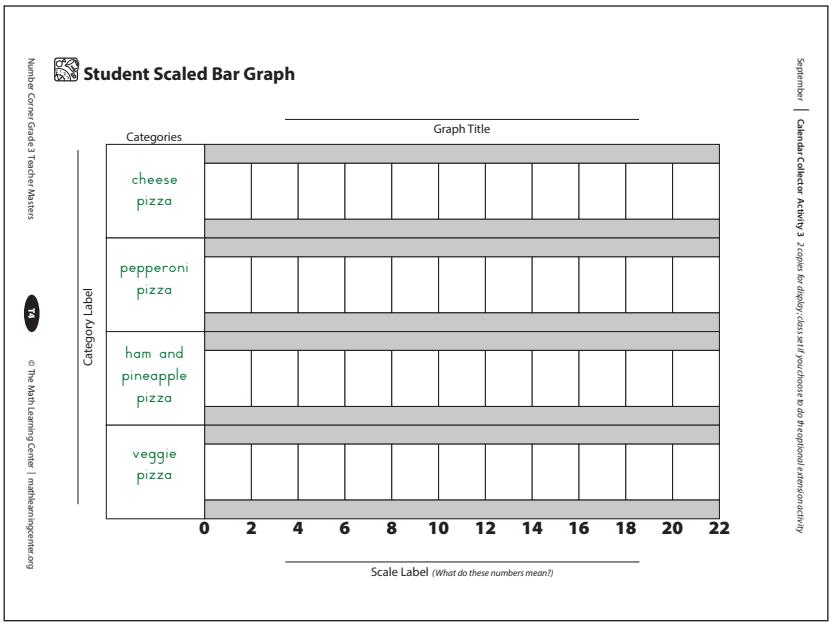
2 Show the students a copy of the Student Scaled Bar Graph on which the data will be recorded.

3 Note with them that the bar graph on this sheet runs horizontally instead of vertically, and that they will likely see graphs in both formats as they start noticing them in the world around them.

4 As students watch, mix up the planning sheets, and pull one of them out of the bag.

5 Show the sheet to the class after you pull it out of the bag.

6 Then have the student who wrote the plan read his or her question along with the four choices to the class, as you record them on the Student Scaled Bar Graph.



7 Then briefly review the survey process.

8 Explain that the student conducting the survey will:

- Ask everyone in class to close their eyes while he or she reads the list of possibilities again.
- Read the list one more time and ask everyone to make their choice without telling anyone.
- Name each choice one last time and ask them to raise their hand when their favorite is named, while their eyes are still closed so their choice and their vote will be private.
- Count the number of hands raised for each choice, and record those numbers on the board.

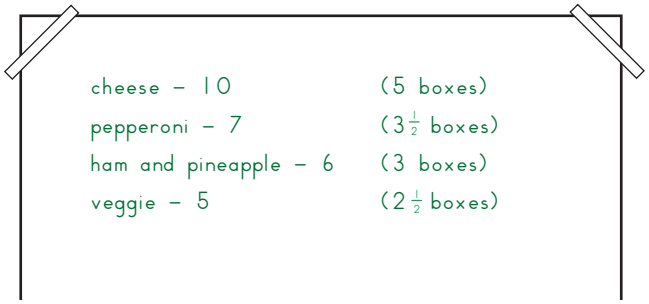
9 Help the student follow the steps to conduct the survey.

Notes About This Activity

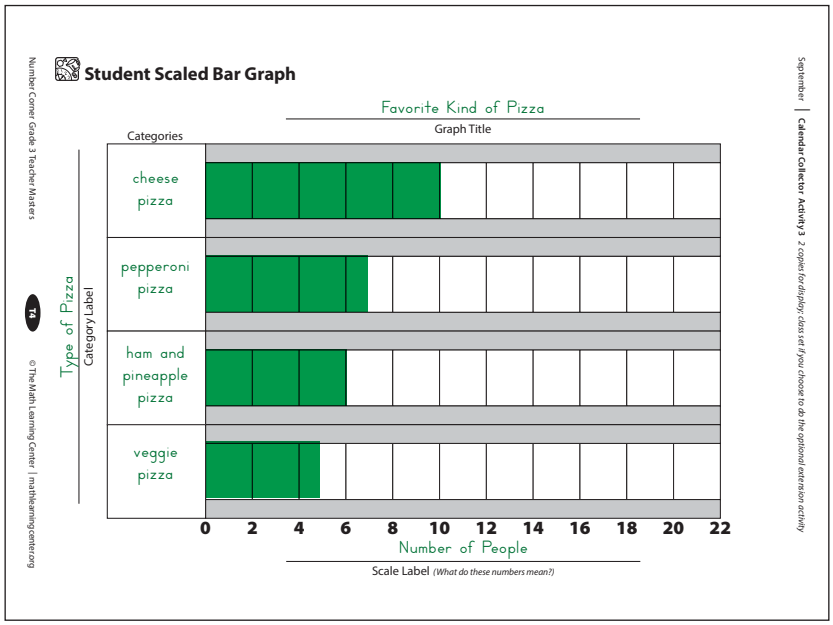
You will need the bag containing students' folded planning sheets, a copy of the Student Scaled Bar Graph Teacher Master, a crayon, and a piece of chart paper or space on the board to write each time you conduct this activity.

10 When the information is recorded on the board, have the students open their eyes and examine the results. Then, as time allows, have the student conducting the survey enter the results on the graph with the help of his or her classmates.

11 If time is running short, have the class work together to determine how many boxes should be colored in for each choice, bearing in mind that each increment on the graph stands for 2, rather than 1 student. Then have the student who conducted the survey fill in the data, labels, and graph title later in the day.



Note If possible, give the student who conducted the survey a little time to share his or her completed graph with the class at a time when everyone is gathered. If time doesn't allow for this, have the student post his or her graph in the classroom where classmates can examine it at their leisure.



Day 7

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		
Number Line	**Solving Problems**	**Assessment**
		Baseline Assessment – Part 1

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Baseline Assessment, Part 1

Completing Pages 1 & 2 — Day 7

1 Open the session by explaining what a baseline assessment is and describing how you'd like students to work on the baseline assessment they will start today and complete within the next couple of days.

Explain that a baseline assessment is a way of finding out where everyone is in math at the very start of the school year. The problems on this assessment involve skills the students studied last year in second grade. The assessment will help you and the students see what they still remember and what they may need to review or study again this year. It will help you do a better job of teaching because you'll see more clearly what each student already knows, and what they still need to work on.

Explain that you would like students to do the following things as they work on the baseline assessment:

- Listen carefully to the instructions for each problem.
- Stay with the class; don't move ahead until instructed to do so.
- Work independently.
- Raise your hand if you have a question.
- Try to answer all of the problems, even those you don't fully understand.
- Explain how you solved a problem when the directions ask you to. You can use pictures, numbers, and words in your explanations.

2 Display your copy of the Baseline Assessment, pages 1 and 2, and give each student a copy.

- Give students a few moments to examine the sheets quietly, and have them get out their pencils, red crayons, and rulers marked in centimeters for today's problems.
- Using your copy of the first sheet, show students how to write their name and date at the top on the lines provided.
- Have a helper give each student a piece of scratch paper to use if needed.

SUPPORT If you want to provide base ten materials (pieces or blocks), have helpers place one or more containers of these materials on each table or near each cluster of desks. Let students know they're welcome to use these materials to help with any part of the assessment today.

3 Read the instructions at the top of page 1 and explain that the first problem is timed, but the rest of the problems on today's part of the assessment are not.

- Let students know that you are going to give them one minute to complete as many of the addition combinations as they can.
- Give them a few moments to examine the combinations carefully, looking for those that seem easiest. Let them know that they can skip over combinations that seem difficult and come back to them when they're finished if they still have time.
- Note with students that the combinations involve many of the addition strategies that they worked with in second grade. By asking them to complete 20 combinations in a minute or less, you're offering them the opportunity to show how fluent they are with these types of facts.
- Show them the clock or timer you plan to use. Explain that they'll start when you give the signal, work for a minute, and then stop when you give the signal. Then you'll ask them to draw a line with red crayon right after the last combination they completed so you can see how far they got.

Assessment Guide

See the Grade 3 Assessment Guide for scoring and intervention suggestions.

4 When students understand how the timing will work, administer problem 1 as described in step 3 above.

5 Use the display copy of the Baseline Assessment to review the rest of the items on the first and second pages with the class.

- Read each problem out loud, and clarify as needed.
- Remind students that they can do some of their figuring on the scratch paper, but they need to show all their work very clearly on the assessment itself.

6 When students understand what to do, give them time to complete this part of the assessment.

- While students work independently, circulate to observe how they work and answer questions as needed.
- Ask students who finish before their classmates to double-check their work, and then read or draw quietly until everyone else is done.

SUPPORT On this assessment, only the first item needs to be timed. If there are students who are unable to complete the assessment in the given amount of time, have them finish later.

Day 8

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 2 – Charting Observations		
Number Line	**Solving Problems**	**Assessment**
	Activity 2 – Jumping by Friendly Numbers	

Activity 2

Charting Observations

1 Before posting the new marker for the day, ask students to pair up to make predictions about the marker.

2 After students have had a few moments to make predictions in pairs, choose two or three students to share their predictions with the class.

Press students to explain or justify their predictions.

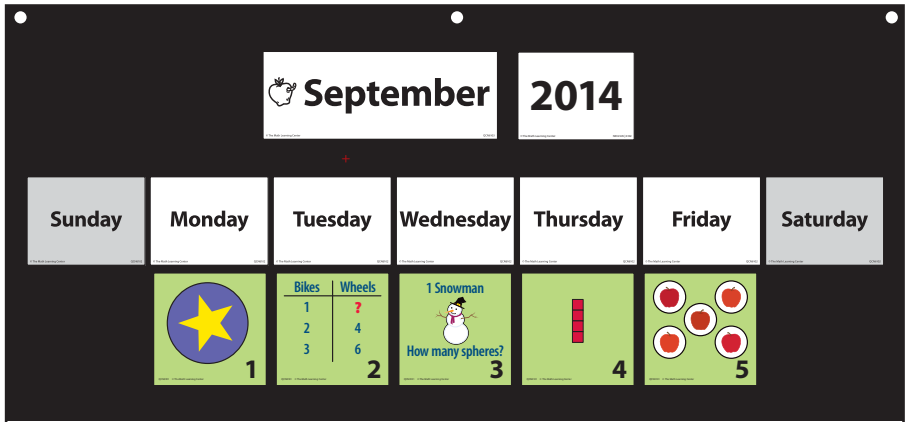
> ***Anita*** *I think it's going to have something about 5 on it.*
>
> ***Teacher*** *Can you say more about that, Anita? Why do you think we'll see something about 5 on today's marker?*
>
> ***Anita*** *So far, every marker has something about its number. There's 1 star on 1, a chart where 2 is the missing number on 2, a snowman made out of 3 circles on 3, and a line of 4 squares on 4. So I think it has to be something with 5 today.*
>
> ***Teacher*** *Thumbs up if you agree with Anita. Max, what's your prediction about today's marker?*
>
> ***Max*** *I agree with Anita that it's going to be something about 5. Maybe a line of 5 squares, or maybe 5 stars in a circle.*
>
> ***Theo*** *I was thinking that too! Maybe it's going in a pattern and it's going to start over, so it'll be 5 stars in a circle, and the next marker after that will be a chart.*
>
> ***Teacher*** *Let's have one more prediction. Jose,what do you think?*
>
> ***Jose*** *It'll be something about 5 for sure. Maybe it'll be a hand or a foot with 5 toes, or something like that.*

3 When a few students have shared their predictions, have your helper post the marker and record the date on the whiteboard. Then introduce the Calendar Grid Observations Chart.

- Show students the Calendar Grid Observations Chart you prepared for this month.
- Explain that this chart will help them keep track of the information on the calendar markers. They can use this information to learn more about the models and find pat-terns in the sequence of markers during the month.

4 With students' help, fill in the Calendar Grid Observations Chart for all the markers that have been posted so far this month, using an erasable marker.

- Fill in the date column on the chart up through today, recording just a number for each day.
- Next, explain that this month's markers feature several different ways to model or show multiplication. Have a helper point to the first marker as you describe the model briefly and record it on the chart.
- Then work with input from the students to write a brief description of the visual on the marker and write a multiplication equation to represent the visual.



Teacher *The first model is loops and groups, just like in the game we played yesterday during Number Corner. The rule with this model is that you can have any number of loops you like, but there have to be exactly the same number of objects in each loop. Do you see any other example of the loops and groups model in the markers posted so far?*

Students *Yes! It's on today's marker!*

There are 5 loops, and there's 1 apple in each loop.

Teacher *How would you describe the first marker to someone who couldn't see it?*

Molly *It's just 1 star in 1 loop.*

Teacher *OK, so what multiplication equation could we write for our first marker?*

Students *It would have to be 1 group of 1.*

It's just 1 loop with 1 thing in it.

Teacher *I can write $1 \times 1 = 1$ to show that. Let's read it together, ready? One group of 1 equals—is the same as—1.*

- Continue this type of dialog with the class for each of the markers displayed.

Teacher *The second marker shows an example of a ratio table. A* ratio *tells us how much or many of one thing there is compared to another thing. For example, the information on Marker 2 tells us how many wheels there are compared with the number of bikes. If we have 1 bike, how many wheels will we see?*

Students *Two!*

And it keeps going like that. On 2 bikes there are 4 wheels.

It just doubles the number, like 3 and 3 is 6.

Teacher *Yes, ratio tables are really interesting. We could probably talk lots about this one, but let's go ahead and record the information on the chart. You mentioned that 1 bike has 2 wheels—let's use that for our description. And what multiplication equation should we write for Marker 2?*

Shawn *I think it should be 1 times 2 because a bike is like 1 group of 2.*

Your chart will look something like this when you've completed it up through the present date.

Calendar Grid Observations

Date	Model	Description	Equation
1	Loop	1 loop with a star in it	1 x 1 = 1 star
2	Ratio Table	1 bike, 2 wheels	1 x 2 = 2 wheels
3	Picture	1 snowman, 3 spheres	1 x 3 = 3 spheres
4	Array	4 rows of 1 square each	4 x 1 = 4 squares
5	Loops	5 loops, 1 apple in each loop	5 x 1 = 5 apples

5 When you conduct this activity again on Days 6 and 8, work with the class to bring the Observations Chart up to date.

.....

Activity 2

Jumping by Friendly Numbers — Day 8

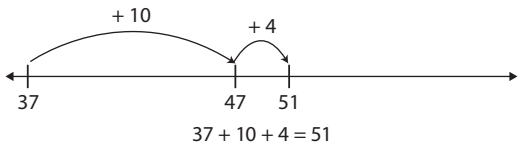
1 Gather students in the discussion area with their Number Corner Student Books and pencils. Recognize students for their participation in the first problem string the other day. Then, ask them to turn to the person sitting next to them and to summarize how a problem string works.

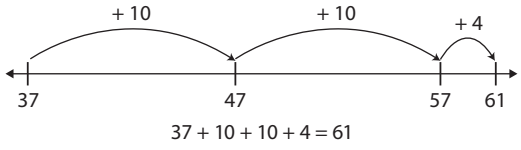
2 Give them an opportunity to ask any questions they may have about problem strings. Then, get started with today's problem string. Have students turn to the next unused Problem String Work Space page in the back of their Number Corner Student Books. Have them write the date and get ready to solve the first problem.

3 Begin the string with the first problem: 37 + 10.

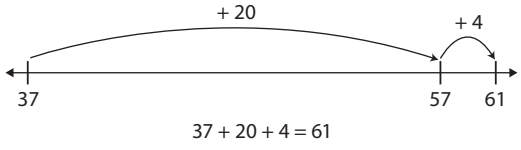
Problem String Jumping by Friendly Numbers

<table>
<tr><th>Problems</th><th>Sample Strategies & Recording</th><th>Connections</th></tr>
<tr><td>37 + 10</td><td>Students will probably produce the answer, 47, without needing to work with a number line.</td><td rowspan="4">Draw out students' strategies that involve jumping by friendly numbers, and reinforce the strategy of jumping by friendly numbers that are larger, such as multiples of 10, before making jumps of 1s. You can use the number line as well as equations to show their jumping strategies.

Big Idea
You can start from the larger of the two addends, then jump by 10s or multiples of 10 and then by 1s to find the sum.</td></tr>
<tr><td>37 + 14</td><td> 

37 + 10 + 4 = 51</td></tr>
<tr><td>37 + 24</td><td> 

37 + 10 + 10 + 4 = 61

37 + 20 + 4 = 61</td></tr>
<tr><td>146 + 10
146 + 16
146 + 46
157 + 37</td><td>See the number line diagrams and equations above for examples of how you can record students' strategies.</td><td>Draw out students' strategies that involve jumping by friendly numbers, and reinforce the strategy of jumping by friendly numbers that are larger, such as multiples of 10, before making jumps of 1s. You can use the number lilne as well as equations to show their jumping strategy.

Big Idea
You can start from the larger of the two addends, then jump by 10s or multiples of 10 and then by 1s to find the sum.</td></tr>
</table>

CHALLENGE Encourage students to use the most efficient or sophisticated strategy they can think of. Then encourage them to look back at their work and see if they can see an even more efficient strategy that they could have used.

4 Conclude by asking students to summarize a big idea that came out of doing this string.

Day 9

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		
Number Line	**Solving Problems**	**Assessment**
		Baseline Assessment – Part 2

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Baseline Assessment, Part 2

Completing Pages 3–5 Day 9

1 Let students know that they are going to do the second half of the Baseline Assessment today.

- Have them get out their pencils and rulers in preparation for taking this part of the assessment.
- Ask helpers to give each student a sheet of scratch paper.

2 Display your copy of the Baseline Assessment, pages 3–5, and give each student a copy.

Give students a few moments to examine the sheets quietly.

SUPPORT If you want to provide base ten materials (pieces or blocks), have helpers place one or more containers of these materials on each table or near each cluster of desks. Let students know they can use the base ten materials to help with the story problems on page 3 if they'd like.

3 Use your display copy to review problems 6a and 6b on page 3.

Read each problem out loud, and clarify as needed.

4 When students understand what to do, give them time to complete the two story problems.

- While they work independently, circulate to observe how they work and answer questions as needed.
- Ask students who finish before their classmates to double-check their work, and then read or draw quietly until everyone else is done.

5 When everyone has completed the two story problems on page 3, have helpers place one or more containers of colored tiles on each table or near each cluster of desks.

Ask students to each take a handful of at least 12 colored tiles, which they'll need to complete the next problem.

6 Use your display copy of review and explain problems 7–10 on pages 4 and 5.

7 When students understand what to do, give them time to finish the assessment.

- While they work independently, circulate to observe how they work and answer questions as needed.
- Ask students who finish before their classmates to double-check their work, and then read or draw quietly until everyone else is done.

SUPPORT Break your instructions into smaller pieces rather than giving them all at once. Instead, read and review the problems on page 4, pausing between each to give students time to respond. Do the same with problems 9 and 10 on page 5.

SUPPORT None of the items on this part of the assessment need to be timed. If there are students who are unable to complete the second part of the assessment in the given amount of time, have them finish later.

Day 10

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		
Number Line	**Solving Problems**	**Assessment**
Activity 2 – Spud Revisited		

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 2

Spud Revisited — Day 10

If you have marked on the One Thousand Grid at all, erase it before today's activity. You will also need erasable markers in two different colors and a piece of chart paper posted in the discussion area.

1 Let students know that they're going to play Spud again today, but this time, you're going to use the One Thousand Grid to help keep track of the counts.

Draw their attention to the Number Corner display, and explain that you are going to stand at the grid and cross out each number as they say it during the game. Every so often, however, you will use a second color to circle a number on the grid instead of crossing it out. After the game is finished, you'll have the class sit back down and take a good look at the circled numbers.

2 Have the students stand up, form a circle, and drop hands in preparation to play the game.

- Briefly review the rules of the game and have them begin, the first student starting with 10.
- Stand at the One Thousand Grid and use an erasable marker to make a slash through each number as one of the students says it. Circle one number in each row at random, rather than marking it with a slash.

3 When the game is over, have the students sit back down in the Number Corner discussion area facing the One Thousand Grid on the display board.

Give student pairs a few moments to make observations about the grid.

10	20	30	40	50	60	70	80	90	100
110	120	130	140	150	160	170	180	190	200
210	220	230	240	250	260	270	280	290	300
310	320	330	340	350	360	370	380	390	400
410	420	430	440	450	460	470	480	490	500
510	520	530	540	550	560	570	580	590	600
610	620	630	640	650	660	670	680	690	700
710	720	730	740	750	760	770	780	790	800
810	820	830	840	850	860	870	880	890	900
910	920	930	940	950	960	970	980	990	1,000

4 Work with input from the class to describe each of the circled numbers in terms of how many hundreds and tens it is composed of.

- Record the information on a piece of chart paper as you talk with students in a manner similar to the dialog below.

> ***Teacher*** *What number is circled in the first row?*
>
> ***Students*** *Sixty!*
>
> ***Teacher*** *How many hundreds are there in 60?*
>
> ***Students*** *What? There aren't any hundreds in 60.*
>
> *It's not even as big as 100.*
>
> ***Teacher*** *OK then—how many tens are there in 60?*
>
> ***Students*** *Sixty!*
>
> *No, 6—it's 6 tens, not 60 tens. Sixty tens would be really a lot.*
>
> ***Teacher*** *Let's count by tens to be sure. I'll point, and you count on your fingers to see how many tens we have to count to get up to 60—ready?*
>
> ***Students*** *10, 20, 30, 40, 50, 60—it's 6!*
>
> *It has to be! There are 6 tens in 60. That's what the number means!*
>
> ***Teacher*** *OK, I'll write that down on our chart paper here. Sixtry equals—is the same as—6 tens. Let's look at the next circled number on the grid. What is it?*
>
> ***Students*** *130!*
>
> ***Teacher*** *How many hundreds are there in 130?*
>
> ***Students*** *One!*
>
> *It's one hundred, and then 30.*
>
> *It's 1 hundred, 3 tens, and no ones.*
>
> ***Teacher*** *OK, I'll record that. What if you wanted to tell how many tens there are in 130, and you could only use tens, no hundreds? Talk to the person next to you about this, and show thumbs up when you have an idea.*
>
> ***Students*** *You can't do it.*
>
> *Yes, you can if you split up the hundred into tens. It's 10 tens for the hundred, and then 3 more tens for the 30.*
>
> *It's 13 tens, and the number kind of looks like that—13 with a 0 after it.*

- Continue in this fashion until you have recorded the number of hundreds and tens, and then the number of tens in each of the circled numbers on the grid.

One Thousand Grid

10	20	30	40	50	60	70	80	90	100
110	120	130	140	150	160	170	180	190	200
210	220	230	240	250	260	270	280	290	300
310	320	330	340	350	360	370	380	390	400
410	420	430	440	450	460	470	480	490	500
510	520	530	540	550	560	570	580	590	600
610	620	630	640	650	660	670	680	690	700
710	720	730	740	750	760	770	780	790	800
810	820	830	840	850	860	870	880	890	900
910	920	930	940	950	960	970	980	990	1,000

60 = 6 tens
130 = 1 hundred and 3 tens or 13 tens
270 = 2 hundred and 7 tens or 27 tens
340 = 3 hundreds and 4 tens or 34 tens
450 = 4 hundreds and 5 tens or 45 tens
580 = 5 hundreds and 8 tens or 58 tens

5 When you have worked your way through the 10 numbers circled on the grid, ask students to make a generalization about the quantity of tens in *any* number on the grid.

- Point to several of the crossed-off numbers at random and ask students how many tens there are in each, given the rule that they can only use tens, no hundreds. In other words, all hundreds have to be "traded in" for tens.
- Then ask what you have to do to determine how many tens there are in any number on the whole grid. Give students a minute to share ideas in pairs, and then call on several volunteers to share their thinking with the class.

> ***Students*** *If it's a number in the first row, it's easy. Like 50 is 5 tens, and 80 is 8 tens.*
>
> *If you just remember that there's 10 tens in a hundred, it's not so hard. Like with 160, it's 10 tens for the hundred, and then 6 more for the 60—16 tens in all.*
>
> *If you just look at the number and chop off the 0, you can tell how many tens. Like on 270, there are 27 tens and on 340 there are 34 tens. So that works for all the numbers.*
>
> ***Teacher*** *What about the multiples of 100, our "spud" numbers? If Dante's theory is correct, then 200 should have 20 tens. Is that true? Talk to the person next to you about this.*
>
> ***Students*** *It's true because with 200, you can trade each hundred in for 10 tens. Ten and ten is 20, so 200 has 20 tens.*
>
> *If you count by tens, you have to go 20 times before you land on 200, so 200 must have 20 tens.*

Students will be able to express themselves more or less clearly, depending on their previous experiences and current understandings of place value. If they aren't able to come up with any clear-cut generalization right now, it's OK. You can leave the issue open, because you will return to it in future workouts.

Note Erase the One Thousand Grid when you are finished with this activity.

Day 11

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 3 – Making Predictions & Writing Equations	**Activity 3 –** Student Surveys	
Number Line	**Solving Problems**	**Assessment**

Activity 3

Making Predictions & Writing Equations

1 Ask students to each bring a whiteboard, pen, and eraser with them as they join you in the Number Corner area today.

You might organize these materials into several containers and place them in different locations close to the Number Corner area. As you call students a few at a time to leave their tables and join you, they can stop by one of the containers, gather their materials, and bring them along.

You will want to take a minute to establish protocols for handling these materials before starting the activity. For example, you might explain to students that you expect them to place the materials safely on the floor in front of them and leave them there, untouched, until you give further instructions.

2 Take a few minutes with the class to update the Calendar Grid Observations Chart up through the previous day.

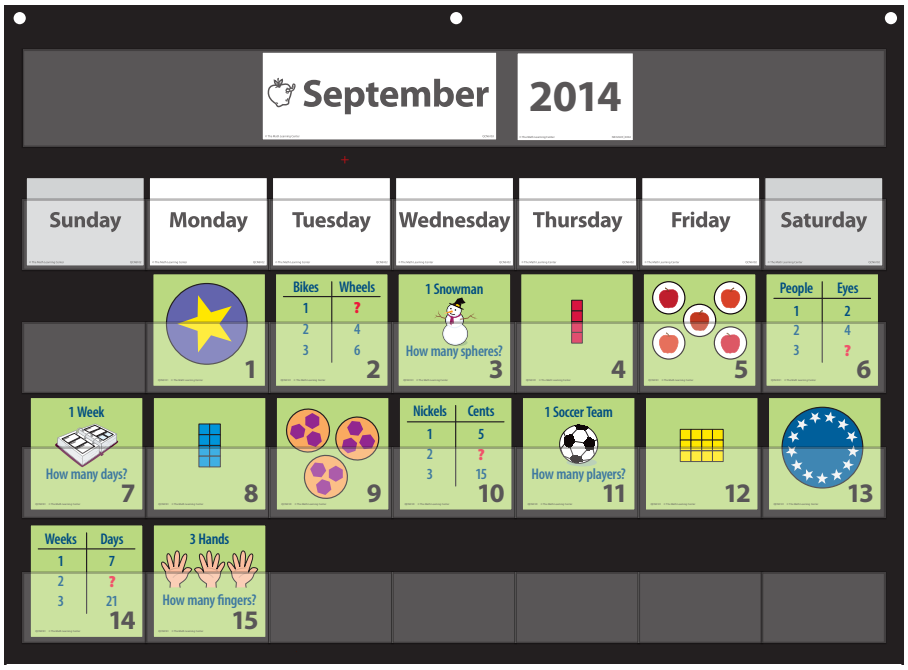
Have students record an equation for each marker on their whiteboards as you do so on the Observations Chart.

3 Before your helper posts the new marker for today, ask students to share predictions, first in pairs, and then as a whole group.

By the time you conduct this activity, you'll be well into the month, and many students will be familiar with the models. At this point, you can start pressing for a little more detail from students. If the next marker will feature the array model, how might the squares
be arranged? If today's marker will show an example of the loops and groups model, can students predict how many loops there might be, and how many items in each loop?

CHALLENGE Ask students to show their predictions on their whiteboards, using numbers, labeled sketches, or words.

.....



Kelsey *It has to be an array with 16 squares in it.*

Teacher *Thumbs up if you agree with Kelsey. I'm seeing lots of thumbs up. Who'd like to explain why they agree?*

Morgan *It has to be 16 because the number of things is always the same as the date. And it has to be an array because that's the pattern—loops, ratio table, picture, array.*

Teacher *Can anyone tell us more about the array we might see on today's marker?*

Students *It could be one long row of 16, but that wouldn't fit very well.*

It could be 2 rows of 8 because 8 and 8 make 16.

I don't think it's going to have 3 rows, because if you go by 3s, you don't land on 16.

It could be in 4s though, because 4, 8, 12, then 13, 14, 15, 16.

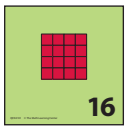
4 Have your helper post the marker and write the day's date on the whiteboard while the rest of the students examine the newly posted marker carefully and write one or more equations on their whiteboard to represent what they see.

By asking for one or more equations without stipulating that they involve multiplication, you'll give students an opportunity to connect what they know about repeated addition to multiplication. Also, some of the calendar markers present opportunities to respond creatively and flexibly. For example, Marker 19 shows 5 cars, 1 of which has a flat tire, and asks students to report the number of good tires. There are a number of different equations that might be used to represent this situation.

5 When they have had a minute or so to record their ideas, ask students to share their equations with a neighbor. Then invite volunteers to share their equations with the class.

- Record each suggestion on the whiteboard or a piece of chart paper posted near the Number Corner display area.
- After students run out of suggestions, work with their input to select one equation to record on the Observations Chart.

Here are examples of the types of equations students may generate for a couple of the markers that appear after the middle of the month.



4 + 4 + 4 + 4 = 16
4 x 4 = 16
2 + 2 + 2 + 2 + 8 = 16
2 x 8 = 16
(4 x 2) + 8 =16
16 x 1 = 16

4 + 4 + 4 + 4 + 3 = 19
(4 + 4 + 4 + 4 + 4) – 1 = 19
20 – 1 = 19
(5 x 4) – 1 = 19
(4 x 4) + 3 = 19

.....

.....

Activity 3

Student Surveys — Days 6, 11

1 When students join you in the Number Corner area, explain that you are going to pick one of their planning sheets out of the bag and help that student conduct his or her survey right now.

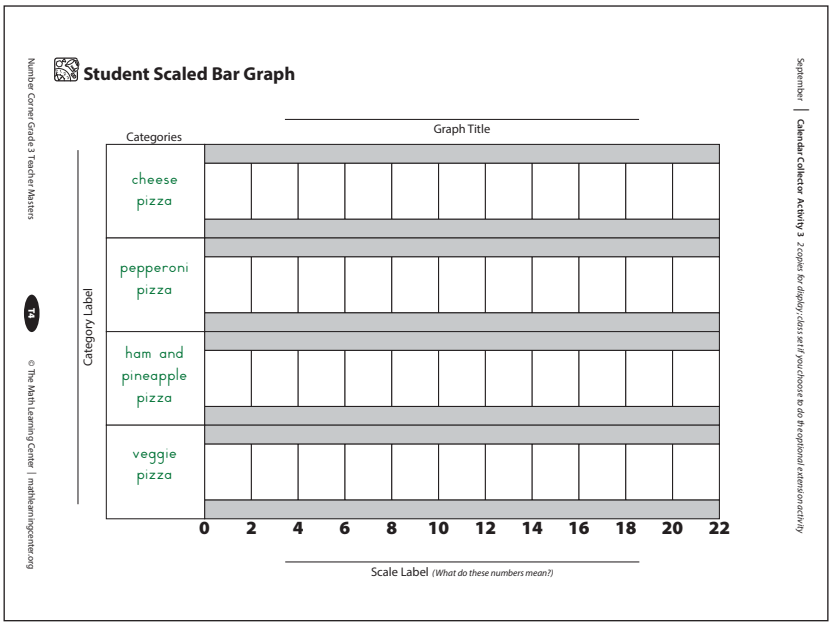
2 Show the students a copy of the Student Scaled Bar Graph on which the data will be recorded.

3 Note with them that the bar graph on this sheet runs horizontally instead of vertically, and that they will likely see graphs in both formats as they start noticing them in the world around them.

4 As students watch, mix up the planning sheets, and pull one of them out of the bag.

5 Show the sheet to the class after you pull it out of the bag.

6 Then have the student who wrote the plan read his or her question along with the four choices to the class, as you record them on the Student Scaled Bar Graph.



7 Then briefly review the survey process.

8 Explain that the student conducting the survey will:

- Ask everyone in class to close their eyes while he or she reads the list of possibilities again.
- Read the list one more time and ask everyone to make their choice without telling anyone.
- Name each choice one last time and ask them to raise their hand when their favorite is named, while their eyes are still closed so their choice and their vote will be private.
- Count the number of hands raised for each choice, and record those numbers on the board.

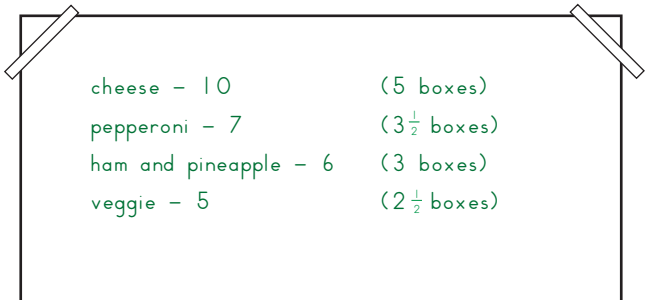
9 Help the student follow the steps to conduct the survey.

Notes About This Activity

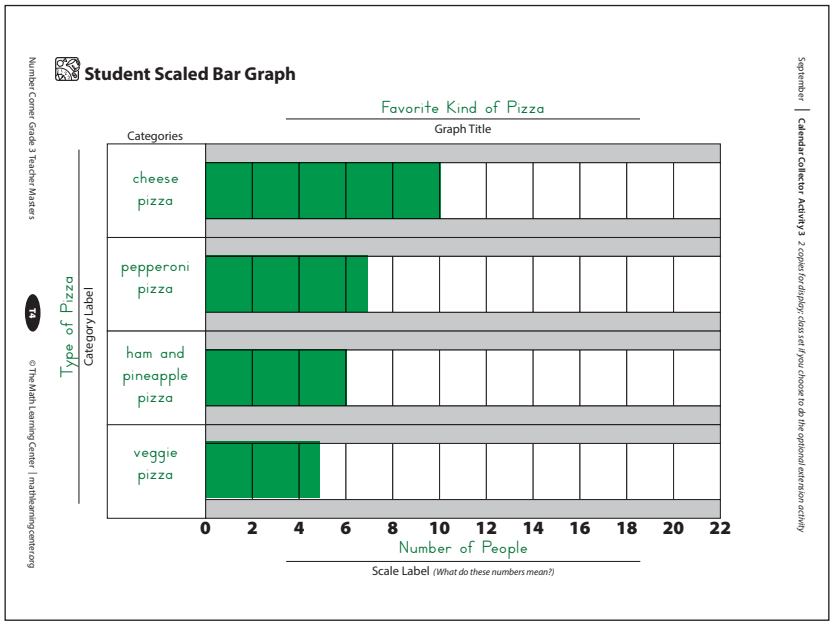
You will need the bag containing students' folded planning sheets, a copy of the Student Scaled Bar Graph Teacher Master, a crayon, and a piece of chart paper or space on the board to write each time you conduct this activity.

10 When the information is recorded on the board, have the students open their eyes and examine the results. Then, as time allows, have the student conducting the survey enter the results on the graph with the help of his or her classmates.

11 If time is running short, have the class work together to determine how many boxes should be colored in for each choice, bearing in mind that each increment on the graph stands for 2, rather than 1 student. Then have the student who conducted the survey fill in the data, labels, and graph title later in the day.



Note If possible, give the student who conducted the survey a little time to share his or her completed graph with the class at a time when everyone is gathered. If time doesn't allow for this, have the student post his or her graph in the classroom where classmates can examine it at their leisure.



Day 12

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		
Number Line	**Solving Problems**	**Assessment**
Activity 3 – From Grid to Line		

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 3

From Grid to Line — Day 12

1 Give each student a copy of the Individual Student Number Line Teacher Master, and display your copy where everyone can see it.

Give students a few moments to examine the sheet quietly.

2 Explain that students will cut out the 10 rows and use a glue stick to attach them at the parts marked "tab" to create their own number lines.

Have students get out their scissors, glue sticks, and crayons in preparation for this project.

Because of the length of these number lines (about 54 inches), many teachers find it helpful to allow some of the students to stretch out on the floor while others work on the tables or desks.

3 Before students start cutting, ask them to use a yellow crayon to lightly color in all the multiples of 100—the "spud" numbers (100, 200, 300, and so on).

4 Then use your display copy of the sheet to model how to cut out and attach the first two rows.

10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	tab

5 Give students a few minutes to assemble their own number lines.

- Each student will need a pair of scissors and a glue stick.
- Ask students who finish the task quickly and easily to help someone else sitting near them.

6 Once students have all constructed their own lines, tell them you are going to have them color in some more of the numbers on their number lines by following a set of clues you'll give them right now.

7 Display a copy of the Number Line Clues Teacher Master, with all but the top line covered with a piece of paper.

- Read the top line with the students. Then slide the paper down the Number Line Clues sheet to reveal the clues one at a time.
- Read each clue with the students and give them time to find and color the numbers. Encourage students to help one another as they work.

SUPPORT Have students circle or underline the numbers for each clue before they color them in.

8 As you work through the clues, call on volunteers to share and explain their answers.

Record correct answers below each clue on the teacher master as students provide them.

9 At the conclusion of the activity, give each pair of students a small envelope to create a storage pocket for their number line at the back of their Number Corner Student Books.

- Show students how to lick and stick the flap closed on the envelope, and then cut the envelope in half along its width to form two small pockets, one for each partner.
- Show students how to glue the pocket to the inside of the back cover of their Number Corner Student Book.
- Finally, show them how to fold their number line down small enough to fit into the pocket.

10 Let students know that they will be using their number lines in future workouts.

Day 13

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		**Activity 2 –** Loops & Groups Rematch
Number Line	**Solving Problems**	**Assessment**

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 2

Loops & Groups Rematch — Day 13

1 Place a fresh copy of the Whole Group Loops & Groups Game Sheet Teacher Master on display, and have students find the Loops & Groups Record Sheet in their Number Corner Student Books.

2 Explain that you're going to play another game of Loops & Groups with the class to see if the team that lost last time can win today.

- Briefly review the rules of the game.
- Let students know that they are going to record the results of the game on their record sheets today, but only for their team. In other words, they will use only the right side of their record sheet.
- Explain that you will keep track of the results for both teams on your display sheet, just as you did last time.

3 Play the game with the class, just as you did the first time.

Use questions such as the ones in the Key Questions section above to keep students engaged and thinking throughout the game.

Day 14

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 3 – Making Predictions & Writing Equations		
Number Line	**Solving Problems**	**Assessment**

Activity 3

Making Predictions & Writing Equations

1 Ask students to each bring a whiteboard, pen, and eraser with them as they join you in the Number Corner area today.

You might organize these materials into several containers and place them in different locations close to the Number Corner area. As you call students a few at a time to leave their tables and join you, they can stop by one of the containers, gather their materials, and bring them along.

You will want to take a minute to establish protocols for handling these materials before starting the activity. For example, you might explain to students that you expect them to place the materials safely on the floor in front of them and leave them there, untouched, until you give further instructions.

2 Take a few minutes with the class to update the Calendar Grid Observations Chart up through the previous day.

Have students record an equation for each marker on their whiteboards as you do so on the Observations Chart.

3 Before your helper posts the new marker for today, ask students to share predictions, first in pairs, and then as a whole group.

By the time you conduct this activity, you'll be well into the month, and many students will be familiar with the models. At this point, you can start pressing for a little more detail from students. If the next marker will feature the array model, how might the squares
be arranged? If today's marker will show an example of the loops and groups model, can students predict how many loops there might be, and how many items in each loop?

CHALLENGE Ask students to show their predictions on their whiteboards, using numbers, labeled sketches, or words.

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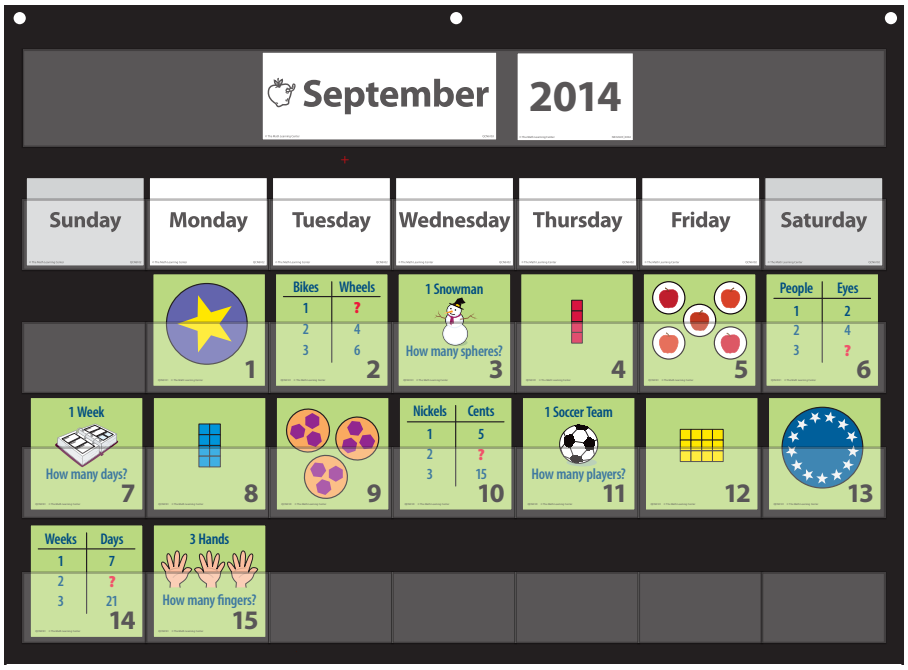


Kelsey *It has to be an array with 16 squares in it.*

Teacher *Thumbs up if you agree with Kelsey. I'm seeing lots of thumbs up. Who'd like to explain why they agree?*

Morgan *It has to be 16 because the number of things is always the same as the date. And it has to be an array because that's the pattern—loops, ratio table, picture, array.*

Teacher *Can anyone tell us more about the array we might see on today's marker?*

Students *It could be one long row of 16, but that wouldn't fit very well.*

It could be 2 rows of 8 because 8 and 8 make 16.

I don't think it's going to have 3 rows, because if you go by 3s, you don't land on 16.

It could be in 4s though, because 4, 8, 12, then 13, 14, 15, 16.

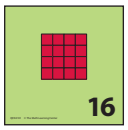
4 Have your helper post the marker and write the day's date on the whiteboard while the rest of the students examine the newly posted marker carefully and write one or more equations on their whiteboard to represent what they see.

By asking for one or more equations without stipulating that they involve multiplication, you'll give students an opportunity to connect what they know about repeated addition to multiplication. Also, some of the calendar markers present opportunities to respond creatively and flexibly. For example, Marker 19 shows 5 cars, 1 of which has a flat tire, and asks students to report the number of good tires. There are a number of different equations that might be used to represent this situation.

5 When they have had a minute or so to record their ideas, ask students to share their equations with a neighbor. Then invite volunteers to share their equations with the class.

- Record each suggestion on the whiteboard or a piece of chart paper posted near the Number Corner display area.
- After students run out of suggestions, work with their input to select one equation to record on the Observations Chart.

Here are examples of the types of equations students may generate for a couple of the markers that appear after the middle of the month.



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Day 15

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		
Number Line	**Solving Problems**	**Assessment**
Activity 4 – Number Riddles		

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 4

Number Riddles — Day 15

If there are any marks on the One Thousand Grid on display in the Number Corner, erase them before you conduct this workout.

1 Ask students to get out the individual number lines they made during the previous Number Line workout. Tell them you are going to share some Number Riddles. Their job will be to identify what number you are thinking of.

Have the students sit in pairs to work these riddles. Explain that some of the riddles are challenging, so they'll really need to work together to solve them.

2 Pose riddles similar to the ones listed below.

These riddles are sequenced from less to more challenging. You can change them to best meet the needs and strengths of your class.

- I'm thinking of the number that's between 420 and 440 on your number line. What's my number? [430]
- I'm thinking of a number. If you jump by 100 four times starting at 370 you'll be on my number. What's my number? [770]
- I'm thinking of a number that's 5 tens more than 150. What's my number? [200]
- I'm thinking of a number that's 12 tens more than 400. What's my number? [520]
- I'm thinking of a number that is 33 tens more than 300. What's my number? [630]
- I'm thinking of a number. If you double 2 hundreds + 2 tens you'll know my number. What's my number? [440]
- I'm thinking of a number. If you start at 200 and add half of my number you'll be at 600. What's my number? [800]
- I'm thinking of a number. It is 99 tens less than 1000. What's my number? [10]

3 As you pose each riddle, give student pairs time to work together to find the answer.

- Have student pairs show thumbs up when they believe they have the solution.
- Call on different students to share and explain their answers.

4 Circle the correct answer to each riddle on the One Thousand Grid.

5 At the end of the activity, have students fold and store their number lines in the pocket at the back of their Student Book for future reference.

Day 16

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 3 – Making Predictions & Writing Equations		
Number Line	**Solving Problems**	**Assessment**
	Activity 3 – Jumping to Get to a Friendly Number	

Activity 3

Making Predictions & Writing Equations

1 Ask students to each bring a whiteboard, pen, and eraser with them as they join you in the Number Corner area today.

You might organize these materials into several containers and place them in different locations close to the Number Corner area. As you call students a few at a time to leave their tables and join you, they can stop by one of the containers, gather their materials, and bring them along.

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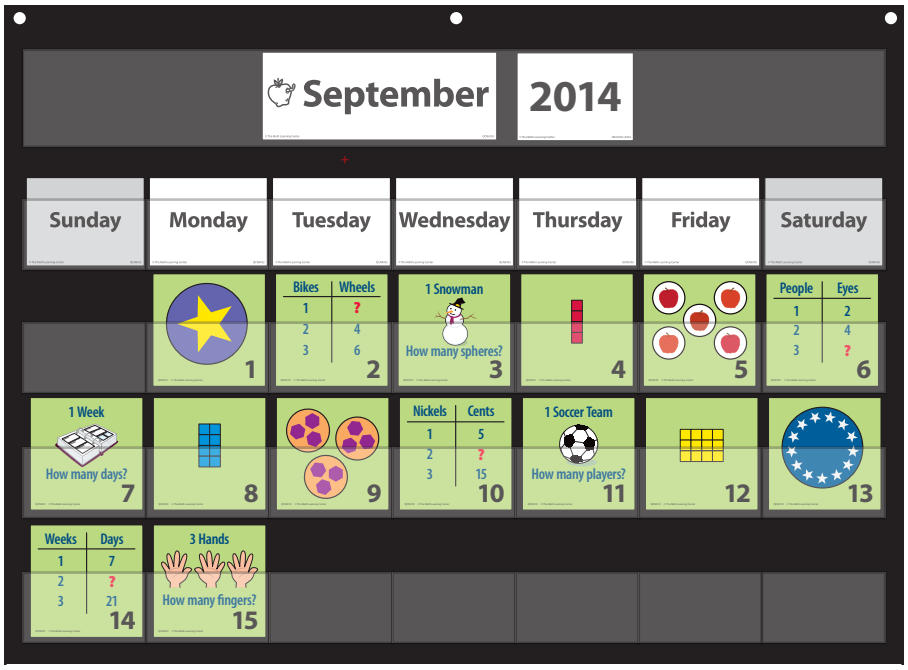

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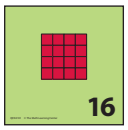

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4 + 4 + 4 + 4 + 3 = 19
(4 + 4 + 4 + 4 + 4) – 1 = 19
20 – 1 = 19
(5 x 4) – 1 = 19
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.....

.....

Activity 3

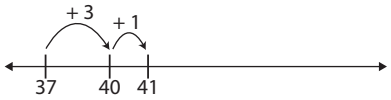
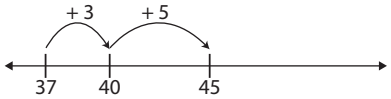
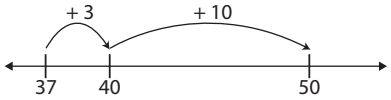
Jumping to Get to a Friendly Number — Day 16

1 Open today's activity by gathering students in the discussion area with their Number Corner Student Books and a pencil.

2 Review problem string procedures and expectations, then have students turn to the next unused Problem String Work Space page in the back of their Number Corner Student Books. Have them write the date and get ready to solve the first problem.

3 Begin the string with the first problem: 37 + 4.

Problem String Jumping to Get to a Friendly Number

Problems	Sample Strategies & Recording	Connections
37 + 4	 37 + 3 + 1 = 41	Draw out students' strategies that involve jumping quickly to a friendly number, using combinations that make 10. They then jump by 10s, if possible, before jumping by 5s or 1s to deal with the leftover numbers. You can use the number lilne as well as equations to show their jumping strategies. **Big Idea** You can start with the first or largest addend on the number line and jump to the closest friendly number. Then use the leftover part of the second addend to jump by 10s, 5s, or 1s.
37 + 8	 37 + 3 + 5 = 45	
37 + 13	 37 + 3 + 10 = 50	
149 + 4	See the number line diagrams and equations above for examples of how you can record students' strategies.	Draw out students' strategies that involve jumping quickly to a friendly number, using combinations that make 10. They then jump by 10s, if possible, before jumping by 5s or 1s to deal with the leftover numbers. You can use the number lilne as well as equations to show their jumping strategy. **Big Idea** You can start with the first or largest addend on the number line and jump to the closest friendly number. Then use the leftover part of the second addend to jump by 10s, 5s, or 1s.
146 + 14		
146 + 23		

CHALLENGE Encourage students to use the most efficient or sophisticated strategy they can think of. Then encourage them to look back at their work and see if they can see an even more efficient strategy that they could have used.

Day 17

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	**Activity 4 –** Which Read-Aloud?	
Number Line	**Solving Problems**	**Assessment**

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

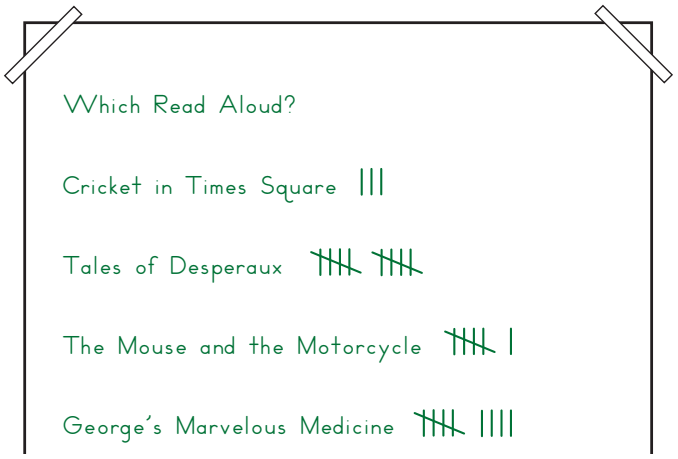
Activity 4

Which Read-Aloud? Day 17

1 When the first few students enter the classroom on the day you conduct this activity, show them the list of books you've written on the board or chart paper, along with the graph you've prepared, and explain the survey.

- Have them each make a tally mark on the board or piece of chart paper beside the book they'd most like you to read.
- Then leave one of the students stationed at the board or chart paper to explain the survey to the other students as they arrive, and have them make tally marks to indicate their choices.

Note Our example shows four of our favorite chapter books; they are not meant to influence your choice of books.

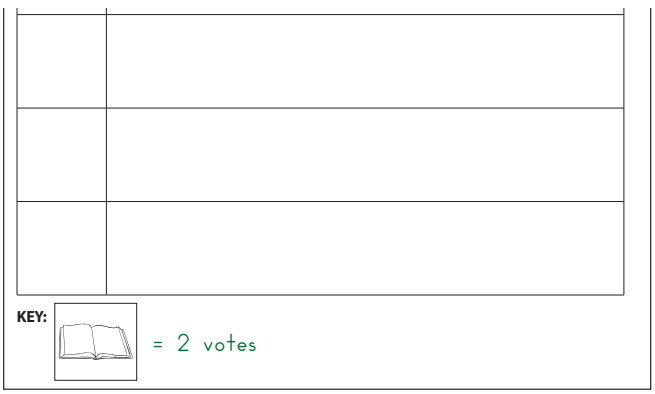


2 Make sure everyone has had a chance to mark their choice on the board or chart paper before you gather the class for Number Corner.

3 Ask students to bring whiteboards, pens, and erasers with them to the Number Corner discussion area.

4 When everyone is seated, draw students' attention to the blank graph and the four books on display.

- Briefly explain the survey.
- Show students the picture graph markers you've prepared. As they watch, glue one into place in the Key section, and label it to show that each book stands for 2 votes.



Notes About This Activity

In preparation for this activity, post the blank Scaled Picture Graph you have prepared on your Number Corner display wall or an easel you can pull into your discussion area. Label each of the columns at the side of the graph with the name of one of the four books you have selected, and place the four books on a shelf, ledge, or small table nearby. You will also need to have your envelope or bag of picture graph markers and a glue stick close at hand. Finally, write the name of each book on the board or a piece of chart paper.

5 Ask students to figure out how many picture graph markers you will need to glue into each row on the graph to show the results of the survey.

- Be sure they can see the board or chart paper on which everyone in class indicated their choice by making a tally mark.
- Have them work alone or in pairs to show on their whiteboards how many picture graph markers are needed for each row.
- As they finish, have them share and compare their answers with others sitting near them.

6 When most students have finished, work with their input to glue the correct number of markers into each row.

7 Note with them that you can cut the picture graph markers in half to accommodate odd numbers of votes if necessary.

8 Pose questions and prompts about the graph similar to the ones listed here.

- Erase the board or put the piece of chart paper on which the votes were recorded aside, so students are reading the graph to get their information.
- Have students respond to each question in writing on their whiteboards.
  - » How many students chose the book that got the most votes?
  - » How many students chose the book that got the fewest votes?
  - » How many more students chose the book the got the most votes, compared with the book that got the fewest votes?
  - » Use the greater than or less than sign to compare the number of votes two of the books got. Show your inequality statement to the person next to you and see if they can figure out which two books you are comparing.

9 As students watch, write several questions about the graph on a piece of chart paper. After you write each one, read it with the class, and work with students' input to write an equation (or more than one equation) in response.

- Have students write each of the equations on their whiteboards as you do so on the board or chart paper.
- Then have them read the equation aloud with you.

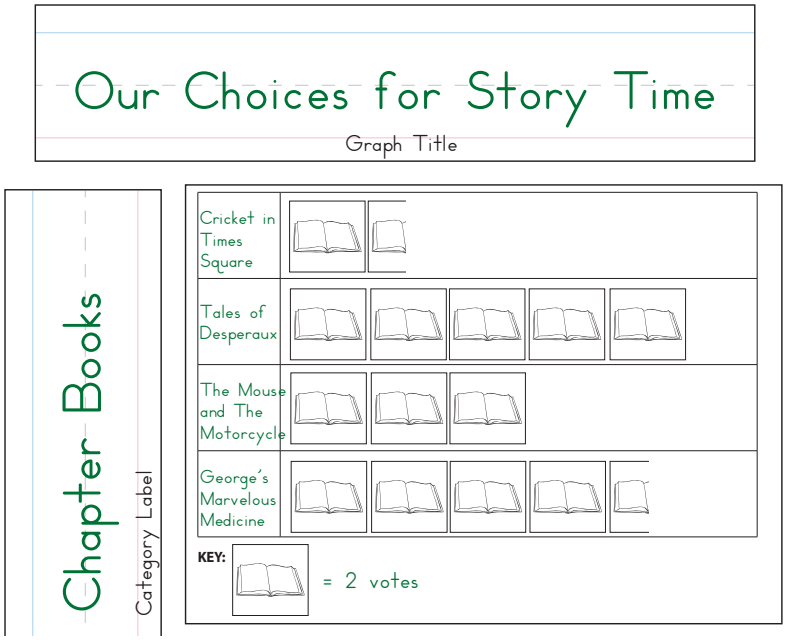
How many students participated in this survey?
10 + 3 + 6 + 9 = 28 students

How many more votes did the most popular choice receive than the second most popular choice?
10 – 9 = 1 vote

What is the differencce in the number of votes for the two most popular choices and the two least popular choices?
10 + 9 = 19
3 + 6 = 9
19 – 9 = 10 votes

10 Finally, work with input from the class to generate a title and a category label for your picture graph.

- Use the sentence strip labels you prepared.
- Work with input from the students to generate a good title. Remind them that a title is not a whole statement or a question, and guide them accordingly.
- Note with the students that a picture graph does not have a scale, and challenge them to explain why that is the case.



11 When you have time later in the day, post the labeled graph and the chart of questions and equations in the display area along with the work preferences graph from Activity 1 and the graphs made by students during Activity 3.

Extensions

Give all the students a chance to conduct the surveys they planned during the second Calendar Collector activity.

- Pull another Survey Planning Sheet out of the bag each day during Number Corner. Have the student whose plan is selected conduct his survey over the course of the day with one classmate at a time and then record the data on a copy of the Student Scaled Bar Graph Teacher Master. At the end of the day, allow the student to briefly share his graph and survey results with the class. Then have him post it on the wall alongside the other graphs you've made this month.
- Once all the students have conducted their surveys, consider placing the entire collection on display in the hall outside your classroom for other students, teachers, and parents to read. As an alternative, you might bind the surveys together into a large book to enjoy throughout the year.

Note You will find an optional Survey Report Sheet in the Calendar Collector Teacher Masters. This sheet asks students to reflect on and interpret their survey results in several different ways. You might use it in conjunction with the Extension suggestion here.

Day 18

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update		**Activity 3 –** Loops & Groups with a Partner
Number Line	**Solving Problems**	**Assessment**

Update

Begin updating after Activity 1, every school day during Number Corner.

Procedure

- If the Calendar Grid isn't one of the featured workouts for the day, the student helper posts the marker before or after the class meets for Number Corner and records the day's date on the whiteboard.

Activity 3

Loops & Groups with a Partner — Day 18

1 Display a copy of the Partner Loops & Groups Game Sheet, and explain that the students are going to play the game again today, this time in pairs.

2 Briefly review the rules of the game. Then have students pair up, and give each pair one copy of the Partner Loops & Groups Game Sheet and a spinner overlay to share.

3 When students understand what to do, give them the remainder of the time to play the game.

Circulate as they work to observe and assist as needed.

SUPPORT If you know that some of the students are likely to struggle playing the game on their own, you might invite a small group to play with you in a corner of the room while the rest of the class is engaged in pairs.

4 At the end of the activity, collect students' papers.

Plan to look these papers over at a later time, as they will give you some sense of how the students are doing with sketching equal groups and using multiplication as well as repeated addition equations to represent their sketches.

Day 19

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 4 – Completing the Multiplication Models Page		
Number Line	**Solving Problems**	**Assessment**

Activity 4

Completing the Multiplication Models Page

1 Explain to students that they're going to do an assignment in their Number Corner Student Book today, rather than meeting in the discussion area.

- Have students get out their books and pencils and find the two Multiplication Models pages as you place a copy of the first sheet on display.
- Give students a few moments to examine both pages quietly.

2 Review and explain the instructions on both pages to the class. When students understand what to do, give them the rest of the workout to complete the assignment.

- Circulate as students are working to observe and provide assistance as needed.
- As students finish the assignment, have them share and compare their answers with a classmate. Encourage them to work together to re-examine problems for which they got different answers, or consult with another classmate to resolve their differences.

SUPPORT Make colored tiles available to students who want to use them to help solve some of the problems.

SUPPORT If some of your students aren't able to complete the assignment within the time provided by Number Corner, give them additional time to finish their work over the next day or so.

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Day 20

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 4 – Making Predictions & Writing Equations		
Number Line	**Solving Problems**	**Assessment**

Activity 3

Making Predictions & Writing Equations

1 Ask students to each bring a whiteboard, pen, and eraser with them as they join you in the Number Corner area today.

You might organize these materials into several containers and place them in different locations close to the Number Corner area. As you call students a few at a time to leave their tables and join you, they can stop by one of the containers, gather their materials, and bring them along.

You will want to take a minute to establish protocols for handling these materials before starting the activity. For example, you might explain to students that you expect them to place the materials safely on the floor in front of them and leave them there, untouched, until you give further instructions.

2 Take a few minutes with the class to update the Calendar Grid Observations Chart up through the previous day.

Have students record an equation for each marker on their whiteboards as you do so on the Observations Chart.

3 Before your helper posts the new marker for today, ask students to share predictions, first in pairs, and then as a whole group.

By the time you conduct this activity, you'll be well into the month, and many students will be familiar with the models. At this point, you can start pressing for a little more detail from students. If the next marker will feature the array model, how might the squares
be arranged? If today's marker will show an example of the loops and groups model, can students predict how many loops there might be, and how many items in each loop?

CHALLENGE Ask students to show their predictions on their whiteboards, using numbers, labeled sketches, or words.

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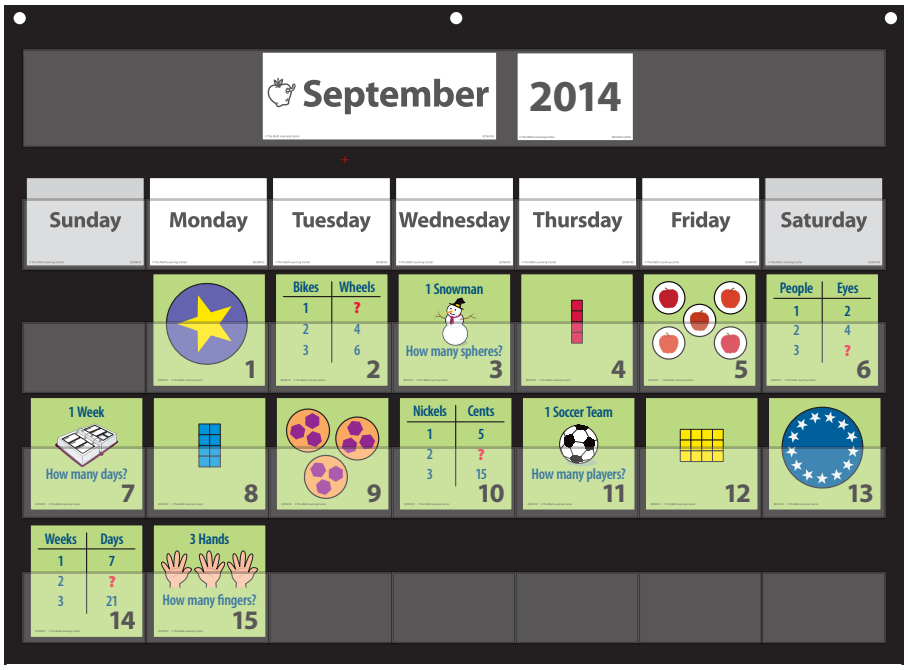


Kelsey *It has to be an array with 16 squares in it.*

Teacher *Thumbs up if you agree with Kelsey. I'm seeing lots of thumbs up. Who'd like to explain why they agree?*

Morgan *It has to be 16 because the number of things is always the same as the date. And it has to be an array because that's the pattern—loops, ratio table, picture, array.*

Teacher *Can anyone tell us more about the array we might see on today's marker?*

Students *It could be one long row of 16, but that wouldn't fit very well.*

It could be 2 rows of 8 because 8 and 8 make 16.

I don't think it's going to have 3 rows, because if you go by 3s, you don't land on 16.

It could be in 4s though, because 4, 8, 12, then 13, 14, 15, 16.

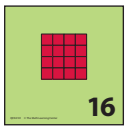
4 Have your helper post the marker and write the day's date on the whiteboard while the rest of the students examine the newly posted marker carefully and write one or more equations on their whiteboard to represent what they see.

By asking for one or more equations without stipulating that they involve multiplication, you'll give students an opportunity to connect what they know about repeated addition to multiplication. Also, some of the calendar markers present opportunities to respond creatively and flexibly. For example, Marker 19 shows 5 cars, 1 of which has a flat tire, and asks students to report the number of good tires. There are a number of different equations that might be used to represent this situation.

5 When they have had a minute or so to record their ideas, ask students to share their equations with a neighbor. Then invite volunteers to share their equations with the class.

- Record each suggestion on the whiteboard or a piece of chart paper posted near the Number Corner display area.
- After students run out of suggestions, work with their input to select one equation to record on the Observations Chart.

Here are examples of the types of equations students may generate for a couple of the markers that appear after the middle of the month.



4 + 4 + 4 + 4 = 16
4 x 4 = 16
2 + 2 + 2 + 2 + 8 = 16
2 x 8 = 16
(4 x 2) + 8 =16
16 x 1 = 16

4 + 4 + 4 + 4 + 3 = 19
(4 + 4 + 4 + 4 + 4) – 1 = 19
20 – 1 = 19
(5 x 4) – 1 = 19
(4 x 4) + 3 = 19

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