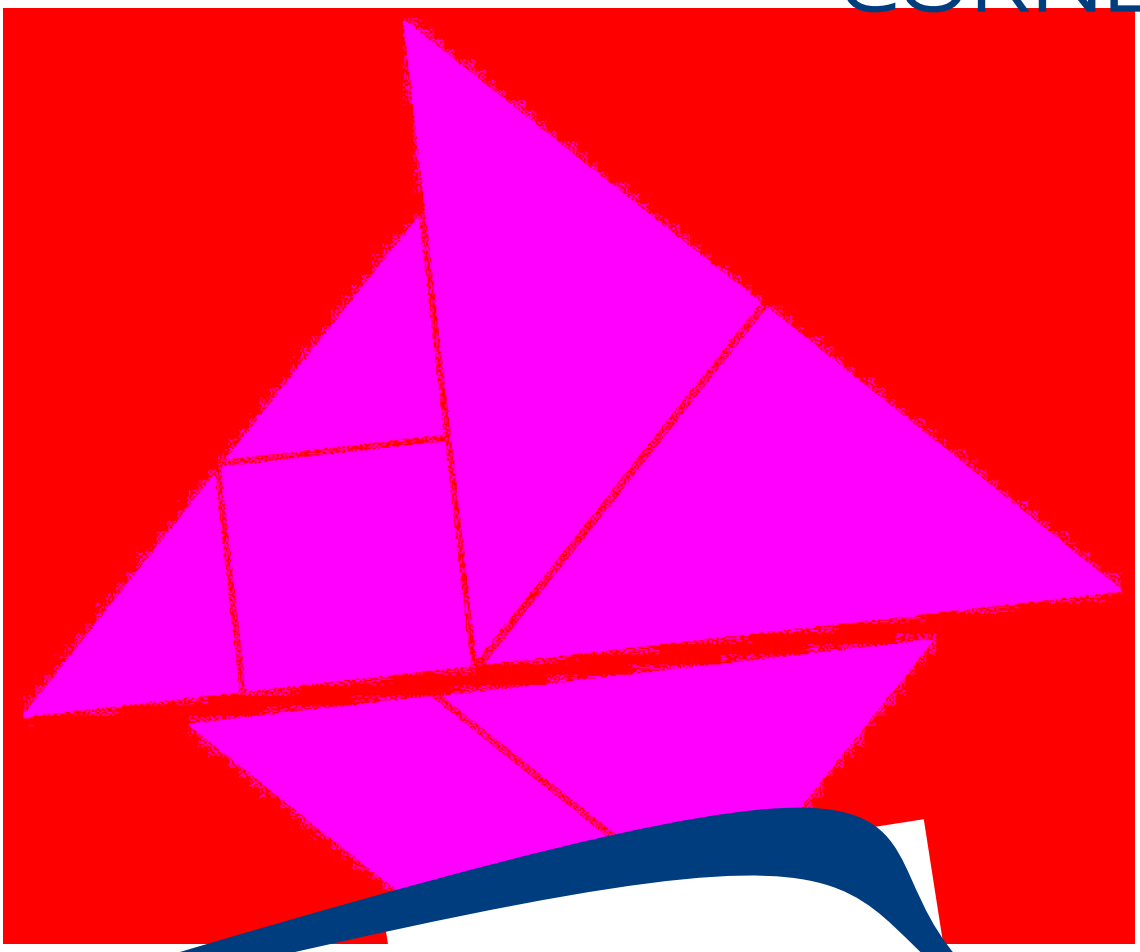
NUMBER® CORNER



SECOND EDITION

TEACHERS GUIDE

MARCH

GRADE 3

Published by The MATH LEARNING CENTER Salem, Oregon

Number Corner Second Edition Grade 3 Teachers Guide Volume 3

The Number Corner Grade 3 package consists of:

Number Corner Grade 3 Teachers Guide Volumes 1–3
Number Corner Grade 3 Teacher Masters
Number Corner Grade 3 Student Book
Number Corner Grade 3 Teacher Masters Answer Key
Number Corner Grade 3 Student Book Answer Key

Number Corner Grade 3 Components & Manipulatives

Assessment Guide:
- Number Corner Assessments
- Comprehensive Growth Assessment

Digital resources noted in italics.

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Bridges in Mathematics is a standards-based K–5 curriculum that provides a unique blend of concept development and skills practice in the context of problem solving. It incorporates Number Corner, a collection of daily skill-building activities for students.

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based professional development, curriculum, materials, and resources to support learning and teaching. To find out more, visit us at www.mathlearningcenter.org.

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Number Corner March

March Sample Display & Daily Planner

March Introduction 1

March Calendar Grid Time & Data Displays 5

Introducing the March Calendar Grid ..... Day 2 7
Introducing the March Observations Chart ..... Day 5 8
Setting the Time on Analog Clocks ..... Day 10 9
Answering Data Questions ..... Day 15 10
Data Story Problems ..... Day 20 11

March Calendar Collector Area & Perimeter of Rectilinear Figures 13

Introducing Square Feet ..... Day 3 15
Starting the Collection ..... Day 6 16
Examining the Collection & Individual Figures ..... Days 9, 16 19

March Computational Fluency Fact Fluency for Multiplying by Six & Nine 23

Multiples of Nine & Six ..... Days 1, 8 24
Scout Them Out ..... Day 14 25

March Number Line Find the Fraction 27

Playing Find the Fraction ..... Days 4, 7 28
Completing the Comparing Fractions Page ..... Day 12 30

March Solving Problems Area & Perimeter Puzzles 31

Perimeter Puzzles ..... Day 11 32
Same Perimeter, Different Area ..... Day 13 34
Area Story Problems ..... Day 18 36

March Assessment Number Corner Checkup 3 39

Completing Pages 1–3 ..... Day 17 40
Completing Pages 4–6 ..... Day 19 41

Teacher Masters

Pages renumber each month.

Grid Paper T1
Tens Minus One Set Facts T2
Half-Tens Plus One Set Facts T3
Find the Fraction 1 ..... T4
Find the Fraction 2 ..... T5
Number Corner Checkup 3 ..... T6

Number Corner Student Book Pages

Page numbers correspond to those in the consumable books.

Data Story Problems 42
Grid 43
Multiplying by Nine 45
Multiplying by Six 46
Scout Them Out (6, 9) 47
Find the Fraction, Number Line 1 48
Find the Fraction, Number Line 2 49
Comparing Fractions 50
Perimeter Puzzles 51
Same Perimeter, Different Area 52
Freddy's Community Center 53

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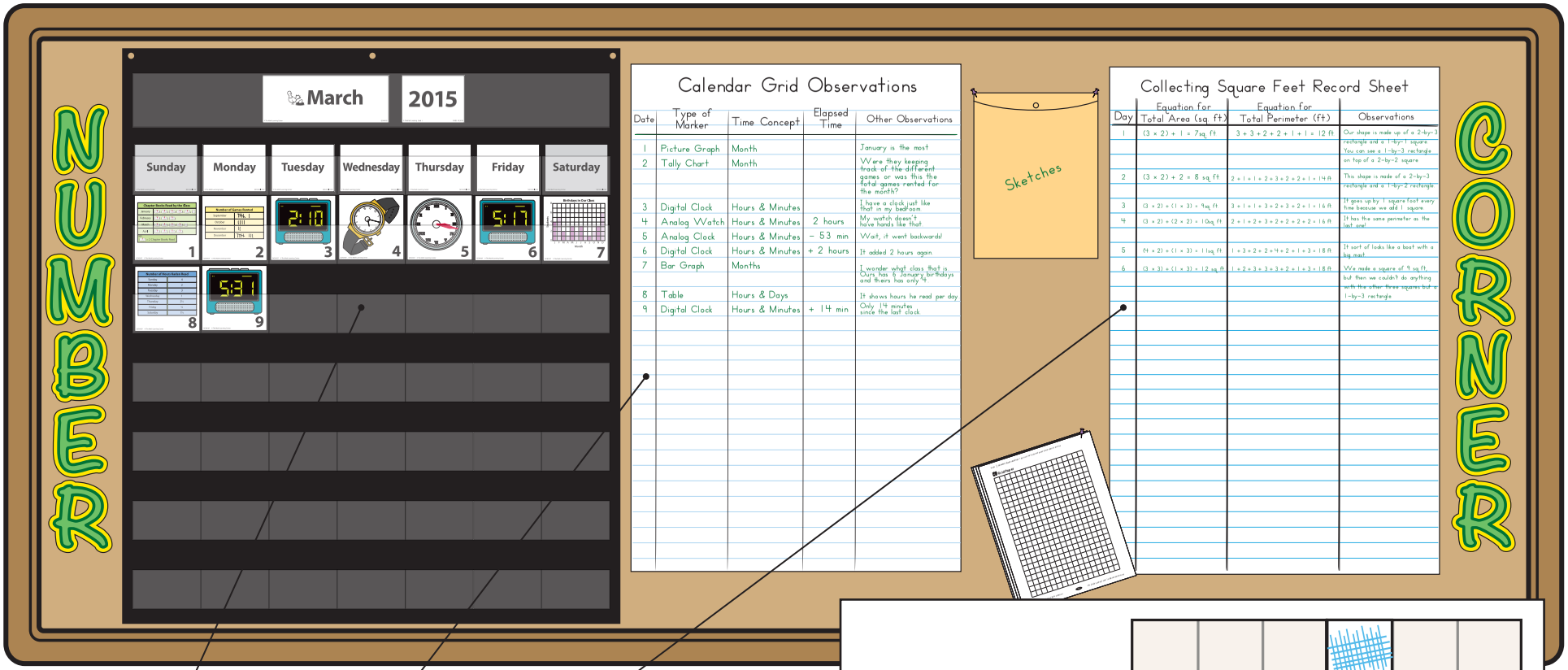
March Sample Display

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 of this month and year.

Calendar Grid Observations Chart

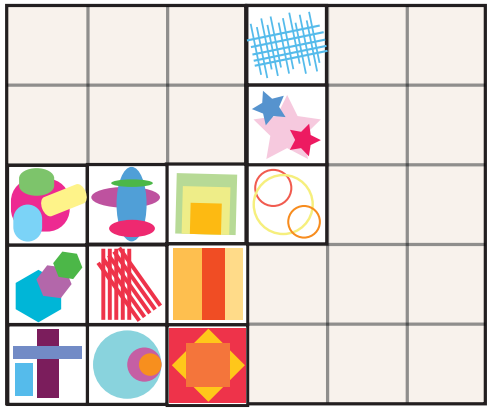
You might use 24″ × 36″ chart paper. If you laminated a sheet in previous months, you can erase and reuse it now.

Calendar Collector Record Sheet & Grid Sketches

Keep copies of the Grid Teacher Master and markers or colored pencils nearby, and post a large envelope near the record sheet. Students will sketch their arrangements and store the sketches in the envelope during each update.

Calendar Collector Square Feet Collection

This 5′ by 6′ display may need to be posted on a wall near your Number Corner area. With each Calendar Collector update, another decorated paper square foot will be added to the display.



Collection display not shown to scale

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☑ March Daily Planner

Day	Date	Calendar Grid	Calendar Collector	Computational Fluency	Number Line	Solving Problems	Assessment
1				**Activity 1** Multiples of Nine & Six (p. 24)			
2		**Activity 1** Introducing the March Calendar Grid (p. 7)					
3		*Update*	**Activity 1** Introducing Square Feet (p. 15)				
4		*Update*	*Update*		**Activity 1** Playing Find the Fraction (p. 28)		
5		**Activity 2** Introducing the March Observations Chart (p. 8)	*Update*				
6		*Update*	**Activity 2** Starting the Collection (p. 16)				
7		*Update*	*Update*		**Activity 1** Playing Find the Fraction (p. 28)		
8		*Update*	*Update*	**Activity 1** Multiples of Nine & Six (p. 24)			
9		*Update*	**Activity 3** Examining the Collection & Individual Figures (p. 19)				
10		**Activity 3** Setting the Time on Analog Clocks (p. 9)	*Update*				
11		*Update*	*Update*			**Activity 1** Perimeter Puzzles (p. 32)	
12		*Update*	*Update*		**Actiivty 2** Completing the Comparing Fractions Page (p. 30)		
13		*Update*	*Update*			**Activity 2** Same Perimeter, Different Area (p. 34)	
14		*Update*	*Update*	**Activity 3** Scout Them Out (p. 25)			
15		**Activity 4** Answering Data Questions (o. 10)	*Update*				
16		*Update*	**Activity 3** Examining the Collection & Individual Figures (p. 19)				
17		*Update*	*Update*				Number Corner Checkup 3, Part 1 (p. 40)
18		*Update*	*Update*			**Activity 3** Area Story Problems (p. 36)	
19		*Update*	*Update*				Number Corner Checkup 3, Part 2 (p. 41)
20		**Activity 5** Data Story Problems (p. 11)	*Update*				

Note *Calendar Grid and Calendar Collector are updated by student helpers, except when the workout is the subject of an activity. Computational Fluency, Number Line, and Solving Problems do not have updates. Update routines are explained in detail in the workout text. Summaries of the update routines appear below.*

Calendar Grid – Post one or more calendar markers so that the Calendar Grid is complete up to the current date. After the Observations Chart is posted, update the chart as well.
Calendar Collector – Draw the number of squares that corresponds to the number of days of school so far in March. Arrange the squares in a rectangle and then record the day of school, the dimensions of the figure formed, perimeter, area, and any observations on the Record Sheet. Note that updating does not begin until after Activity 2.

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Number Corner
March

Overview

This month provides engaging challenges and activities as students deepen their understanding of time and data; measurement, area, and perimeter; multiplication facts; and fractions, mixed numbers, and improper fractions. Many activities review and extend proficiency with skills and concepts while others introduce new ones. The Calendar Collector and Solving Problems areas target many of the same skills and concepts through different presentations and activities. Toward the end of the month, students spend two days taking the Number Corner Checkup 3.

Activities

Workouts	Day	Activities	D	G	SB
Calendar Grid Time & Data Displays This month's markers feature a repeating pattern of clocks and data displays, including tables and graphs. Students tell time to the minute on both analog and digital clock faces, calculate elapsed time, and consider the longer spans of time over which a variety of kinds of data have been collected and then displayed. They also answer story problems about that data.	2	**1** Introducing the March Calendar Grid	●		
	5	**2** Introducing the March Observations Chart	●		
	10	**3** Setting the Time on Analog Clocks	●		
	15	**4** Answering Data Questions	●		
	20	**5** Data Story Problems	●		●
Calendar Collector Area & Perimeter of Rectilinear Figures Students add 1 square foot to the collection for each day of school. They create a rectilinear figure with the square feet, find its area and perimeter, and create a drawing that shows the figure on grid paper. The class collects these drawings in an envelope. Later in the month, the teacher takes a drawing from the envelope, identifies the dimensions of the rectangles that make up the figure, and tells students the perimeter of the figure. Then students try to recreate the figure with tiles. They also use that same number of tiles to build as many different rectangles as they can and compare their perimeters.	3	**1** Introducing Square Feet	●		
	6	**2** Starting the Collection	●		
	9, 16	**3** Examining the Collection & Individual Figures			
Computational Fluency Fact Fluency for Multiplying by Six & Nine Students review how to multiply by 6 and 9. They use the multiplication table to consider patterns among these multiplication facts and complete Scout Them Out activities, as they did last month, for practice.	1,8	**1** Multiples of Nine & Six	●		●
	14	**3** Scout Them Out	●		●
Number Line Find the Fraction Students once again play the game Find the Fraction. The game helps them use the number line to represent and compare fractions, including improper fractions, mixed numbers, and fractions that are equal to whole numbers.	4, 7	**1** Playing Find the Fraction	●		
	12	**2** Completing the Comparing Fractions Page	●		●
Solving Problems Area & Perimeter Puzzles This month's problems support and extend the work with area and perimeter in the Calendar Collector. Students find the perimeter and area of figures with known side lengths, and find the missing side lengths when given the perimeter and area.	11	**1** Perimeter Puzzles	●		●
	13	**2** Same Perimeter, Different Area	●		●
	18	**3** Area Story Problems	●		●
Assessment Number Corner Checkup 3 During the last week of the month, the teacher administers a two-day written assessment to the entire class. This checkup is designed to help teachers learn more about students' current understandings and skills in the areas of multiplication concepts, the relationship between multiplication and division, fractions, time, area, and perimeter.	17	**Number Corner Checkup 3, Part 1** Completing Pages 1–3			
	19	**Number Corner Checkup 3, Part 2** Completing Pages 4–7			

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

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Teaching Tips

- Review students' work on the January Assessment (Number Corner Checkup 2). Look for opportunities to help students with areas of challenge.
- Compare students' results on Checkup 2 and Checkup 3 to gauge progress and identify areas of challenge. You may want to share important observations with families, other educators, or any other relevant people.
- Continue to use discussion, Number Corner Student Book pages, and games as opportunities for informal assessment.
- Think about pairing students in different ways to maximize learning experiences.

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**
3.OA.5 Multiply using the commutative property			●		
3.OA.5 Multiply using the distributive property			●		
3.OA.6 Solve division problems by finding an unknown factor (e.g., solve 32 ÷ 8 by finding the number that makes 32 when multiplied by 8)			●		
3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations.			●		
3.OA.9 Identify patterns among basic multiplication facts			●		
3.OA.9 Identify patterns in the multiplication table			●		
3.OA.9 Explain patterns among basic multiplication facts by referring to properties of the operation			●		
3.NF.2 Locate fractions on a number line				●	
3.NF.2 Place fractions in their correct positions on a number line				●	
3.NF.2a Show a unit fraction 1/b on a number line by defining the interval from 0 to 1 as the whole and then partitioning it into b equal parts				●	
3.NF.3c Write a whole number as a fraction				●	
3.NF.3c Recognize fractions that are equivalent to whole numbers				●	
3.NF.3d Compare two fractions with the same numerator or the same denominator by reasoning about their size				●	
3.NF.3d Demonstrate that fractions can only be compared when they refer to the same whole				●	
3.NF.3d Use the symbols >, =, and < to record comparisons of two fractions				●	
3.NF.3d Explain why one fraction must be greater than or less than another fraction				●	
3.MD.1 Tell and write time to the nearest minute and measure time intervals in minutes	●				
3.MD.1 Solve story problems involving addition and subtraction of time intervals in minutes	●				
3.MD.3 Solve one and two-step comparison problems using data shown on a scaled bar graph with several categories	●				
3.MD.5a Demonstrate an understanding that unit squares can be used to measure the areas of other plane figures		●			
3.MD.5b Demonstrate an understanding that a plane figure that can be covered without gaps or overlaps by *n* unit squares has an area of *n* square units		●			
3.MD.6 Measure the area of a plane figure by counting the number of square inches, feet, or units that cover it, with no gaps or overlaps		●			
3.MD.7a Demonstrate that the area of a rectangle with whole-number side lengths can be found by multiplying the side lengths		●			

Major Skills/Concepts Addressed	CG	CC	CF	NL	SP
3.MD.7b Find the area of a rectangle by multiplying its side lengths		●			
3.MD.7b Represent the product of two numbers as the area of a rectangle with side lengths equal to those two numbers		●			
3.MD.7b Solve story problems involving finding the area of a rectangle					●
3.MD.7c Use the area model for multiplication to illustrate the distributive property (e.g., the area of a rectangle with side lengths a and $b + c$ is equal to $a \times (b + c)$ or $a \times b + a \times c$)		●			
3.MD.7d Find the area of a figure that can be decomposed into nonoverlapping rectangles		●			
3.MD.7d Solve story problems that call for finding the area of a figure that can be decomposed into non-overlapping rectangles					●
3.MD.8 Find the perimeter of a polygon, given its side lengths		●			
3.MD.8 Find an unknown side length of a polygon, given its perimeter and other side lengths					●
3.MD.8 Create rectangles with the same area but different perimeters		●			●
3.MD.8 Solve story problems that involve finding the perimeter of a polygon, given its side lengths					●
3.MD.8 Solve story problems that involve finding an unknown side length of a polygon, given its perimeter and other side lengths					●
3.MD.8 Solve story problems that involve creating rectangles with the same perimeter but different areas					●
3.MD.8 Solve story problems that involve creating rectangles with the same area but different perimeters					●
3.MP.1 Make sense of problems and persevere in solving them					●
3.MP.2 Reason abstractly and quantitatively			●		
3.MP.3 Construct viable arguments and critique the reasoning of others					●
3.MP.4 Model with mathematics				●	
3.MP.5 Use appropriate tools strategically			●		
3.MP.6 Attend to precision		●			
3.MP.7 Look for and make use of structure	●			●	
3.MP.8 Look for and express regularity in repeated reasoning	●	●			

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

Assessments

Number Corner Checkup 3 is given over two days. Students begin working on the assessment on Day 17 and finish it on Day 19, taking a break to do a Solving Problems activity in the middle. The assessment begins with a timed minute of multiplication facts. Once this portion is finished, students can move at their own pace and work through the assessment in any order. Students can also be given additional time if the time allotted in two Number Corner days is not enough.

This assessment gives teachers an opportunity to gauge students' proficiency with some of skills that have been most heavily addressed in February and March: multiplication concepts; fractions, including comparing fractions, equivalent fractions, identifying fractions on a number line, and recognizing fractions as whole numbers; measurement, including time, area and perimeter, and bar graphs. Students also solve multi-step story problems.

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.

Materials		**Done**
Copies	Run copies of Teacher Masters T1–T11 according to the instructions at the top of each master.	
	If students do not have their own Number Corner Student Books, run a class set of pages 42–53.	
	Run a single display copy of Number Corner Student Book pages 43, 45–47, and 51–53.	
Charts	Prepare this month's Observations Chart according to Preparation instructions in the Calendar Grid workout.	
	Prepare this month's Record Sheet according to Preparation instructions in the Calendar Collector workout.	
Special Items	Before Calendar Collector Activity 1, follow Preparation instructions in the workout to cut a class set of 12″ × 12″ construction paper squares and to create a 5′ × 6′ butcher paper grid.	

March Calendar Grid

Time & Data Displays

Overview

This month's markers feature a repeating pattern of clocks and data displays, including tables and graphs. Students tell time to the minute on both analog and digital clock faces, calculate elapsed time, and consider the longer spans of time over which a variety of kinds of data have been collected and then displayed. They also answer story problems about that data.

Skills & Concepts

- Tell and write time to the nearest minute and measure time intervals in minutes (3.MD.1)
- Solve story problems involving addition and subtraction of time intervals in minutes (3.MD.1)
- Solve one- and two-step comparison problems using data shown on a scaled bar graph with several categories (3.MD.3)
- Look for and express regularity in repeated reasoning (3.MP.8)
- Look for and make use of structure (3.MP.7)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Introducing the March Calendar Grid	2		Used in all Calendar Grid activities: • Calendar Grid pocket chart • Day, Month, and Year markers • Calendar Markers	• Calendar Grid Observations Chart (see Preparation) • erasable markers
Activity 2 Introducing the March Observations Chart	5			
Activity 3 Setting the Time on Analog Clocks	10		• student clocks, class set	
Activity 4 Answering Data Questions	15			
Activity 5 Data Story Problems	20	**NCSB 42** Data Story Problems		

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

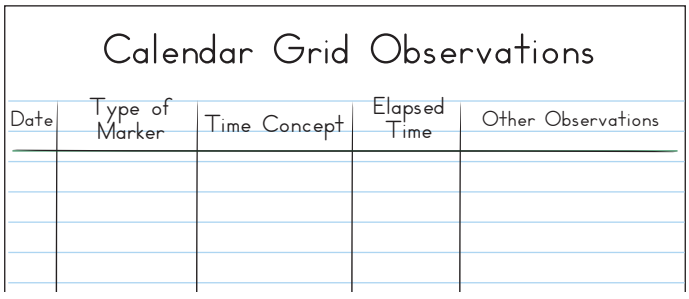
Vocabulary

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

a.m.
analog
bar graph*
chart
data display
digital
elapsed time*
hour (hr.)
minute (min.)
p.m.
picture graph*
second (sec.)
table*

Preparation

Erase the Calendar Grid Observations Chart from February. Label five columns at the top of the first sheet as shown below for use with this month's markers. Use an erasable marker to record students' observations so that you can re-use the chart each month. Post the chart before Activity 2.



You'll extend the chart midway through the month using the second sheet of chart paper.

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Enlarging Calendar Markers for Viewing

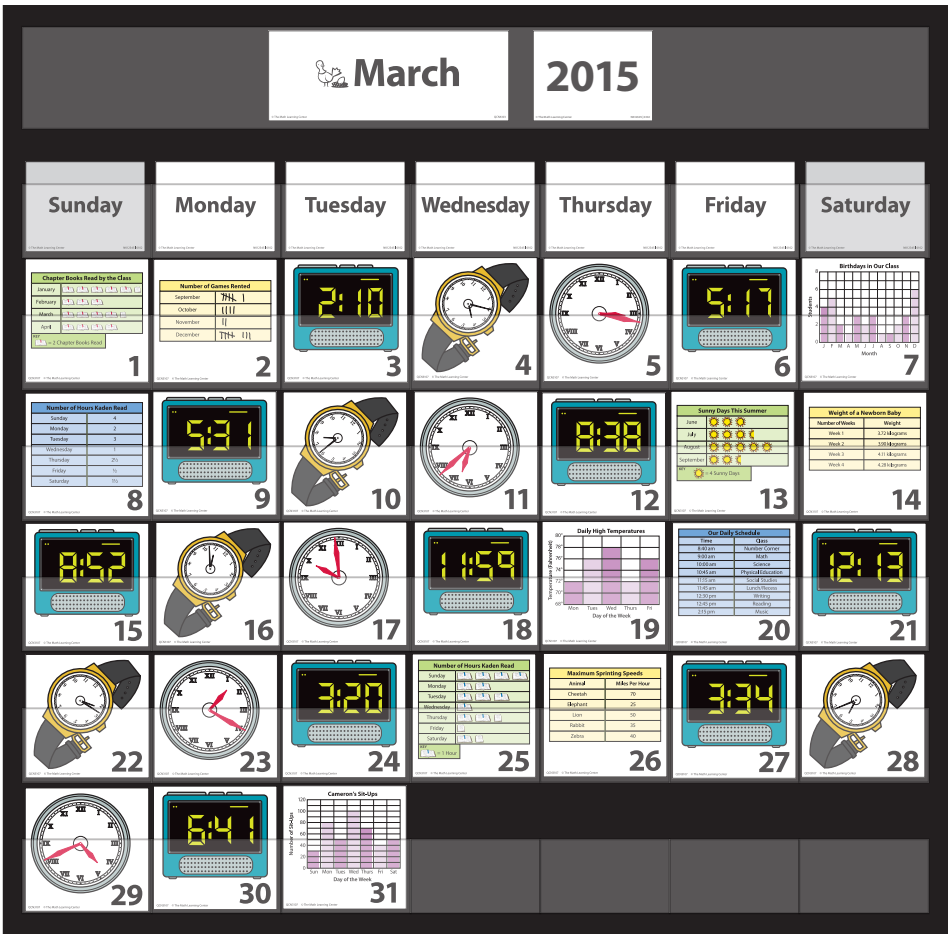
During activities 1 and 4, students will need to be able to read graphs on this month's calendar markers. You can display the markers using a document camera or projector, or make a half-class set of copies of markers 1, 2, 13 and 19 for students to use during these activities.

Mathematical Background

This month's calendar markers feature digital and analog clocks, as well as a variety of data displays (graphs, charts, etc.) that represent data collected over different periods of time, including weeks and months. Students practice telling time to the minute, calculating elapsed time (the amount of time that passes between one point in time and another), and interpreting the data on the charts and graphs. They answer a variety of questions that involve comparing different pieces of data on a given chart or graph.

About the Pattern

The markers this month alternate between those with pictures of a variety of digital and analog timepieces and those that display data focused around a theme of time. Two markers display data, and then four markers show time on analog and digital time pieces in a predictable pattern. There is also a predictable growing pattern for the times displayed. The first timepiece shows a time, for example 2:10, and the next piece shows the time 2 hours later. The first time is shown digitally and the second time is shown on an analog clock. This supports students in making connections between digital and analog time. The third timepiece shows a time that is 53 minutes earlier than the second one and then the fourth timepiece is, again, 2 hours later than the third. While clocks come in groups of 4, students can also notice that the first clock of the next series of clocks is 14 minutes later than the last clock. The times shown give students practice predicting what time comes next and telling time to the minute. For the data displays, the markers go back and forth between graphs (picture graphs and bar graphs) and tables.



Key Questions

Use the following questions to guide students' discussion this month:

- What time is it right now? Is it a.m. or p.m.?
- What would 5:12 look like on a digital clock? An analog clock? How about 3:47?
- How many minutes (or hours and minutes) have passed between the time on this clock and the time on the next clock?
- If the pattern of the markers were to continue, what would the next two markers have on them?
- What does the key on this graph tell you?

Literature Connections

You might use the following books as read-alouds this month.

Pigs on the Move
by Amy Axelrod

It's About Time
by Stuart Murphy

The Great Graph Contest
by Loreen Leedy

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Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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March

Date	Type of Marker	Time Concept	Elapsed Time	Other Observations
1	picture graph	month		Add observations from students.
2	table chart	month		
3	digital clock	hours & minutes		
4	analog watch	hours & minutes	plus 2 hours	
5	analog clock	hours & minutes	minus 53 minutes	
6	digital clock	hours & minutes	plus 2 hours	
7	bar graph	month		
8	table chart	week		
9	digital clock	hours & minutes	plus 14 minutes	
10	analog watch	hours & minutes	plus 2 hours	
11	analog clock	hours & minutes	minus 53 minutes	
12	digital clock	hours & minutes	plus 2 hours	
13	picture graph	month		
14	table chart	week		
15	digital clock	hours & minutes	plus 14 minutes	
16	analog watch	hours & minutes	plus 2 hours	
17	analog clock	hours & minutes	minus 53 minutes	
18	digital clock	hours & minutes	plus 2 hours	
19	bar graph	days & week		
20	table chart	hours		
21	digital clock	hours & minutes	plus 14 minutes	
22	analog watch	hours & minutes	plus 2 hours	
23	analog clock	hours & minutes	minus 53 minutes	
24	digital clock	hours & minutes	plus 2 hours	
25	picture graph	week		
26	table chart	hour		
27	digital clock	hours & minutes	plus 14 minutes	
28	analog watch	hours & minutes	plus 2 hours	
29	analog clock	hours & minutes	minus 53 minutes	
30	digital clock	hours & minutes	plus 2 hours	
31	bar graph	days		

About the Pattern

The markers this month alternate between those with pictures of a variety of digital and analog timepieces and those that display data focused around a theme of time. Two markers display data, and then four markers show time on analog and digital time pieces in a predictable pattern. There is also a predictable growing pattern for the times displayed. The first timepiece shows a time, for example 2:10, and the next piece shows the time 2 hours later. The first time is shown digitally and the second time is shown on an analog clock. This supports students in making connections between digital and analog time. The third timepiece shows a time that is 53 minutes earlier than the second one and then the fourth timepiece is, again, 2 hours later than the third. While clocks come in groups of 4, students can also notice that the first clock of the next series of clocks is 14 minutes later than the last clock. The times shown give students practice predicting what time comes next and telling time to the minute. For the data displays, the markers go back and forth between graphs (picture graphs and bar graphs) and tables.

Notes:

CALENDAR GRID OBSERVATIONS

DATE	TYPE OF MARKER	TIME CONCEPT	ELAPSED TIME	OTHER OBSERVATIONS

March Calendar Collector

Area & Perimeter of Rectilinear Figures

Overview

Students start the month by decorating their own square foot of paper. Then they begin the collection by arranging some of those square feet on a grid. After that, student helpers add 1 square foot to the collection for each day of school. They create a rectilinear figure with the square feet, find its area and perimeter, and create a drawing that shows the figure on grid paper. The class collects these drawings in an envelope. Later in the month, the teacher takes a drawing from the envelope, identifies the dimensions of the rectangles that make up the figure, and tells students the perimeter of the figure. Then students try to recreate the figure with tiles. They also use that same number of tiles to build as many different rectangles as they can and compare their perimeters.

Skills & Concepts

- Demonstrate an understanding that unit squares can be used to measure the areas of other plane figures (3.MD.5a)
- Demonstrate an understanding that a plane figure that can be covered without gaps or overlaps by *n* unit squares has an area of *n* square units (3.MD.5b)
- Measure the area of a plane figure by counting the number of square inches, feet, or units that cover it, with no gaps or overlaps (3.MD.6)
- Demonstrate that the area of a rectangle with whole-number side lengths can be found by multiplying the side lengths (3.MD.7a)
- Use the area model for multiplication to illustrate the distributive property (e.g., the area of a rectangle with side lengths a and $b + c$ is equal to $a \times (b + c)$ or $a \times b + a \times c$) (3.MD.7c)
- Attend to precision (3.MP.6)
- Look for and express regularity in repeated reasoning (3.MP.8)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Introducing Square Feet	3			• sheets of 12″ × 18″ construction paper, plus some extra (see Preparation) • 36″ butcher paper, 2 piece cut to 5 feet (see Preparation) • yardstick • markers • Calendar Collector Record Sheet and extra chart paper (see Preparation)
Activity 2 Starting the Collection	6	**TM T1** Grid Paper		• tape • 9″ × 12″ envelope to store students' sketches
Activity 3 Examining the Collection & Individual Figures	9, 16	**NCSB 43*–44** Grid	• colored tiles (up to 20 per student)	

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

** Run 1 copy of this page for display.*

Vocabulary

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

area*
dimension*
factor*
perimeter*
product*
rectangle*
rectilinear
square*
square unit*

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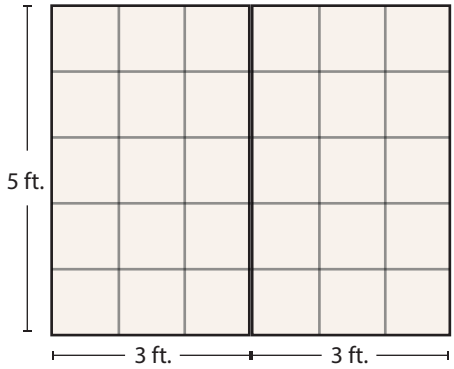
Preparation

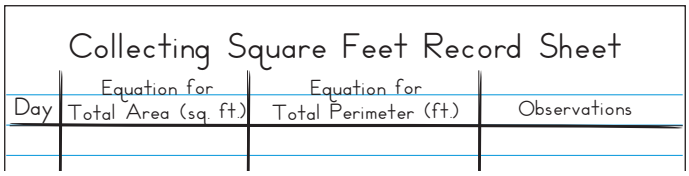
All of these instructions are based upon students using square feet. It is valuable for students to develop familiarity with this widely used unit of measure: the sizes of buildings and homes, for example, are reported in square feet. If the resulting collection would be too large to display in your classroom, you can adapt the workout using smaller squares (6 inches on all sides, for example). If you do, it will probably make the best sense to talk about linear units and square units (rather than having students calculate area and perimeter in terms of inches and square inches, which will be quite cumbersome and will most likely detract from the mathematical focus this month).

Cut a class set, plus a few extra, of 12″ × 18″ sheets of construction paper into 12″ × 12″ squares.

Cut two 5-foot long pieces of 36″ butcher paper. Post them side-by-side on or near your Number Corner display to create a 5-foot high and 6-foot wide rectangle. Use a yardstick to draw a square-foot grid on the paper, using a black marker to make it visible from a distance.



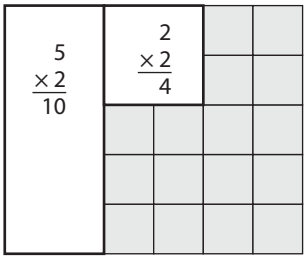
Erase the Calendar Collector Record Sheet from February. Redraw the lines to create 4 columns. Label the columns at the top of the first sheet as shown. You'll need to extend the chart midway through the month using a second sheet of chart paper.



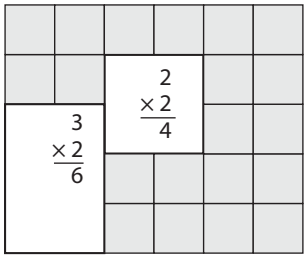
Beside the record sheet and butcher paper grid, post an empty 9″ × 12″ envelope and a few pages of Grid Paper cut into quarter sheets.

Mathematical Background

Students extend their emerging understandings about area, perimeter, and multiplication as they build and examine this month's collection. By working with rectangles and multiplication earlier this year, third graders have begun to understand that the area of a rectangle can be calculated by multiplying its side lengths. In this collection, students build figures out of rectangles. Such figures are called rectilinear figures. Students can calculate the total area of these figures by finding the area of each rectangle and then adding them, as shown here.



10 sq. ft. + 4 sq. ft. = 14 sq. ft.



6 sq. ft. + 4 sq. ft. = 10 sq. ft.

Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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COLLECTING SQUARE FEET

RECORD SHEET

DAY	EQUATION FOR TOTAL AREA (SQ. FT.)	EQUATION FOR TOTAL PERIMETER (FT.)	OBSERVATIONS

March Computational Fluency

Fact Fluency for Multiplying by Six & Nine

Overview

Students review how to multiply by 6 and 9. They use the multiplication table to consider patterns among these multiplication facts and complete Scout Them Out activities, as they did last month, for practice.

Skills & Concepts

- Multiply using the commutative and distributive properties (3.OA.5)
- Solve division problems by finding an unknown factor (e.g., solve 32 ÷ 8 by finding the number that makes 32 when multiplied by 8) (3.OA.6)
- Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. (3.OA.7)
- Identify patterns among basic multiplication facts (3.OA.9)
- Identify patterns in the multiplication table (3.OA.9)
- Explain patterns among basic multiplication facts by referring to properties of the operation (3.OA.9)
- Reason abstractly and quantitatively (3.MP.2)
- Use appropriate tools strategically (3.MP.5)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Multiples of Nine & Six	1, 8	**TM T2** Tens Minus One Set Facts **TM T3** Half-Tens Plus One Set Facts **NCSB 20** Multiplication Table (from December–February) **NCSB 45*** Multiplying by Nine **NCSB 46*** Multiplying by Six		• purple and turquoise colored pencils, 1 of each color for each student
Activity 2 Scout Them Out	14	**NCSB 20** Multiplication Table (from December–February) **NCSB 47*** Scout Them Out (6, 9)		• blue and red crayons or colored pencils, 1 of each color for each student

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

** Run 1 copy of this page for display.*

Vocabulary

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

divide*
equal*
equation*
factor*
multiple*
multiply*
pattern*
product*
skip-count
strategy

Mathematical Background

This month, students focus on multiplying by 9 and 6, using strategies that start with what students know about multiplying by 10, as shown in this table.

Fact Category		Description	Example
x 6	Half-Tens Plus One Set	Multiply by 10, cut in half, and add one set.	$8 \times 6 = 8 \times ((10 \div 2) + 1) = (8 \times 5) + 8 = 40 + 8 = 48$
x 9	Tens Minus One Set	Multiply by 10 and subtract one set.	$8 \times 9 = 8 \times (10 - 1) = (8 \times 10) - (8 \times 1) = 80 - 8 = 72$

Describing a strategy that can be used to multiply by a given number by any other number helps students develop computational fluency with their basic facts and beyond.

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March Number Line

Find the Fraction

Overview

Students once again play the game Find the Fraction. The game helps them use the number line to represent and compare fractions, including improper fractions, mixed numbers, and fractions that are equal to whole numbers. In the last activity of the month, students complete a Student Book page independently to practice these skills.

Skills & Concepts

- Locate fractions on a number line (3.NF.2)
- Place fractions in their correct positions on a number line (3.NF.2)
- Show a unit fraction 1/*b* on a number line by defining the interval from 0 to 1 as the whole and then partitioning it into *b* equal parts (3.NF.2a)
- Write a whole number as a fraction (3.NF.3c)
- Recognize fractions that are equivalent to whole numbers (3.NF.3c)
- Compare two fractions with the same numerator or the same denominator by reasoning about their size (3.NF.3d)
- Demonstrate that fractions can only be compared when they refer to the same whole (3.NF.3d)
- Use the symbols >, =, and < to record comparisons of two fractions (3.NF.3d)
- Explain why one fraction must be greater than or less than another fraction (3.NF.3d)
- 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 Playing Find the Fraction	4, 7	**TM T4** Find the Fraction 1 **NCSB 48** Find the Fraction Number Line 1 **TM T5** Find the Fraction 2 **NCSB 49** Find the Fraction Number Line 2		
Activity 2 Completing the Comparing Fractions Page	12	**NCSB 50** Comparing Fractions		

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.

benchmark
denominator*
fraction*
greater than
improper fraction*
less than
mixed number*
model
numerator*
part
partition*
whole

Mathematical Background

Working with fractions represented on a number line helps students understand that fractions are numbers. By using the number line to represent and compare fractions, they learn that every fraction describes a specific value or location on the number line, and that looking at the denominator will help them determine how many sections to partition a segment of the number line into. They also review that two or more numbers that name the same amount are equivalent and therefore represent the same point on a number line. All of this work on the number line helps students understand that fractions are numbers, not just partial pieces of something.

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March Solving Problems

Area & Perimeter Puzzles

Overview

This month's problems support and extend the work students have been doing with area and perimeter in the March Calendar Collector. In addition to finding the perimeter and area of figures with known side lengths, students find the missing side lengths when given the perimeter and area of a figure.

Skills & Concepts

- Solve story problems involving finding the area of a rectangle (3.MD.7b)
- Solve story problems that call for finding the area of a figure that can be decomposed into non-overlapping rectangles (3.MD.7d)
- Find an unknown side length of a polygon, given its perimeter and other side lengths (3.MD.8)
- Create rectangles with the same perimeter but different areas (3.MD.8)
- Solve story problems that involve finding the perimeter of a polygon, given its side lengths (3.MD.8)
- Solve story problems that involve finding an unknown side length of a polygon, given its perimeter and other side lengths (3.MD.8)
- Solve story problems that involve creating rectangles with the same perimeter but different areas or with the same area but different perimeters (3.MD.8)
- Make sense of problems and persevere in solving them (3.MP.1)
- Construct viable arguments and critique the reasoning of others (3.MP.3)

Materials

Activities	Day	Copies	Kit Materials	Classroom Materials
Activity 1 Perimeter Puzzles	11	**NCSB 51*** Perimeter Puzzles		
Activity 2 Same Perimeter, Different Area	13	**NCSB 52*** Same Perimeter, Different Area	• colored tiles, at least 30 per student	
Activity 3 Area Story Problems	18	**NCSB 53*** Freddy's Community Center	• colored tiles, at least 20 per student	

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.

area*
dimension*
perimeter*
polygon*
rectangle*
rectilinear
square*

Preparation

Students will work in pairs this month. Consider assigning partners based on students' strengths, needs, and working styles.

These problems relate directly to the work in this month's Calendar Collector. Use your observations about students' understanding of the Calendar Collector challenges to help guide and support your instruction in this workout.

Mathematical Background

Solving context-based problems is some of the most important work students do in third grade math. Considering authentic situations not only helps develop problem-solving skills, it also helps students find, realize, and discover math in their day to day lives. This workout takes many of the skills and concepts explored in this month's Calendar Collector and applies them to problem-solving situations. Students need to be able to identify what problems are asking and how to solve them. This month, students often solve a "bare numbers" problem immediately before solving a context-based problem that requires the same mathematics as the first problem. This helps them make connections between the two types of problems.

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The context this month focuses on perimeter and area as attributes of two-dimensional regions. Students use a variety of strategies to find perimeter and area of regular and non-regular polygons. They construct rectangles with the same perimeter but different area and rectangles with the same area but different perimeter. They also solve puzzles such as identifying an unknown side length based on the other known side lengths and total perimeter. Students continue exploring rectilinear figures (figures that have all right angles). They find the area of these figures by decomposing them into smaller rectangles. For every problem, students are asked to communicate clearly, justify their thinking, make connections, and reflect on and critique the work of others.

Key Questions

Use the following questions to guide students' discussion this month:

- Can you make rectangles with the same area but different perimeters?
- Can you make rectangles with the same perimeter but different areas?
- Can you generalize how you solved this problem so you could use the same ideas to solve a similar problem?
- How can you find the area of a rectilinear figure?
- If you know the perimeter of a polygon and all the sides but one, can you find the length of the unknown side?

March
A

March Assessment
Number Corner Checkup 3

Overview

During the last week of the month, 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 two days later. Number Corner Checkup 3 is designed to help teachers ascertain students' current understandings and skills in the areas of multiplication and division facts, fractions, time, area, and perimeter.

Skills & Concepts

- Solve for the unknown in a multiplication or division equation involving 3 whole numbers (3.OA.4)
- Fluently multiply with products to 100 using strategies; recall from memory all products of two 1-digit numbers (3.OA.7)
- Demonstrate an understanding of a unit fraction 1/*b* as 1 of *b* equal parts into which a whole has been partitioned (3.NF.1)
- Show a fraction *a/b* on a number line by marking off, starting at 0, *a* lengths of 1/*b* each and labeling the resulting interval *a/b* (3.NF.2b)
- Identify equivalent fractions by comparing their sizes or locations on a number line (3.NF.3a)
- Recognize simple equivalent fractions; explain why two fractions must be equivalent (3.NF.3b)
- Write a whole number as a fraction; recognize fractions that are equivalent to whole numbers (3.NF.3c)
- Compare two fractions with the same numerator or the same denominator; use the symbols >, =, and < to record the comparisons; explain why one fraction must be greater than or less than another fraction (3.NF.3d)
- Tell and write time to the nearest minute; measure time intervals in minutes, and solve related story problems (3.MD.1)
- Solve two-step comparison problems using data shown on a scaled bar graph with several categories (3.MD.3)
- Demonstrate an understanding that unit squares can be used to measure the areas of other plane figures (3.MD.5a)
- Demonstrate an understanding that a plane figure that can be covered without gaps or overlaps by *n* unit squares has an area of *n* square units (3.MD.5b)
- Measure the area of a plane figure by counting the number of square units that cover it, with no gaps or overlaps (3.MD.6)
- Demonstrate that the area of a rectangle with whole-number side lengths can be found by multiplying the side lengths (3.MD.7a)
- Find the area of a rectangle by multiplying its side lengths; solve story problems involving finding the area of a rectangle (3.MD.7b)
- Solve story problems that call for finding the area of a figure that can be decomposed into non-overlapping rectangles (3.MD.7d)
- Solve story problems that involve finding the perimeter of a polygon, given its side lengths, or finding an unknown side length of a polygon, given its perimeter and other side lengths or that involve creating rectangles with the same perimeter but different areas, and vice versa (3.MD.8)

Materials

Assessments	Day	Ancillaries	Kit Materials
Number Corner Checkup 3, Part 1 Completing Pages 1–3	17	**TM T6–T8** Number Corner Checkup 3, pages 1–3	• colored tiles (optional, see Preparation)
Number Corner Checkup 3, Part 2 Completing Pages 4–6	19	**TM T9–T11** Number Corner Checkup 3, pages 4–6	

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.

area*
bar graph*
denominator*
equation*
factor*
fraction*
hour (hr.)
minute (min.)
number line*
numerator*
perimeter*
scale*
square unit*
time
whole number*

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Preparation

Organize your square-inch colored tiles into tubs or other containers so students will have access to at least 12 tiles during both parts of the assessment if they want to use them for support.

Mathematical Background

Number Corner Checkup 3 gives teachers an opportunity to gauge students' proficiency with some of skills that have been most heavily addressed in February and March: multiplication concepts; fractions, including comparing fractions, equivalent fractions, identifying fractions on a number line and recognizing fractions as whole numbers; measurement, including time, area and perimeter, and bar graphs. Multi-step story problems occur throughout the assessment as well.

Having conducted these assessments, you will be in a better position to plan daily instruction for the rest of the school year. On the basis of students' strengths and weaknesses, you may decide to emphasize certain aspects of Number Corner instruction while minimizing others, and will have more of the information needed to pitch questions and prompts at levels appropriate to different students. The results of this Number Corner Checkup will also reflect, to some extent, how effective the instruction has been for each student, and provide information that might be shared with parents, administrators, paraprofessionals and resource room teachers about each child's current proficiency with key grade level skills.

Assessment Guide

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

Day 1

Date:

Calendar Grid	Calendar Collector	Computational Fluency
		Activity 1 – Multiples of Nine & Six (pg. 24)
Number Line	**Solving Problems**	**Assessment**

Activity 1

This activity is written for the first week when students will review multiplying by 9. On day 8, repeat the activity for multiplication by 6. The featured strategies for multiplying by 9 and 6 involve first multiplying by 10 as a starting point, so be sure to have students make the connection to the Tens and Half-Tens facts.

Multiples of Nine & Six — Days 1, 8

1 Open today's activity by explaining that in Computational Fluency this month, students will practice using what they know about multiplying by 10 and 5 to multiply by 9 and 6. Today they will focus on multiplying by 9.

2 Display the Tens Minus One Set Facts Teacher Master, and use it to review multiplying by 9.

- Read the poem out loud or invite a student volunteer to read the poem out loud.
- Invite students to use the strategy to solve the challenge problems if it seems appropriate for your group.

3 Display your copy of the Multiplication Table Number Corner Student Book page, and ask students to turn to the same in their own books.

You might want to skip steps 3–5 if students have already spent time studying the multiplication table during your regular math instruction.

4 Ask students to look for the Tens Minus One Set facts on the table. Where do they see these facts? What patterns do they notice?

5 Take some time together as a class to mark the Tens Minus One Set facts by coloring them lightly in purple and marking them in the legend. (On Day 8, color the Half-Tens Plus One Set facts in turquoise.)

6 Display your copy of the Multiplying by Nine page, and review the instructions.

7 Give students time to complete the page independently. Emphasize that they should complete items 1, 2, and 3. If they have time, they can move on to the other items.

8 When there are just a few minutes left in the period, review the products for item 3 so that students can check their own work. Ask them to circle any products they could not recall or that they recalled incorrectly.

9 Let students know that they will have time to practice these facts and more in the months to come.

Literature Connections

Use the following books as read-alouds this month.

- *I Can Count the Petals of a Flower* by John and Stacey Wahl
- *Amanda Bean's Amazing Dream* by Marilyn Burns
- *Minnie's Diner, A Multiplying Menu* by Dayle Ann Dodds

Day 2

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 1 – Introducing the March Calendar Grid (pg. 7)		
Number Line	**Solving Problems**	**Assessment**

Activity 1

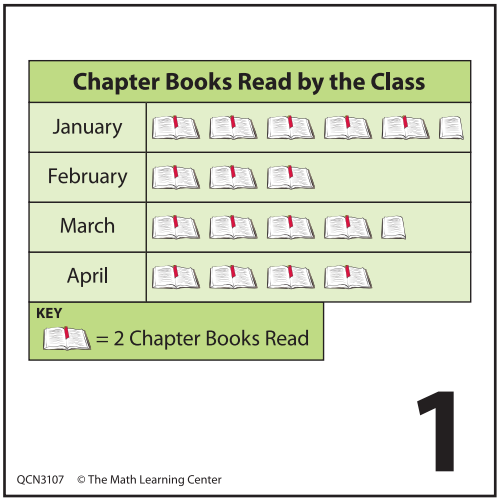
Introducing the March Calendar Grid — Day 2

1 Open today's activity by gathering students where they can all see the Calendar Grid. They will be looking closely at the first two graphs on the markers, so consider projecting the markers or passing out prepared copies while students stay at their seats today.

2 Reveal the first marker and ask students to study it silently for a minute and then share, first in pairs and then as a class, what they notice.

Be sure to address the following items during this brief discussion.

- Use the Word Resource Card to reinforce the term *picture graph*.
- Be sure students see the key and understand how to use it to interpret the data on the picture graph.



3 Ask some specific questions to prompt students to study the graph and consider the data more carefully.

- How many books did the class read in March? What does the half book represent? [9 total; the half book represents 1 book]
- In which month did the class read the most books? [January, 11 books]
- In which month did the class read the fewest books? [February, 6 books]
- How many more books did they read in January than in February? [5 books]

4 Reveal the second marker (a tally chart) and repeat steps 2 and 3.

5 Then reveal the third marker and invite students to share some observations and predictions.

6 Wrap up today's activity by asking students if they have any ideas about what the theme for this month's calendar pattern might be. Let them know that they will begin recording on the Observations Chart in the next activity.

Also let students know that when it is their turn to update, they will just turn over the calendar marker. Once the Observations Chart is posted, the helper will flip the marker and record information on the chart.

Calendar Markers

If you have a computer projector or digital projection system, you can use them to project the PDFs of the calendar markers that are available at the Bridges Educator site.

Day 3

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	**Activity 1 –** Introducing Square Feet (pg. 15)	
Number Line	**Solving Problems**	**Assessment**

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Activity 1

Introducing Square Feet — Day 3

1 Begin today's activity by introducing the term *square foot*.

- Explain that this month, students are going to collect square feet.
- Invite students to share what they know, if anything, about square feet.
- You might hold up a ruler and remind students that this is one foot in length. Given that, what might a square foot be?
- After hearing from students, hold up one of the construction paper squares you cut ahead of time, and explain that it is a square foot.

> ***Teacher*** *This piece of paper is a square foot. You can see that it is a square. That means that each side is exactly the same length. In this case, each side is exactly 1 foot long, which makes this square a square foot. You can measure area in square feet. For example, we measure the space in our homes and schools in square feet.*

2 Use the butcher paper square-foot grid to review area.

- Draw students' attention to the butcher paper grid you posted on the wall.
- Explain that each of the squares is 1 square foot.
- Ask students to talk in pairs about what the total area of the grid is. Post the *area* Word Resource Card and briefly review the term if needed.

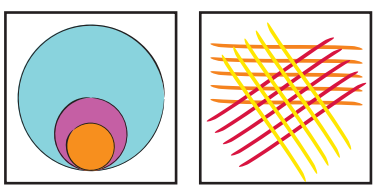
> ***Teacher*** *Please talk to a partner about the area of this grid. In other words, how many of these paper square feet would it take to completely cover this grid if we don't leave any gaps or overlap any of the squares?*

- Invite students to talk, as a whole class, about what the area is and how they figured it out. When they share their strategies, invite students to come point to the grid to illustrate their thinking. Students are likely to describe the following strategies:
  - » Counting the squares 1-by-1 or by 2s
  - » Skip-counting by 5s using the columns of 5
  - » Seeing 2 columns together as 10 square feet and then seeing 3 groups of 10, for a total of 30
  - » Multiplying 5 by 6 to arrive at 30

3 When students have clearly concluded that the total area of the grid is 30 square feet, introduce the month's collection.

- Explain that each student will get their own paper square.
- They will decorate their squares to create a class collection of squares.
- They will use the grid to start the collection next time and add 1 new square each day. (You'll explain this in more detail in Activity 2.)

4 Have students spend the rest of the period decorating their paper squares.



5 Close the activity by collecting the paper squares and letting students know that you'll get the collection started as a class next time you do a Calendar Collector workout.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Day 4

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
Activity 1 – Playing Find the Fraction (pg. 28)		

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Activity 1

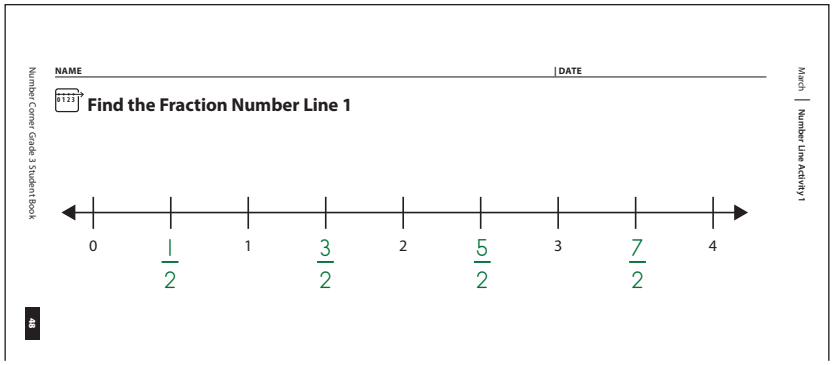
On Day 4, use the Find the Fraction Number Line 1 Number Corner Student Book page and Find the Fraction 1 Teacher Master. On Day 7, repeat the activity using the Find the Fraction Number Line 2 page and Find the Fraction 2 Teacher Master.

Playing Find the Fraction — Days 4, 7

1 Open today's activity by letting students know that they will once again play Find the Fraction.

2 Use your copy of the Find the Fraction Number Line 1 page in the Number Corner Student Book to introduce today's number line.

- Display your copy of the page.
- Ask students to study the page in silence for a moment.
- Then ask them to talk, first in pairs and then as a group, about how they would label the marks shown on the number line.
- Then, with students' input, label the marks on your copy of the page.

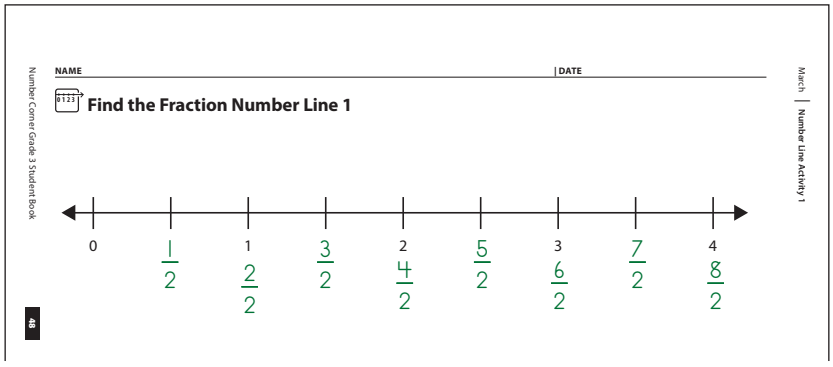


3 Work as a class to have students label all of the halves on the number line in their own Number Corner Student Books.

- Ask students to turn to the page in their own books and label the marks as you just did together on the display copy of the page.
- Write the following fractions where everyone can see, and ask students to label them on their own number lines. They can work independently or in pairs.

$\frac{2}{2}$ $\frac{4}{2}$ $\frac{6}{2}$ $\frac{8}{2}$

- Call on students one at a time to explain where they put each fraction and label them on your display copy.



Key Questions

Use the following questions to guide students' discussion this month:

- What happens to the size of the pieces when the denominator gets bigger? What happens when the numerator gets bigger?
- What happens to the size of the pieces when the denominator gets smaller? What happens when the numerator gets smaller?
- Which fraction is more? How do you know?
- Which is less? How do you know?

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CHALLENGE Invite students to talk more about equivalent fractions and whole numbers. You could ask questions like the following to promote discussion and push students to make generalizations.

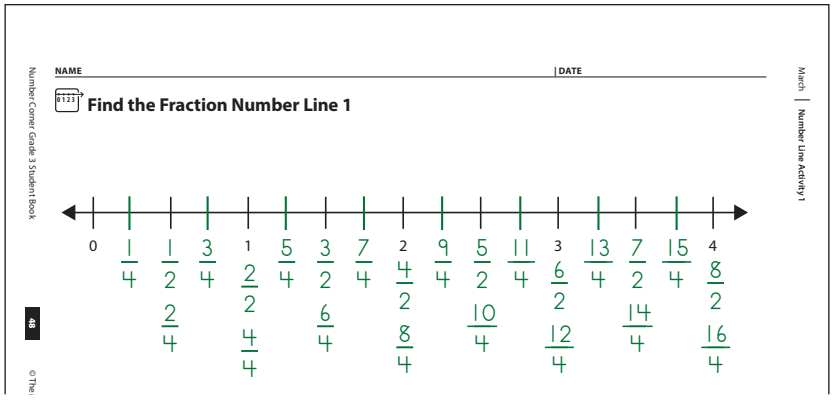
- » How many halves are equal to 5? How can we write that as a fraction? [10/2]
- » How many halves are equal to 6? How can we write that as a fraction? [12/2]
- » How many halves are equal to 7? How can we write that as a fraction? [14/2]
- » How many halves are equal to 20? How can we write that as a fraction? [40/2]
- » How many halves are equal to 50? How can we write that as a fraction? [100/2]
- » What is the pattern? How can you write any whole number as some number of halves? [as a fraction with a denominator of 2]

4 Then have students label the fourths on their number lines.

- Ask students to take some time to mark and label as many fourths on their own number lines as they can. While they work, circulate to make observations and offer support as needed.

SUPPORT Encourage students to use the half marks to help mark fourths. Invite them to focus only on the part of the number line from 0 to 1, at least at first. Help them see that ¼ is halfway between 0 and ½. You might also need to remind students that some fourths are already labeled as equivalent fractions with halves. They can simply write the fraction in terms of fourths under the label that is already there.

- When students are done labeling, have them compare their labeled number lines with a partner. Ask them to resolve any differences and make sure they have each labeled all possible fourths.
- Ask students to bring their work to display to share how they labeled their number lines. If they missed any fourths on their own lines, invite them to mark and label them now.



5 Use the Find the Fraction 1 Teacher Master to introduce the game.

- Display the number line on the master, but keep the prompts covered.
- Explain that the number line shown here matches the number lines they just filled out.
- Explain that you will read a prompt one at a time. Each time, they will have to circle the correct number on their number lines.

6 Play a round of the game.

- Reveal and read each prompt one at a time.
- Have students select the correct fraction and circle it on their number lines.
- Then have them compare their work with a partner. If they disagree, have them resolve the disagreement, using their number lines to help.
- Have the class tell you which fraction to circle on the master.

Literature Connections

Use the following books as read-alouds this month.

- *The Wishing Club: A Story About Fractions* by Donna Jo Napoli
- *Full House: An Invitation to Fractions* by Gayle Ann Dodds

- For each prompt, write an inequality statement to express the relationship between the fractions.
- Repeat this process for all of the prompts.

7 Conclude the activity by asking students to discuss, first in pairs and then as a group, a few questions that push them toward making generalizations about comparing fractions with the same denominator or with the same numerator.

- Name a fraction that is not labeled on the number line that has a numerator of 3 and is less than ¾. Explain how you know it must be less than ¾.
- Name a fraction that is not labeled on the number line that has a denominator of 4 and is greater than 16/4. Explain how you know it must be greater than 16/4.

Day 5

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 2 – Introducing the March Observations Chart (pg. 8)	*Update*	
Number Line	**Solving Problems**	**Assessment**

Activity 2

Introducing the March Observations Chart — Day 5

1 Open today's activity by gathering students in front of the Calendar Grid. Give them a moment to study the calendar in silence and then share observations, first in pairs and then as a class.

2 Draw students' attention to markers 4 and 5, and ask students what time it is on each clock face. Give them some time to think about it, independently or with a partner.

If today is the 5th, invite a student to turn over the 5th marker.

SUPPORT Students may be confused by the Roman numerals on the clock. If so, quickly explain what Roman numerals are and invite students to figure out what Arabic numeral corresponds to each Roman numeral, based upon what they know about the clock face.

3 As a class, discuss how students could tell what time was shown on markers 4 and 5.

SUPPORT Sometimes students confuse the hour and minute hands. You can help them remember which is which by inviting them to think about the minute hand as the long hand and the hour hand as the short hand. You could write the words *hour* and *minute* on the board: *minute* is a longer word, and the longer hand is the minute hand; *hour* is a shorter word and the shorter hand is the hour hand. Let students know they can use this visual of the words to help remind them that the shorter hand on the clock goes with the shorter word (hour) and be longer hand on the clock goes with the longer word (minute).

4 Work with input and participation from students to bring the markers up to date and then fill in the rows on the Observations Chart for all the markers posted so far.

5 Tell students that they will fill in the Elapsed Time column only for markers that show clocks. If the marker shows a graph or data display of some kind, they will leave that column empty.

Calendar Grid Observations

Date	Type of Marker	Time Concept	Elapsed Time	Other Observations
1	Picture Graph	Month		January is the most
2	Tally Chart	Month		Were they keeping track of the different games or was this the total games rented for the month?
3	Digital Clock	Hours & Minutes		I have a clock just like that in my bedroom.
4	Analog Watch	Hours & Minutes	2 hours	My watch doesn't have hands like that.

6 Conclude today's activity by making sure students understand what they need to do when it is their turn to update the Calendar Grid.

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Day 6

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	**Activity 2 –** Starting the Collection (pg. 16)	
Number Line	**Solving Problems**	**Assessment**

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Activity 2

Before doing this activity, count how many school days you have this month. Find the difference between the number of school days and the number of construction paper squares your students decorated in Activity 1. Remove that number of squares from the collection and tape them to the butcher paper grid to begin the collection. For example, if you have 20 days of school and 26 paper squares, you'll start the collection with 6 paper squares taped to the grid today. This activity is written based on 20 days of school and 26 paper squares. Adjust as needed based on your actual numbers.

Starting the Collection — Day 6

1 Draw students' attention to the butcher paper grid, and ask them to watch silently while you get the collection started.

- One at a time, use tape (or tacks if there is a cork board behind the butcher paper) to post the square feet you set aside ahead of time. (See comment above the title of this activity.)
- Explain that this is the starting point for their collection.

2 Ask students to determine what the total area and perimeter are of the beginning of the collection. Review the term *perimeter* if needed using the Word Resource Card.

- Ask students to talk in pairs about what the area of the collection is so far. How many square feet do they have? How do they know?
- After students have had a moment to talk in pairs, invite them to share their strategies and conclusions as a class.
- Ask students to talk in pairs about what the perimeter of the collection is so far. What is the total distance around the figure, in feet? How do they know?
- After students have had a moment to talk in pairs, invite them to share their strategies and conclusions as a class.

3 Then explain how students will update the collection each school day.

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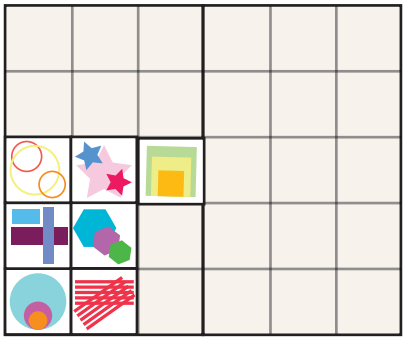
Teacher *Each day of school, a pair of helpers is going to update our collection of square feet. You're going to take one of the square feet out of the bag and tape it to the grid. Then you're going to make a shape built out of rectangles on the grid. You'll find the total area and total perimeter of the shape. Let's do it together to see how it works.*

4 Work with students to add a square for the first school day of the month, and work with their input to add information to the record sheet. Clarify that the figure is a rectilinear shape, meaning it is made out of rectangles (including, in this case, a square).

Teacher *So our collection starts with 6 square feet. We need to bring our collection up to date. For the first day of school, we need to add 1 square foot. It needs to share at least 1 whole side with the collection, like this.*



Teacher *Talk to your partner now. What's the area of this figure? What's the perimeter?…*

Students *We can't just multiply like we did before: 2 times 3 was 6 square feet.*

Right, but we knew we had 6 before and we just added 1 more square foot, so it has to have an area of 7 square feet.

Teacher *What about the perimeter? What is the distance around this new shape?*

Students *The perimeter of the starting rectangle was 10 feet. We just added another square, so it should be 11 feet.*

Wait, no. The perimeter of the new square is 4 feet, so we added 4 feet to the perimeter. 14 feet.

Teacher *Take a closer look here where the new square meets the rectangle we started with. Do you think we just increased the perimeter by 4 feet?… Let's figure it out together by figuring out what the length of each side is and then adding them all up.*

Collecting Square Feet Record Sheet

Day	Equation for Total Area (sq. ft.)	Equation for Total Perimeter (ft.)	Observations
1	(3 × 2) + 1 = 7sq. ft.	3 + 3 + 2 + 2 + 1 + 1 = 12 ft.	Our shape is made up of a 2-by-3 rectangle and a 1-by-1 square. You can see a 1-by-3 rectangle on top of a 2-by-2 square.

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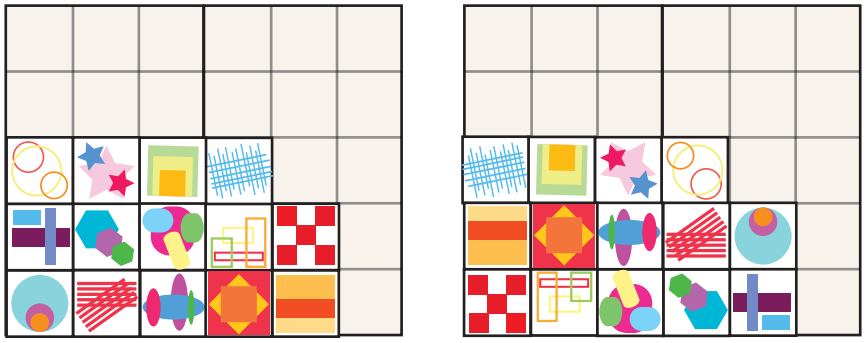
5 Before moving on, model how to draw this figure on the grid paper posted beside the record sheet. Explain that when they make these drawings, they should write their names and the day and date on them before putting them in the envelope.

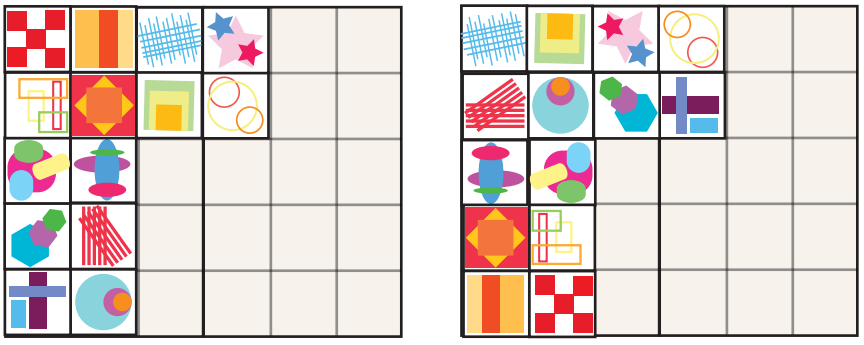
6 Repeat this process to bring the collection up to date. Stress that each time they add a square foot, they need to arrange the entire collection of square feet to create a figure that is made up of at least two rectangles.

If you are short on time, update only for the current day. If you have time later, have student helpers assist you in filling in the record sheet for the previous days. These helpers can then be the class experts if their classmates need some help with the update procedure in the future. It is most important, at this point, to make sure students know what to do when it is their turn to update the collection and that they see how to create a figure that is composed of at least two rectangles and then find its area and perimeter. Make sure they also understand that there is more than one way to do this for any number of squares and that they get to choose how they arrange the squares when they do the update.

7 Close the activity by asking students to turn and talk to a partner about the update procedure. Then quickly review as a class what they will do when it is their turn to update the collection.



Arrangement 1 (14 sq. ft.)
You can see that Arrangement 1 can be divided into a 3-by-4 and a 2-by-1 rectangle or into a 1-by-4 and a 2-by-5 rectangle. The total area is 14 sq. ft. and the perimeter is 16 ft.



Arrangement 2 (14 sq. ft.)
You can see that Arrangement 2 can be divided into a 3-by-2 and a 2-by-4 rectangle or into a 5-by-2 and a 2-by-2 rectangle. The total area is 14 sq. ft. and the perimeter is 18 ft.

Day 7

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
Activity 1 – Playing Find the Fraction (pg. 28)		

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Activity 1

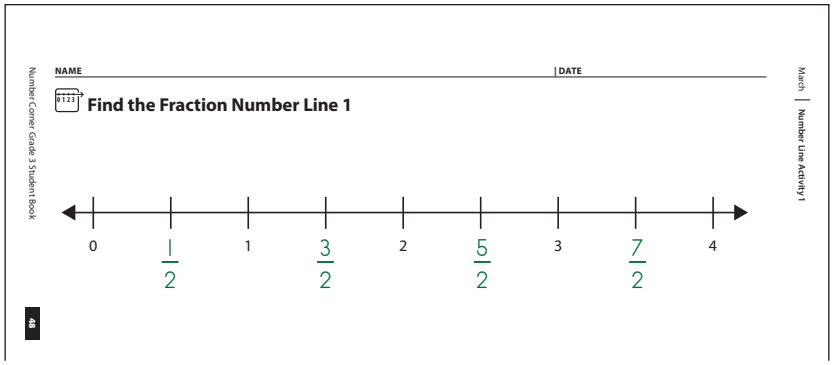
On Day 4, use the Find the Fraction Number Line 1 Number Corner Student Book page and Find the Fraction 1 Teacher Master. On Day 7, repeat the activity using the Find the Fraction Number Line 2 page and Find the Fraction 2 Teacher Master.

Playing Find the Fraction — Days 4, 7

1 Open today's activity by letting students know that they will once again play Find the Fraction.

2 Use your copy of the Find the Fraction Number Line 1 page in the Number Corner Student Book to introduce today's number line.

- Display your copy of the page.
- Ask students to study the page in silence for a moment.
- Then ask them to talk, first in pairs and then as a group, about how they would label the marks shown on the number line.
- Then, with students' input, label the marks on your copy of the page.

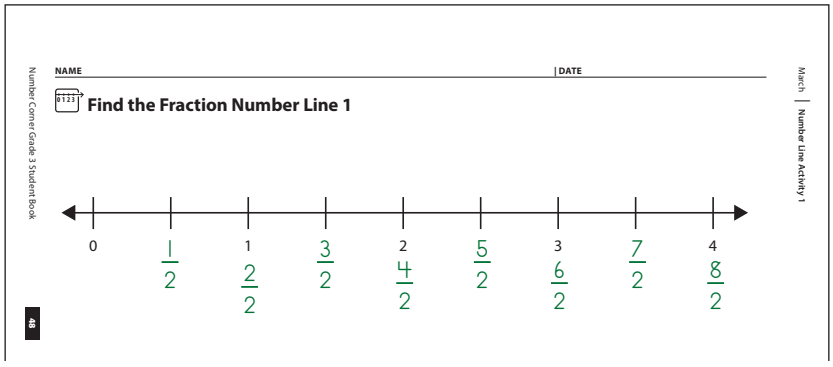


3 Work as a class to have students label all of the halves on the number line in their own Number Corner Student Books.

- Ask students to turn to the page in their own books and label the marks as you just did together on the display copy of the page.
- Write the following fractions where everyone can see, and ask students to label them on their own number lines. They can work independently or in pairs.

$\frac{2}{2}$ $\frac{4}{2}$ $\frac{6}{2}$ $\frac{8}{2}$

- Call on students one at a time to explain where they put each fraction and label them on your display copy.



Key Questions

Use the following questions to guide students' discussion this month:

- What happens to the size of the pieces when the denominator gets bigger? What happens when the numerator gets bigger?
- What happens to the size of the pieces when the denominator gets smaller? What happens when the numerator gets smaller?
- Which fraction is more? How do you know?
- Which is less? How do you know?

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CHALLENGE Invite students to talk more about equivalent fractions and whole numbers. You could ask questions like the following to promote discussion and push students to make generalizations.

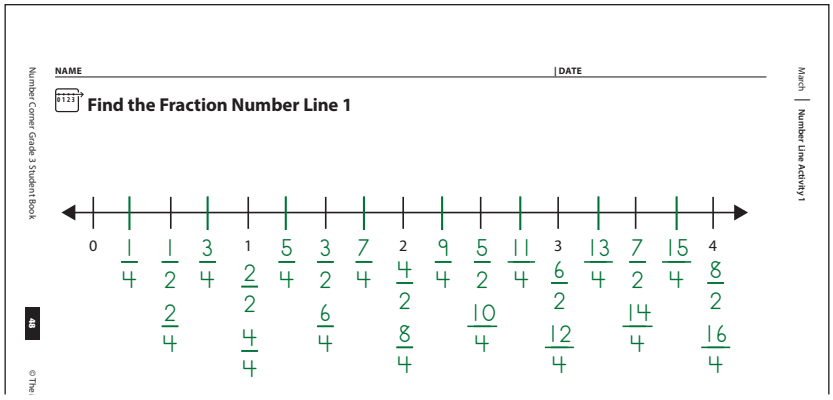
- » How many halves are equal to 5? How can we write that as a fraction? [10/2]
- » How many halves are equal to 6? How can we write that as a fraction? [12/2]
- » How many halves are equal to 7? How can we write that as a fraction? [14/2]
- » How many halves are equal to 20? How can we write that as a fraction? [40/2]
- » How many halves are equal to 50? How can we write that as a fraction? [100/2]
- » What is the pattern? How can you write any whole number as some number of halves? [as a fraction with a denominator of 2]

4 Then have students label the fourths on their number lines.

- Ask students to take some time to mark and label as many fourths on their own number lines as they can. While they work, circulate to make observations and offer support as needed.

SUPPORT Encourage students to use the half marks to help mark fourths. Invite them to focus only on the part of the number line from 0 to 1, at least at first. Help them see that ¼ is halfway between 0 and ½. You might also need to remind students that some fourths are already labeled as equivalent fractions with halves. They can simply write the fraction in terms of fourths under the label that is already there.

- When students are done labeling, have them compare their labeled number lines with a partner. Ask them to resolve any differences and make sure they have each labeled all possible fourths.
- Ask students to bring their work to display to share how they labeled their number lines. If they missed any fourths on their own lines, invite them to mark and label them now.



5 Use the Find the Fraction 1 Teacher Master to introduce the game.

- Display the number line on the master, but keep the prompts covered.
- Explain that the number line shown here matches the number lines they just filled out.
- Explain that you will read a prompt one at a time. Each time, they will have to circle the correct number on their number lines.

6 Play a round of the game.

- Reveal and read each prompt one at a time.
- Have students select the correct fraction and circle it on their number lines.
- Then have them compare their work with a partner. If they disagree, have them resolve the disagreement, using their number lines to help.
- Have the class tell you which fraction to circle on the master.

Literature Connections

Use the following books as read-alouds this month.

- *The Wishing Club: A Story About Fractions* by Donna Jo Napoli
- *Full House: An Invitation to Fractions* by Gayle Ann Dodds

- For each prompt, write an inequality statement to express the relationship between the fractions.
- Repeat this process for all of the prompts.

7 Conclude the activity by asking students to discuss, first in pairs and then as a group, a few questions that push them toward making generalizations about comparing fractions with the same denominator or with the same numerator.

- Name a fraction that is not labeled on the number line that has a numerator of 3 and is less than ¾. Explain how you know it must be less than ¾.
- Name a fraction that is not labeled on the number line that has a denominator of 4 and is greater than 16/4. Explain how you know it must be greater than 16/4.

Day 8

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	**Activity 1 –** Multiples of Nine & Six (pg. 24)
Number Line	**Solving Problems**	**Assessment**

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Activity 1

This activity is written for the first week when students will review multiplying by 9. On day 8, repeat the activity for multiplication by 6. The featured strategies for multiplying by 9 and 6 involve first multiplying by 10 as a starting point, so be sure to have students make the connection to the Tens and Half-Tens facts.

Multiples of Nine & Six — Days 1, 8

1 Open today's activity by explaining that in Computational Fluency this month, students will practice using what they know about multiplying by 10 and 5 to multiply by 9 and 6. Today they will focus on multiplying by 9.

2 Display the Tens Minus One Set Facts Teacher Master, and use it to review multiplying by 9.

- Read the poem out loud or invite a student volunteer to read the poem out loud.
- Invite students to use the strategy to solve the challenge problems if it seems appropriate for your group.

3 Display your copy of the Multiplication Table Number Corner Student Book page, and ask students to turn to the same in their own books.

You might want to skip steps 3–5 if students have already spent time studying the multiplication table during your regular math instruction.

4 Ask students to look for the Tens Minus One Set facts on the table. Where do they see these facts? What patterns do they notice?

5 Take some time together as a class to mark the Tens Minus One Set facts by coloring them lightly in purple and marking them in the legend. (On Day 8, color the Half-Tens Plus One Set facts in turquoise.)

6 Display your copy of the Multiplying by Nine page, and review the instructions.

7 Give students time to complete the page independently. Emphasize that they should complete items 1, 2, and 3. If they have time, they can move on to the other items.

8 When there are just a few minutes left in the period, review the products for item 3 so that students can check their own work. Ask them to circle any products they could not recall or that they recalled incorrectly.

9 Let students know that they will have time to practice these facts and more in the months to come.

Literature Connections

Use the following books as read-alouds this month.

- *I Can Count the Petals of a Flower* by John and Stacey Wahl
- *Amanda Bean's Amazing Dream* by Marilyn Burns
- *Minnie's Diner, A Multiplying Menu* by Dayle Ann Dodds

Day 9

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	**Activity 3 –** Examining the Collection & Individual Figures (pg. 19)	
Number Line	**Solving Problems**	**Assessment**

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Activity 3

Before doing this activity each time, examine the record sheet and students' drawings of the figures they created, and decide which figures you'll feature each time. Select a few choices including some that are more straightforward and some that are more challenging.

Examining the Collection & Individual Figures Days 9, 16

1 Begin today's activity by asking students to study the record sheet in silence for a moment. Give them some time to think about what they notice.

2 Then ask them to look at the area and perimeter columns. Ask them to think about whether they see any patterns, and then invite them to share what they notice, first in pairs and then as a class.

Students will probably notice that the area of the figures always increases by 1 square foot each day, no matter what. The perimeters are probably getting somewhat larger over time, but there will probably be no regular and predictable patterns.

3 Summarize what students will do today.

- You will describe one of the figures their classmates created on a past day.
- They will arrange square tiles on a paper grid in their Number Corner Student Books to try to recreate the figure.
- They can work in pairs or alone.

4 Ask students to turn to the Grid page in their Number Corner Student Books and make sure each student has access to enough tiles to create the largest figure you'll be exploring today. (Students can tear out the page if it is easier to use lying completely flat.)

5 Describe the first figure you selected, and ask students to work alone or in pairs to create this figure with their tiles.

Provide the following information. Write it on the board as you tell it to students.

- The area of the rectangles the figure is composed of.
- The total perimeter of the figure.

> ***Teacher*** *I'm going to give you some information about a figure some of your classmates made last week. Try to recreate it with your tiles on your grid. The figure is made up of a 3-by-2 rectangle and a 2-by-2 rectangle. It has a perimeter of 16 feet.*
>
> 3–by–2 and 2–by–2
> Perimeter is 16 feet

6 While students are working, walk around the room to see what they are doing with their tiles. You might identify which students you want to have share their work.

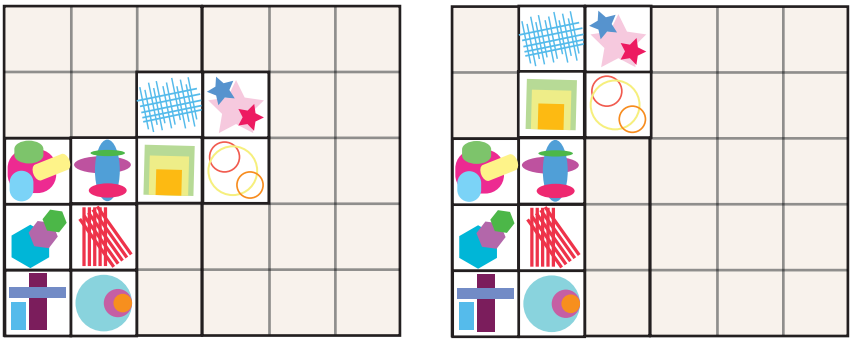
You might, for example, invite one pair of students to talk about how they determined how many tiles they would start with, especially if the pair knew how to begin but was unable to recreate the figure (i.e., to make an arrangement with the tiles that had the correct perimeter). Then invite a few different pairs to talk about how they arranged those tiles to get the correct perimeter. There will probably be many viable solutions: compare a few of them.

SUPPORT Encourage pairs to build the two rectangles first and find the perimeter of each one, and then find the sum of those perimeters. The perimeter of the target figure will be less than the sum of the perimeters of the two rectangles, so invite students to think about how they could put the two rectangles together to reduce the total perimeter by the correct amount. In the featured example, the two rectangles together have a perimeter of 18 feet, but the target figure has a perimeter of 16 feet. How can they put the two rectangles together to effectively reduce the total perimeter by 2 feet?

7 When quite a few students have created a figure that meets the criteria, reconvene the group and invite students to share their work.

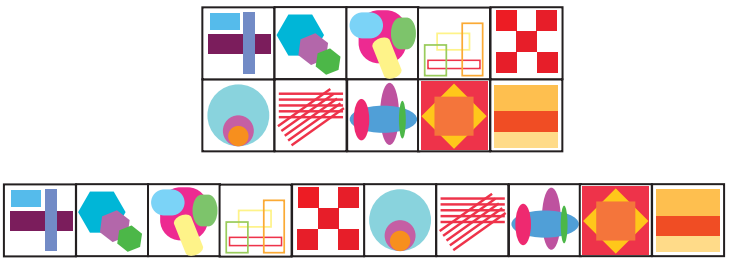
During the discussion, make sure students see that they can build the rectangles first and then move them around to achieve the correct perimeter. They can also calculate the total number of squares required by first finding the area, that is, multiplying the two pairs of dimensions and then adding them, so that they can count out the correct number of tiles.

- Invite students to bring their work up to display for everyone to see, or recreate their work at a projector or on the board.
- Invite the rest of the class to examine the figure and determine whether it meets the criteria.
- Compare different figures that work.
- Show the sketch the student helpers made and compare it to the figures students created today.



Both of these figures are composed of a 3-by-2 rectangle and a 2-by-2 rectangle. Each has a perimeter of 16 units.

8 Finally, ask students to make a rectangle with the same tiles they used to create the figure and find its area and perimeter. If they can make more than one rectangle (this will be true for any number of tiles that is not prime), compare the perimeters of the rectangles.



You can use 10 tiles to create a 2-by-5 rectangle or a 1-by-10 rectangle. The perimeter of the first is 14 units and the perimeter of the second is 22 units. The area of each is, of course, 10 square units.

9 Repeat steps 5–8 with as many figures as you can in the remaining time.

CHALLENGE Students in need of an additional challenge can be invited to determine the total area of each square in terms of square inches. Then ask them to use that information to determine the area of different figures in square inches. Can they find a way to convert an area

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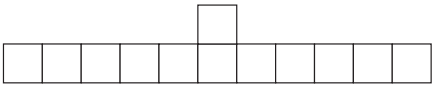
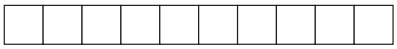
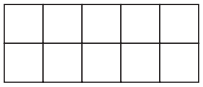
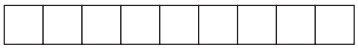
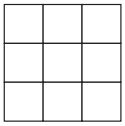
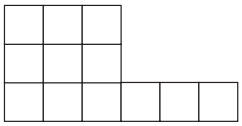
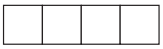
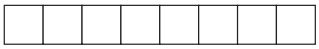
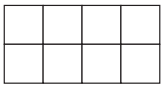
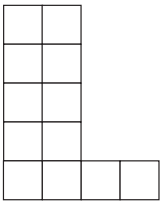
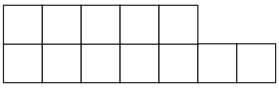
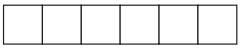
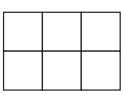
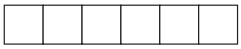
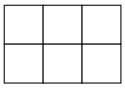
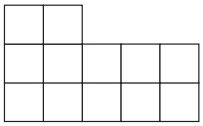
measurement taken in square feet to square inches? [multiply by 144] Invite them to consider the perimeters as well. What is the perimeter of each figure in inches? How can they convert any measurement taken in feet to inches? [multiply by 12] Invite them to explain what they have figured out to others, either verbally or in writing, using visuals for support.

Some students might enjoy trying to find all the possible ways they can create a rectilinear figure composed of exactly 2 rectangles that has a specific area. For example, with what rectangles can they create a rectilinear figure with an area of 12? First, they will need to determine all pairs of numbers with a sum of 12. Then, for each pair, they will need to determine the dimensions of the different rectangles they could build with that many square units.

Extension

Save students' drawings of their figures and use them periodically to review area and perimeter concepts for the rest of the year.

Numbers with a Sum of 12 & Their Corresponding Rectangles		**An Example of a Rectilinear Figure**
1	**11**	
		
2	**10**	
	 1 × 10  2 × 5	
3	**9**	
	 1 × 9  3 × 3	
4	**8**	
 1 × 4 2 × 2	 1 × 8  2 × 4	
5	**7**	
1 × 5	1 × 7	
6	**6**	
 1 × 6  2 × 3	 1 × 6  2 × 3	

Day 10

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 3 – Setting the Time on Analog Clocks (pg. 9)	*Update*	
Number Line	**Solving Problems**	**Assessment**

Activity 3

Setting the Time on Analog Clocks — Day 10

1 Begin by updating the Calendar Grid and Observations Chart together as a class and having students share any new observations or questions they have about the pattern.

2 Ask students to focus on the digital clock markers that have been revealed so far this month while you distribute student clocks to the class.

3 Then hold up marker 3, and ask students to set their clocks to this time.

4 When they finish, ask them to compare their clocks with a partner, and then, as a class, come to an agreement about what time it says and where the hour and minute hands should be placed.

Be sure students have a sense of where the hour hand belongs. As a group, practice counting by 5s as you move a minute hand from one number to the next on the clock face, and then by 1s as you position it on the exact number of minutes.

5 Repeat steps 3 and 4 for the other digital clock markers that have been posted so far.

SUPPORT You'll likely notice that some students may compute elapsed time with relative ease, while others struggle to tell and count time on an analog clock face. Make note of who is comfortable and who is struggling so that in future workouts you can pair students who are having difficulty with students who are able to help them.

6 Ask students to leave their clocks set to the last time shown on a digital clock. Then ask them to set their clocks to the time it would be 25 minutes later, consult with a partner, and then share their new time and their strategies for getting there as a class.

7 Repeat step 6 with different amounts of time.

Don't have students reset their clocks each time, just keep going. Adjust the level of challenge based on how students are doing. Make sure students are positioning their hour hands accurately. Talk about making jumps of 5 minutes, 10 minutes, and other landmark amounts on the clock face.

- What time would it be 12 minutes later?
- What time would it be 15 minutes later?
- What time would it be 1 hour and 5 minutes later?
- What time would it be 1 hour and 16 minutes later?
- What time would it be 3 hours later?
- What time would it be 12 hours later?

8 Wrap up today's activity by asking students to report what time it is right now and then figure out how much time is left until lunch (or gym, dismissal, or some other landmark time).

Forward or Backward

By now, students will likely have noticed that between markers 4 and 5, the clock progression either lost time (53 minutes) or progressed by an unusually large amount (11 hours, 7 minutes or possibly 23 hours, 7 minutes). Either view is valid.

Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Day 11

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
	Activity 1 – Perimeter Puzzles (pg. 32)	

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

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- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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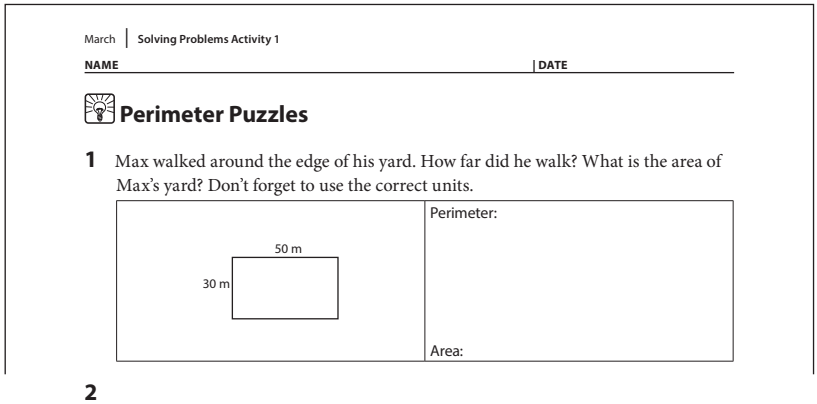
Activity 1

Perimeter Puzzles — Day 11

1 Open today's activity by letting students know that the work they have been doing with square feet in the Calendar Collector will help them solve problems this month, all of which challenge them to think about area and perimeter.

2 Briefly review the meaning of area and perimeter if needed, using the Word Resource cards to help.

3 Display your copy of the Perimeter Puzzles Student Book Page, showing only the first problem. Invite a student to read the problem aloud. Ask another student how she would solve the problem.


March | Solving Problems Activity 1

NAME | DATE

Perimeter Puzzles

1 Max walked around the edge of his yard. How far did he walk? What is the area of Max's yard? Don't forget to use the correct units.

50 m

30 m

Perimeter:

Area:

2

4 Ask students to turn to the same page in their own books and solve the first problem. If they finish before others, they can go on to the second problem.

5 Once everyone has finished the first problem, have students share their work with a partner and then have a few students share with the whole class.

> ***Students*** *At first, I didn't realize they were talking about perimeter, but when I saw the word* perimeter *at the bottom of the problem, I knew I had to find the perimeter. So, I added 50 and 30 and 50 and 30. I got 160.*
>
> *160 what?*
>
> What is the perimeter of the shape below?
>
> *160 meters.*
>
> *I doubled the 50 and the 30. Fifty doubled is 100 and 30 doubled is 60, so the perimeter is 160 meters.*
>
> *At first I was confused for the area because there was no way to make that many little squares. I couldn't really draw them or count them. But, then I remembered that it's not that hard to multiply multiples of 10. irty times 50 is like 3 times 5 times 10 times 10.*
>
> *I thought about it like 30 fifties. I know 10 fifties is 500, so another 10 fifties is 1000 and another groups of 10 fifties makes 1,500.*
>
> *I got 1,500 too. 1,500 square meters.*

Key Questions

Use the following questions to guide students' discussion this month:

- Can you make rectangles with the same area but different perimeters?
- Can you make rectangles with the same perimeter but different areas?
- Can you generalize how you solved this problem so you could use the same ideas to solve a similar problem?
- How can you find the area of a rectilinear figure?
- If you know the perimeter of a polygon and all the sides but one, can you find the length of the unknown side?

6 Next, display the third problem on the page and invite a student to read it aloud. Have students turn to a partner to talk about how they would solve the problem.

7 Have students solve the problem in their Number Corner Student Books. If they finish before others do, they can go back to the second problem.

8 Invite students to share their work on the third problem, first with a partner and then with the whole class. As students share their work, model their thinking with equations.

> ***Karina*** *At first I thought I had no idea. But then I realized that I could figure it out. I added up all the sides I knew and then figured out how much more I needed to get to 24. That was the side I did not know.*
>
> ***Teacher*** *So what did you actually do?*
>
> ***Karina*** *I added 6 plus 6 plus 4 plus 2 plus 3 and I got 21. Then, I saw that I needed to add 3 more to get to 24. The perimeter was 24, so the unknown side had to be 3 feet.*
>
> ***Teacher*** *I'm going to write an equation for your thinking. Does this show what you did?*
>
> $6 + 6 + 4 + 2 + 3 + __ = 24$
>
> ***Karina*** *Yes.*
>
> ***Teacher*** *Did anyone solve it a different way?*
>
> ***Hector*** *I added up the sides like she did and then subtracted that from 24.*
>
> ***Teacher*** *Like this?*
>
> $24 - __ = 6 + 6 + 4 + 2 + 3$
>
> ***Hector*** *I guess so. Maybe I thought it would be 24 minus all those numbers equals the missing number.*

9 Give students time to revisit the second problem. As they finish the second problem, have them share their thinking with a partner. If some students finish well ahead of others, invite them to make up a problem like the third problem and share it with another student.

10 Wrap up today's activity by summarizing what students did and inviting them to connect it to the world around them.

- Explain that students need to be able to solve problems in context, which is what they did today. They used what they knew about perimeter and area to solve story problems.
- Ask students to think of related problems that they might encounter in their own lives.
- Let students know they will solve more problems in the next Solving Problems activity.

Day 12

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
Activity 2 – Completing the Comparing Fractions Page (pg. 30)		

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Activity 2

Completing the Comparing Fractions Page — Day 12

1 Use your display copy of the Comparing Fractions page in the Number Corner Student Book to introduce the work students will do today.

- Display the page.
- Read all the problems aloud.
- Answer questions students have about what they should do.

2 Have students turn to the page in their own books and work independently. While they work, circulate to observe and provide support as needed.

3 If you have time, review the page together during the last 5 minutes of your Number Corner period. If you don't, collect students' books, review their work, and discuss any common points of confusion as a class another time.

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Day 13

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
	Activity 2 – Same Perimeter, Different Area (pg. 34)	

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Activity 2

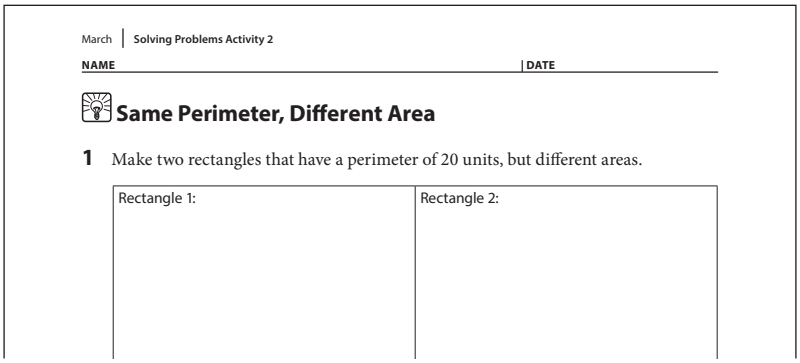
Same Perimeter, Different Area — Day 13

1 Open today's activity by connecting the work students are about to do with some of their recent explorations in the Calendar Collector workout. Then introduce the Same Perimeter, Different Area Student Book page.

- Remind students that previously in Calendar Collector, they experimented with creating rectangles that have the same area (same number of square units) and different perimeters (different total distances around).
- If students can remember an example of two rectangles with the same area but different perimeter, have them share it now.

CHALLENGE Given the areas they have been working with, if students can think of two rectangles with the same area but different dimensions, they can then find the perimeters and see that they are different. You might invite students who are ready for a challenge to consider whether they can make two rectangles with the same area but different dimensions that also have the same perimeter, such that $a \times b = c \times d$ and $2(a + b) = 2(c + d)$. In essence, they would be looking for two pairs of numbers that have the same product *and* the same sum. If they conclude that it is not possible, or suspect that it is not possible, challenge them to explain why.

- Explain that today, students will work on a different but related challenge.
- Show only the first problem on your display copy of the Number Corner Student Book page, and invite a student to read the problem aloud.



March | Solving Problems Activity 2

NAME | DATE

Same Perimeter, Different Area

1 Make two rectangles that have a perimeter of 20 units, but different areas.

Rectangle 1:	Rectangle 2:

2 Ask students to talk, first in pairs and then as a class, about how this is different from finding rectangles with the same area and to share some ideas about what they need to do to solve the problem.

> ***Students*** *Before we knew the area. We could use that amount of tiles and just move them around until we made a square or rectangle. I think this might be harder.*
>
> *Here we have to figure out what can have a perimeter of 20 units. I think you have to make some guesses and try different ideas until something works.*
>
> *You have to think of numbers that add up to 20, like make 6 and 6 and 4 and 4. Hey, that could be one! The area would be 24 square units.*

3 After sharing ideas as a class, have students solve the problem, either independently or with a partner.

- Make colored tiles available to students.

- As students work, circulate around the room to make observations, answer questions, and provide differentiated instruction.

ELL/SUPPORT Make sure students understand the directions. Review important vocabulary. Model how to find one rectangle with a perimeter of 20 units.

CHALLENGE Have students find as many rectangles with a perimeter of 20 units as possible. Have them record the dimensions and area in a chart to help make sure they have found all the possibilities. They can generate a complete list by considering all the pairs of whole numbers with a sum of 10, because if the perimeter is 20 units, $2(a + b) = 20$, which means $a + b = 10$.

4 Create a chart of all the possible rectangles with input from students, and then invite students to share what they notice about the dimensions and areas of the rectangles that have a perimeter of 20 units.

- Invite students to share the rectangles they made one at a time.
- Each time, record the dimensions, area, and perimeter of the rectangle on a chart.
- Continue until you have listed all the possibilities in an organized way, as shown here.

SUPPORT Draw a quick sketch of each rectangle to help support visual thinkers. Also, invite students to think about the commutative property if the question of whether a 3-by-7 rectangle is the same as a 7-by-3 rectangle. The sketches will help too.

Dimensions	Area	Perimeter
1 × 9	9 units^2	20 units
2 × 8	16 units^2	20 units
3 × 7	21 units^2	20 units
4 × 6	24 units^2	20 units
5 × 5	25 units^2	20 units

Ask students to share what they notice about the chart. What happens to the area as the dimensions get closer together? In other words, what happens as the rectangle becomes closer to a square? [the area increases]

5 Introduce and discuss the second problem before giving students time to solve it.

- Display the second problem and invite a student to read it aloud.
- Ask students to talk for a moment about how this problem is similar to or different from the first one.

Make sure students see that this problem asks them to do the same work as in the first problem, only in context and with different numbers.

> **2** Sergio is making a quilt. He has 16 meters of edging. What size quilts can Sergio make that have a perimeter of 16 meters? Draw and label two rectangular shapes that Sergio could use for his quilt. Show the area of each quilt.

6 Give students time to solve the problem alone or in pairs. Then repeat step 4.

7 At the end of today's activity, invite students to summarize what they did and what they learned or found interesting during the workout.

Day 14

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	**Activity 3 –** Scout Them Out (pg. 25)
Number Line	**Solving Problems**	**Assessment**

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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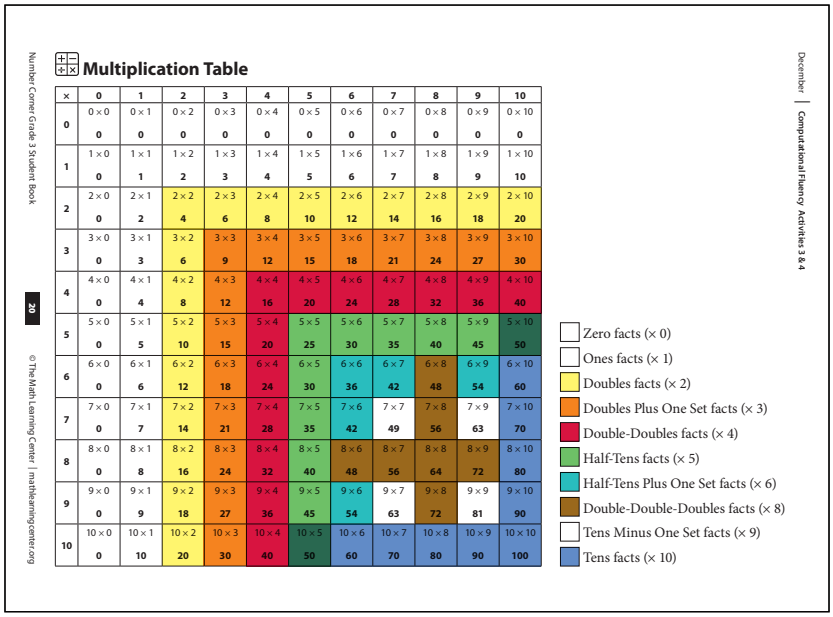
Activity 2

Scout Them Out — Day 14

1 Open today's activity by displaying your copy of the Multiplication Table, having students turn to the page in their own books, and discussing it together as a class.

- Give students a minute to study the table in silence.
- Then invite them to share observations, first in pairs and then as a class.
- Begin by asking students what they notice about the Multiplication Table.
- Then ask each of the following questions one at a time, and have students respond in pairs first and then as a class.
  - » What do you notice about the multiples of 2?
  - » What facts result in even products? What facts result in odd products? Why are there so many more even products than odd products?
  - » Why does 3 times 7 have the same answer as 7 times 3? What property is this an example of?
  - » Focus on the column and row for multiples of 6. What do you notice about the products in this row and column?



Multiplication Table

×	0	1	2	3	4	5	6	7	8	9	10
0	0 × 0 = 0	0 × 1 = 0	0 × 2 = 0	0 × 3 = 0	0 × 4 = 0	0 × 5 = 0	0 × 6 = 0	0 × 7 = 0	0 × 8 = 0	0 × 9 = 0	0 × 10 = 0
1	1 × 0 = 0	1 × 1 = 1	1 × 2 = 2	1 × 3 = 3	1 × 4 = 4	1 × 5 = 5	1 × 6 = 6	1 × 7 = 7	1 × 8 = 8	1 × 9 = 9	1 × 10 = 10
2	2 × 0 = 0	2 × 1 = 2	2 × 2 = 4	2 × 3 = 6	2 × 4 = 8	2 × 5 = 10	2 × 6 = 12	2 × 7 = 14	2 × 8 = 16	2 × 9 = 18	2 × 10 = 20
3	3 × 0 = 0	3 × 1 = 3	3 × 2 = 6	3 × 3 = 9	3 × 4 = 12	3 × 5 = 15	3 × 6 = 18	3 × 7 = 21	3 × 8 = 24	3 × 9 = 27	3 × 10 = 30
4	4 × 0 = 0	4 × 1 = 4	4 × 2 = 8	4 × 3 = 12	4 × 4 = 16	4 × 5 = 20	4 × 6 = 24	4 × 7 = 28	4 × 8 = 32	4 × 9 = 36	4 × 10 = 40
5	5 × 0 = 0	5 × 1 = 5	5 × 2 = 10	5 × 3 = 15	5 × 4 = 20	5 × 5 = 25	5 × 6 = 30	5 × 7 = 35	5 × 8 = 40	5 × 9 = 45	5 × 10 = 50
6	6 × 0 = 0	6 × 1 = 6	6 × 2 = 12	6 × 3 = 18	6 × 4 = 24	6 × 5 = 30	6 × 6 = 36	6 × 7 = 42	6 × 8 = 48	6 × 9 = 54	6 × 10 = 60
7	7 × 0 = 0	7 × 1 = 7	7 × 2 = 14	7 × 3 = 21	7 × 4 = 28	7 × 5 = 35	7 × 6 = 42	7 × 7 = 49	7 × 8 = 56	7 × 9 = 63	7 × 10 = 70
8	8 × 0 = 0	8 × 1 = 8	8 × 2 = 16	8 × 3 = 24	8 × 4 = 32	8 × 5 = 40	8 × 6 = 48	8 × 7 = 56	8 × 8 = 64	8 × 9 = 72	8 × 10 = 80
9	9 × 0 = 0	9 × 1 = 9	9 × 2 = 18	9 × 3 = 27	9 × 4 = 36	9 × 5 = 45	9 × 6 = 54	9 × 7 = 63	9 × 8 = 72	9 × 9 = 81	9 × 10 = 90
10	10 × 0 = 0	10 × 1 = 10	10 × 2 = 20	10 × 3 = 30	10 × 4 = 40	10 × 5 = 50	10 × 6 = 60	10 × 7 = 70	10 × 8 = 80	10 × 9 = 90	10 × 10 = 100

Zero facts (× 0)
Ones facts (× 1)
Doubles facts (× 2)
Doubles Plus One Set facts (× 3)
Double-Doubles facts (× 4)
Half-Tens facts (× 5)
Half-Tens Plus One Set facts (× 6)
Double-Double-Doubles facts (× 8)
Tens Minus One Set facts (× 9)
Tens facts (× 10)

Number Corner Grade 3 Student Book 20 © The Math Learning Center | mathlearningcenter.org
December | Computational Fluency Activities 3 & 4

2 Display a copy of the Scout Them Out Multiplication (6, 9) page, and have them turn to that page in their Number Corner Student Books.

3 Read the directions out loud and work with students to circle each kind of fact in the specified color.

- Let students know that they might have an easier time if they do all the problems in one category first and then all the problems in the other category afterward.
- Tell students they have a few minutes to complete this section of the page independently.
- Remind students they should use what they know about multiplication to help solve the division problems.

4 Then give students time to work on the page independently.

Key Questions

Use the following questions to guide students' discussion this month:

- How does learning to skip-count help you with learning your multiplication facts?
- What patterns do you see in the ones digits in the products in this row/column?
- What patterns do you see in the tens digits in the products in this row/column?
- If you skip-count by ____, will you ever land on _____? Why or Why not?
- How are multiplication and addition related?
- How are multiplication and division related?
- What is your favorite multiplication strategy we've learned so far, or which one do you feel most comfortable using?

5 Once students have finished the page, have them share their work with a partner. If students have different answers, encourage them to justify their thinking or rethink the problem together.

6 In any time remaining, have students go back to the Multiplying by Nine and Multiplying by Six pages in their Number Corner Student Books and finish any problems they did not have time to complete on days 1 and 8.

Day 15

Date:

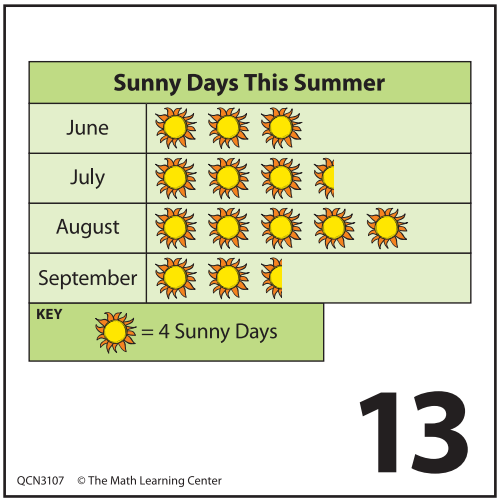
Calendar Grid	Calendar Collector	Computational Fluency
Activity 3 – Answering Data Questions (pg. 10)	*Update*	
Number Line	**Solving Problems**	**Assessment**

Activity 4

Answering Data Questions — Day 15

1 Complete the update procedure as a class. Give students a few moments to share any questions or new observations they have about the pattern.

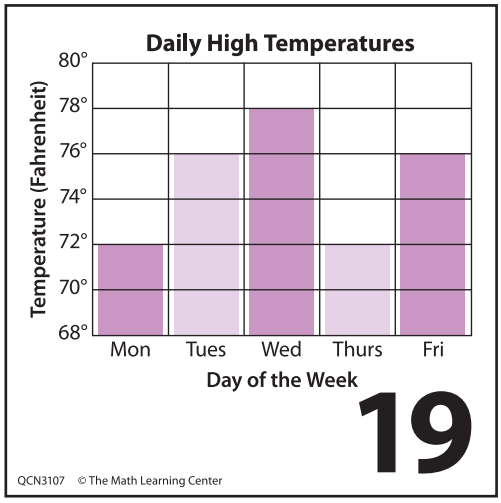
2 Then, display marker 13 where everyone can see it. You might consider using a projector or document camera, or passing out prepared copies of the marker. Ask the following questions one at a time, and have students discuss their answers as a class.



- » How many sunny days were in June?
- » How many days does the half sun stand for?
- » How many more sunny days were there in August than September?
- » Were there more sunny days in June and July combined, or in August and September combined?

3 Next, display marker 19, give students time to study it quietly, and then discuss the following questions first in pairs and then as a class.

- Which day had the highest high temperature? What was the high temperature that day?
- Which day had the lowest high temperature? What was the high temperature that day?
- What is the difference between the highest and lowest high temperature for the week?



4 If you have time, invite students to choose marker 13 or marker 19 and think of at least one question about the data that could be answered using the graph. Then discuss a few of those questions as a class.

Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Day 16

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	**Activity 3 –** Examining the Collection & Individual Figures (pg. 19)	
Number Line	**Solving Problems**	**Assessment**

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Activity 3

Before doing this activity each time, examine the record sheet and students' drawings of the figures they created, and decide which figures you'll feature each time. Select a few choices including some that are more straightforward and some that are more challenging.

Examining the Collection & Individual Figures Days 9, 16

1 Begin today's activity by asking students to study the record sheet in silence for a moment. Give them some time to think about what they notice.

2 Then ask them to look at the area and perimeter columns. Ask them to think about whether they see any patterns, and then invite them to share what they notice, first in pairs and then as a class.

Students will probably notice that the area of the figures always increases by 1 square foot each day, no matter what. The perimeters are probably getting somewhat larger over time, but there will probably be no regular and predictable patterns.

3 Summarize what students will do today.

- You will describe one of the figures their classmates created on a past day.
- They will arrange square tiles on a paper grid in their Number Corner Student Books to try to recreate the figure.
- They can work in pairs or alone.

4 Ask students to turn to the Grid page in their Number Corner Student Books and make sure each student has access to enough tiles to create the largest figure you'll be exploring today. (Students can tear out the page if it is easier to use lying completely flat.)

5 Describe the first figure you selected, and ask students to work alone or in pairs to create this figure with their tiles.

Provide the following information. Write it on the board as you tell it to students.

- The area of the rectangles the figure is composed of.
- The total perimeter of the figure.

> ***Teacher*** *I'm going to give you some information about a figure some of your classmates made last week. Try to recreate it with your tiles on your grid. The figure is made up of a 3-by-2 rectangle and a 2-by-2 rectangle. It has a perimeter of 16 feet.*
>
> 3–by–2 and 2–by–2
> Perimeter is 16 feet

6 While students are working, walk around the room to see what they are doing with their tiles. You might identify which students you want to have share their work.

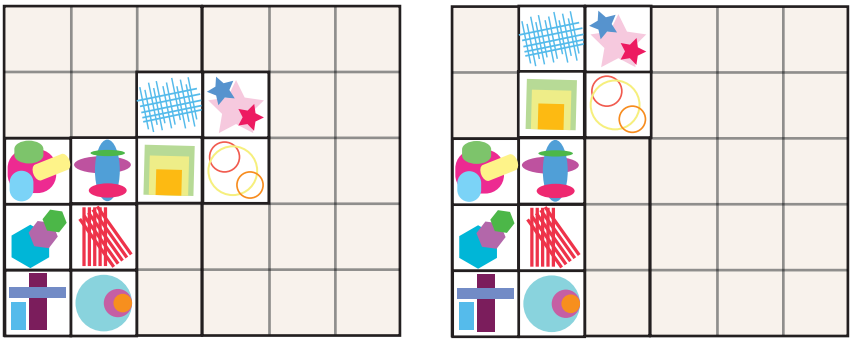
You might, for example, invite one pair of students to talk about how they determined how many tiles they would start with, especially if the pair knew how to begin but was unable to recreate the figure (i.e., to make an arrangement with the tiles that had the correct perimeter). Then invite a few different pairs to talk about how they arranged those tiles to get the correct perimeter. There will probably be many viable solutions: compare a few of them.

SUPPORT Encourage pairs to build the two rectangles first and find the perimeter of each one, and then find the sum of those perimeters. The perimeter of the target figure will be less than the sum of the perimeters of the two rectangles, so invite students to think about how they could put the two rectangles together to reduce the total perimeter by the correct amount. In the featured example, the two rectangles together have a perimeter of 18 feet, but the target figure has a perimeter of 16 feet. How can they put the two rectangles together to effectively reduce the total perimeter by 2 feet?

7 When quite a few students have created a figure that meets the criteria, reconvene the group and invite students to share their work.

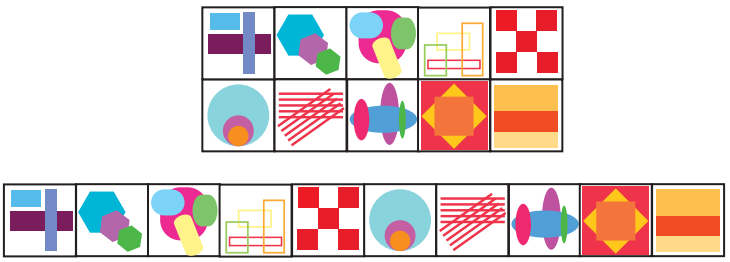
During the discussion, make sure students see that they can build the rectangles first and then move them around to achieve the correct perimeter. They can also calculate the total number of squares required by first finding the area, that is, multiplying the two pairs of dimensions and then adding them, so that they can count out the correct number of tiles.

- Invite students to bring their work up to display for everyone to see, or recreate their work at a projector or on the board.
- Invite the rest of the class to examine the figure and determine whether it meets the criteria.
- Compare different figures that work.
- Show the sketch the student helpers made and compare it to the figures students created today.



Both of these figures are composed of a 3-by-2 rectangle and a 2-by-2 rectangle. Each has a perimeter of 16 units.

8 Finally, ask students to make a rectangle with the same tiles they used to create the figure and find its area and perimeter. If they can make more than one rectangle (this will be true for any number of tiles that is not prime), compare the perimeters of the rectangles.



You can use 10 tiles to create a 2-by-5 rectangle or a 1-by-10 rectangle. The perimeter of the first is 14 units and the perimeter of the second is 22 units. The area of each is, of course, 10 square units.

9 Repeat steps 5–8 with as many figures as you can in the remaining time.

CHALLENGE Students in need of an additional challenge can be invited to determine the total area of each square in terms of square inches. Then ask them to use that information to determine the area of different figures in square inches. Can they find a way to convert an area

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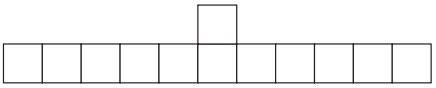
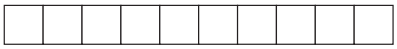
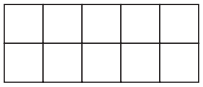
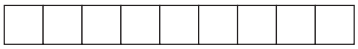
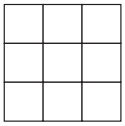
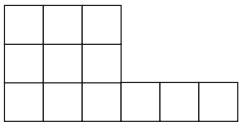
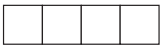
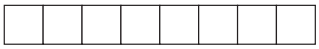
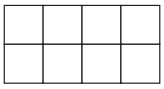
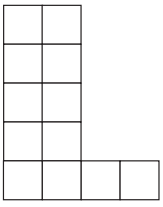
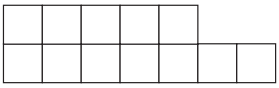
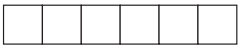
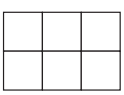
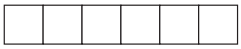
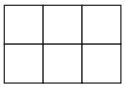
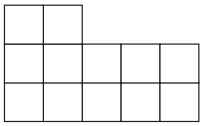
measurement taken in square feet to square inches? [multiply by 144] Invite them to consider the perimeters as well. What is the perimeter of each figure in inches? How can they convert any measurement taken in feet to inches? [multiply by 12] Invite them to explain what they have figured out to others, either verbally or in writing, using visuals for support.

Some students might enjoy trying to find all the possible ways they can create a rectilinear figure composed of exactly 2 rectangles that has a specific area. For example, with what rectangles can they create a rectilinear figure with an area of 12? First, they will need to determine all pairs of numbers with a sum of 12. Then, for each pair, they will need to determine the dimensions of the different rectangles they could build with that many square units.

Extension

Save students' drawings of their figures and use them periodically to review area and perimeter concepts for the rest of the year.

Numbers with a Sum of 12 & Their Corresponding Rectangles		**An Example of a Rectilinear Figure**
1	**11**	
		
2	**10**	
	 1 × 10  2 × 5	
3	**9**	
	 1 × 9  3 × 3	
4	**8**	
 1 × 4 2 × 2	 1 × 8  2 × 4	
5	**7**	
1 × 5	1 × 7	
6	**6**	
 1 × 6  2 × 3	 1 × 6  2 × 3	

Day 17

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
		Number Corner Checkup 3 – Part 1 (pg. 40)

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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Number Corner Checkup 3, Part 1

Completing Pages 1–3 Day 17

1 Open the session by reminding students what a checkup is and describing how you'd like students to work on the assessment they will start today during Number Corner and complete on the next day.

Review the key ideas behind checkups: a checkup is a way of finding out how everyone is doing with some of the skills you've been working on over the last couple of months during Number Corner. The assessment will help you and the students spot their strengths and weaknesses with respect to the skills and concepts that have been covered so far 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 first half of the checkup:

- Listen carefully to the instructions for each problem.
- Stay with the class; don't move ahead to the next problem 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 Number Corner Checkup 3, pages 1–3, and give each student a copy.

- Give students a few moments to examine all three pages quietly.
- Using your copy of the first page, show students how to write their name and date at the top on the lines provided.

SUPPORT Apart from the multiplication facts on page 1, this assessment does not need to be timed. If there are students who are unable to complete the assessment in the given amount of time, have them do it later, perhaps during math stations or a seatwork period.

3 Tell students they will have one minute to complete as many of the multiplication problems on the top half of the first page as they're able. They will use a colored pencil for the multiplication problems and a regular pencil for the rest of the problems.

4 Have students pick up a colored pencil. Tell them when to begin and give them one minute to complete as many multiplication facts as possible.

5 When one minute has passed, have students put down their colored pencils and pick up their regular pencils. Give them the rest of the time to finish pages 1, 2 and 3 of the assessment.

You may want to collect the colored pencils while students continue working. If they are anxious about not completing many facts, assure them they will keep working on them for the rest of the year.

SUPPORT Place containers of colored tiles on each table or near each cluster of desks. They may be particularly helpful for students struggling with items on page 3. Let students know they're welcome to use these materials to help with the checkup today.

6 At the end of Number Corner time today, have students stop working on their assessment. Recognize them for their effort and remind them that an assessment like this is only one way of showing their understanding. Let them know they will finish the assessment in a couple of days.

Assessment Guide

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

Day 18

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
	Activity 3 – Area Story Problems (pg. 36)	

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
- Can you create a different figure that has the same area but different perimeter? What is the largest perimeter you can get with this area? How did figure it out?

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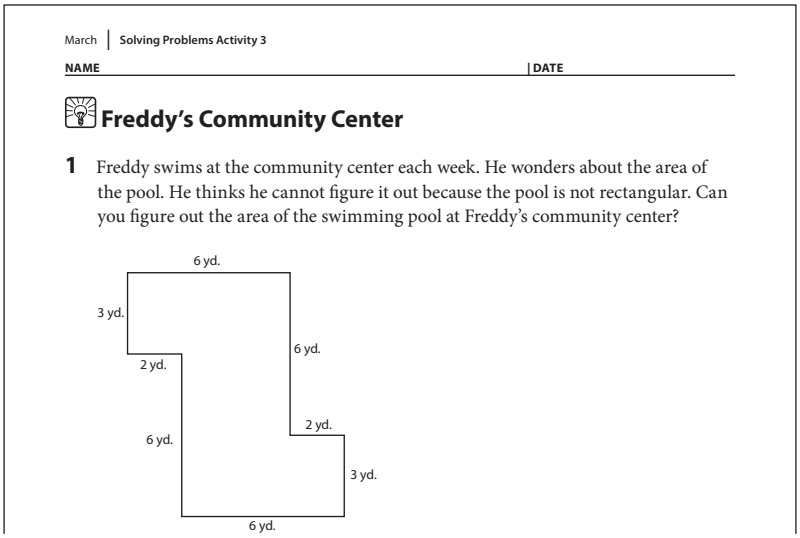
Activity 3

Area Story Problems — Day 18

1 Open today's activity by introducing the featured problems.

- Let students know that today's problems focus on area.
- Display your copy of the Freddy's Community Center page.
- For now, reveal only the first problem, and invite a student to read it aloud.



March | Solving Problems Activity 3

NAME _____ | DATE _____

Freddy's Community Center

1 Freddy swims at the community center each week. He wonders about the area of the pool. He thinks he cannot figure it out because the pool is not rectangular. Can you figure out the area of the swimming pool at Freddy's community center?

2 Connect this problem to the work students have done with rectilinear figures in the Calendar Collector.

- Ask students if they know the name of the shape of Freddy's pool.
- If no one remembers the term *rectilinear*, remind them of it now. A rectilinear figure is a figure with all right angles. Because it has all right angles, rectilinear figures also have all straight sides.

3 Ask students to turn to a partner and talk about how they could find the area of Freddy's pool. Then, invite a few pairs to share their ideas with the whole class.

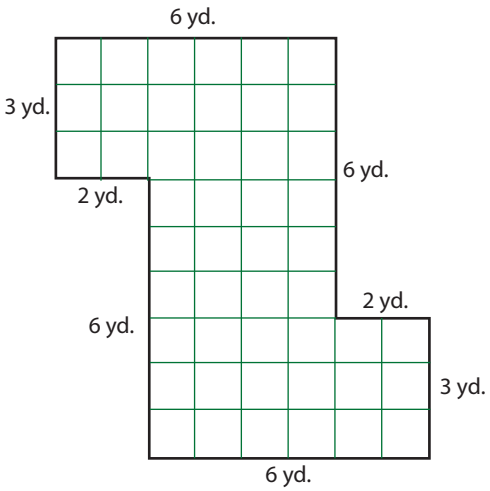
> ***Students*** *We think you can split up the shape into parts. We're not sure how to find the area of all the parts, but we think that is how you could get started.*
>
> *We also think you have split up the shape. Then, you have to figure out the lengths of the new shapes you made by splitting it up.*
>
> *When we talked about rectilinear shapes the other day, some people saw one way to split it up and other people saw another way. We think there might be more than one way to split up the shape.*

4 Have students find the same page in their Number Corner Student Books, and get started on the first problem. Give them the option of working alone or with a partner.

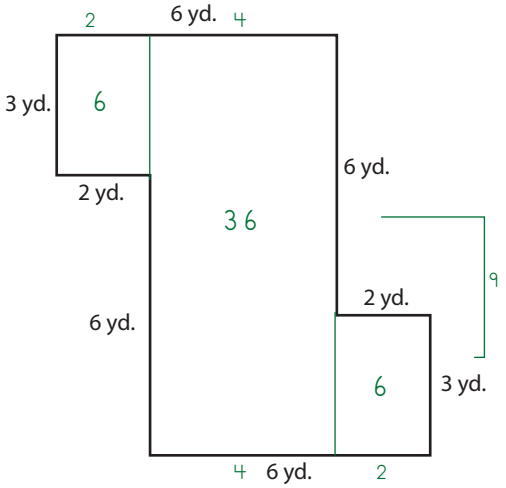
5 After students have worked on the problem for a while, invite them to share their thinking.

Andrea *We were really not sure what to do, so we started by dividing the shape into square units. The numbers were not too big, so we knew we could do it.*

Isabel *Then, we knew that we could just count the squares to find the area, but we decided to do it a little faster. With the squares, we saw that we had two 3-by-2 rectangles and a big 4-by-9 rectangle. We found the area of those and got the total area.*



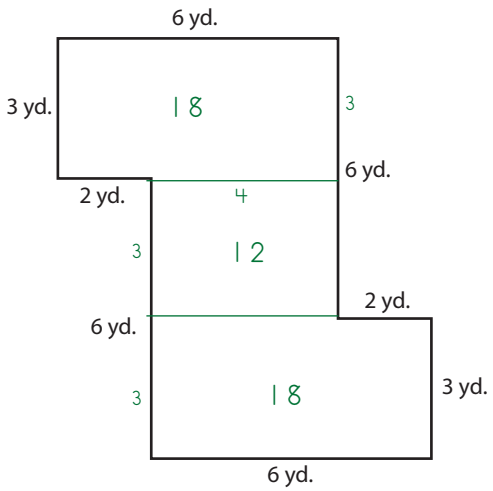
Charlie *That's what we did, only without making all the squares.*



David *We saw different rectangles. We saw a 3-by-6 rectangle across the top and another one across the bottom. That left a 4-by-3 rectangle in the middle. At first it was hard to figure out that it was 4 by 3, but we got it. So, the pool is 48 square units.*

Isabel *I don't get how you found the 4-by-3 rectangle in the middle.*

David *We know what it is across on the top and bottom, right? So, when you cut off those little rectangles on the sides, you are cutting off 2 from the length of 6. That leaves 4. Then, we know it is 9 units tall. We cut off 3 from the top and 3 from the bottom and that left 3 in the middle. It helps if you look at our drawing.*



18 + 12 + 18 = 48 yd.^{2}

6 After discussing the first problem, introduce the second problem.

- Display the second problem, and invite a student to read it aloud.
- Ask students if they can recall having solved a problem like this before.

> **2** Freddy's community center is building a new sandbox. They know they want the sandbox to be a rectangle with an area of 18 square feet but they are not sure what the perimeter should be. Draw two different rectangles with an area of 18 square feet. Show the perimeter of each one.

7 Make colored tiles available for students to use, and then give them time to solve the problem alone or with a partner.

8 After students have had a chance to work on the problem, bring the class back together to share their work.

Invite students to share one of the rectangles they made. Record the dimensions, perimeter, and area in a chart. Continue until you have found all the possibilities. Just as you did in Activity 2, organize the rectangles in a way that helps students make and build on observations. Continue to draw a quick sketch of each rectangle to help support visual thinkers.

Dimensions	Perimeter	Area
1 × 18	38 feet	18 ft^2
2 × 9	22 feet	18 ft^2
3 × 6	18 feet	18 ft^2

9 Ask students what they notice about the chart and how they would know if they found all the possibilities. Help students connect the dimensions of the rectangles formed to the idea of factors. Have they found all the factors of 18?

10 At the end of Number Corner today, ask students if they have any questions about any of the work they did in Solving Problems this month.

11 Then, wrap up this month by inviting students to share some of the big ideas they worked on in today's activity or the first two activities.

Day 19

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Update	*Update*	
Number Line	**Solving Problems**	**Assessment**
		Number Corner Checkup 3 – Part 2 (pg. 41)

Update

Starting after Activity 1, have the student helper(s) complete this update procedure every day that the Calendar Grid is not a featured activity. You'll update the Calendar Grid as part of Activities 2–5.

Procedure

- Reveal a new marker or markers to bring the calendar up to date.
- After Activity 2, update the Observations Chart with information about the new marker(s).

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Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

- Take a single square out of the bag.
- Add it to the collection of squares.
- Move the squares on the grid to create a figure that is made up of at least 2 rectangles.
- Draw the figure you made on grid paper. Label the grid paper with the day of school, date of the month, and your names. Put your drawing in the envelope beside the record sheet.
- Update the record sheet for the day.

Key Questions

Use the following questions to guide students' discussion this month:

- How can you calculate the area of this figure? Can you do it another way?
- How can you calculate the perimeter of this figure? Can you do it another way?
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Number Corner Checkup 3, Part 2

Completing Pages 4–6 — Day 19

1 Let students know that they are going to do the second half of the Number Corner checkup today.

Have them get out their pencils for today's problems.

7 Display your copy of Number Corner Checkup 3, pages 4–6, and give each student a copy.

Give students a few moments to examine the pages quietly.

8 Then, have students get started. Give them the rest of the available time to finish the assessment.

SUPPORT Remember that this is not a reading test. If students are struggling to read any part of the assessment, you can read the problems aloud for them. Also remember that apart from the multiplication facts on page 1, this is not a timed test. If students need extra time, they can have it at another time that works for you.

SUPPORT Place containers of colored tiles on each table or near each cluster of desks. Let students know they're welcome to use these materials to help with the checkup today.

9 At the end of Number Corner time today, have students stop working on their assessment. Recognize them for their effort and remind them the assessment will help you help them. Let them know they will have another checkup in a few months.

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Day 20

Date:

Calendar Grid	Calendar Collector	Computational Fluency
Activity 5 – Data Story Problems (pg. 11)	*Update*	
Number Line	**Solving Problems**	**Assessment**

Activity 5

Data Story Problems — Day 20

1 Open today's activity by completing the update procedure as a class and giving students some time to share observations and predictions as a group.

2 Then explain that students will complete a page in the Number Corner Student Book that will give them practice interpreting graphs.

3 Display your copy of the Data Story Problems page, and ask students to turn to the page in their own books.

4 Read the prompts out loud and answer any questions students have about what to do. Be sure they understand that each cell represents 20 sit-ups.

You might quickly review the scale by having students identify how many sit-ups he did on Sunday.

5 Then let students know how much time they will have to work. As they work, circulate around the room to make observations, answer questions, and provide differentiated instruction.

CHALLENGE Ask students to find the total number of sit-ups. Encourage them to think about averages by asking if they can find one number of sit-ups that Cameron could do each day and still do about the same amount as he did this week.

6 As students finish, have them share their work with a partner. If they have different answers, have them justify their thinking or rework the problem until they reach agreement.

Update

Starting after Activity 2, have a pair of student helpers complete this update procedure every day, including those days when the Calendar Collector is a featured activity. (If you want to complete the update procedure as a class when the Calendar Collector is the featured activity, you can do that; it will simply take more time.)

Procedure

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Key Questions

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