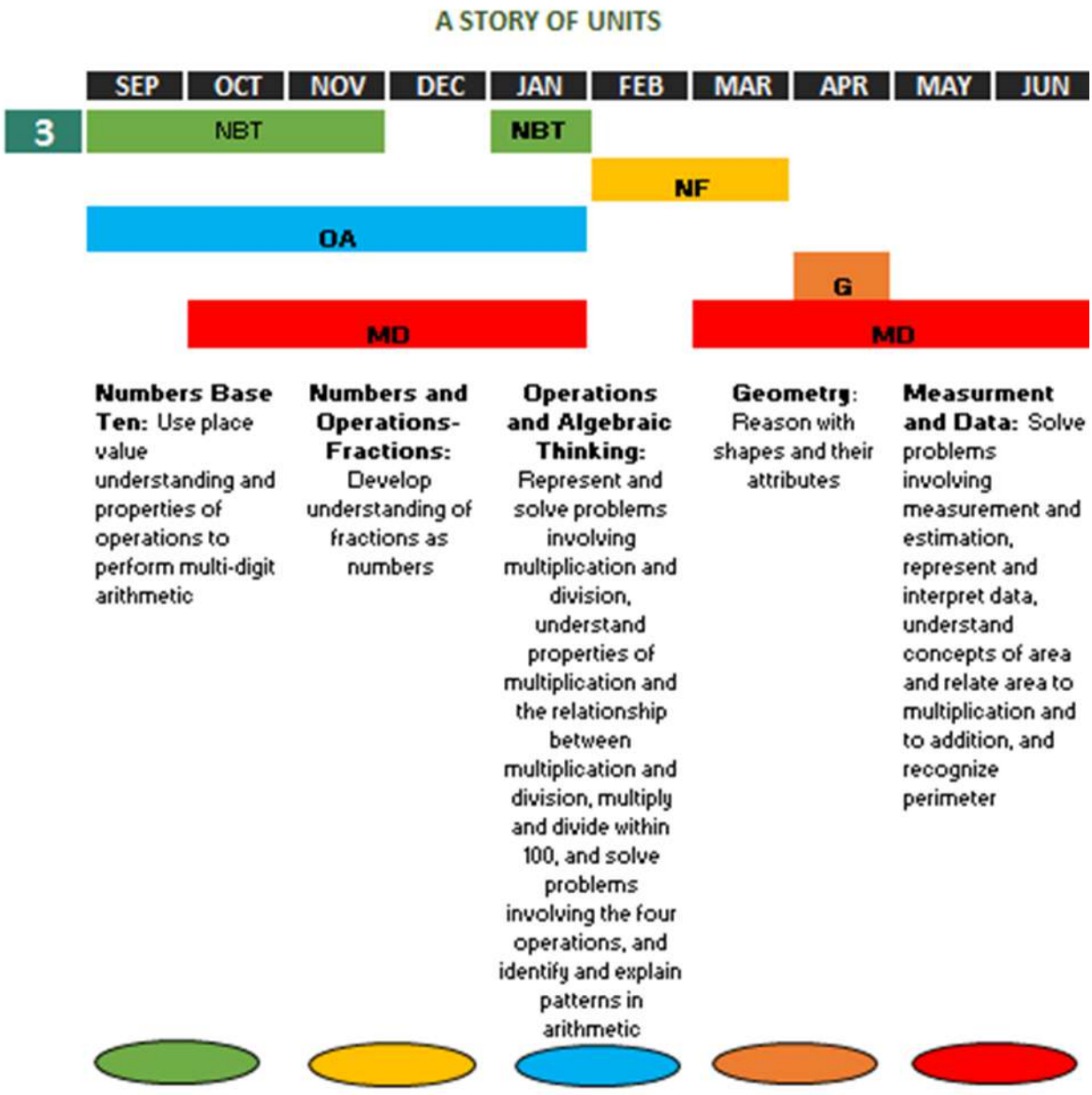
3rd Grade Mathematics

Unit 3 Curriculum Map: January 27 - April 6, 2017

ORANGE PUBLIC SCHOOLS

OFFICE OF CURRICULUM AND INSTRUCTION

OFFICE OF MATHEMATICS


A STORY OF UNITS
SEP
OCT
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MD
Numbers Base Ten: Use place value understanding and properties of operations to perform multi-digit arithmetic
Numbers and Operations-Fractions: Develop understanding of fractions as numbers
Operations and Algebraic Thinking: Represent and solve problems involving multiplication and division, understand properties of multiplication and the relationship between multiplication and division, multiply and divide within 100, and solve problems involving the four operations, and identify and explain patterns in arithmetic
Geometry: Reason with shapes and their attributes
Measurment and Data: Solve problems involving measurement and estimation, represent and interpret data, understand concepts of area and relate area to multiplication and to addition, and recognize perimeter

Table of Contents

Unit Overview

Unit 3: Chapters 14, 16, and PARCC Review
In this Unit Students will
• Develop an understanding of fractions, beginning with unit fractions. • View fractions in general as being built out of unit fractions, and they use fractions along with visual fraction models to represent parts of a whole. • Understand that the size of a fractional part is relative to the size of the whole. For example, 1/2 of the paint in a small bucket could be less paint than 1/3 of the paint in a larger bucket, but 1/3 of a ribbon is longer than 1/5 of the same ribbon because when the ribbon is divided into 3 equal parts, the parts are longer than when the ribbon is divided into 5 equal parts. Students are able to use fractions to represent numbers equal to, less than, and greater than one. • Solve problems that involve comparing fractions by using visual fraction models and strategies based on noticing equal numerators or denominators. • Recognize that the numerator is the top number of a fraction and that it represents the number of equal sized parts of a set or whole; recognize that the denominator is the bottom number of a fraction and that it represents the total number of equal sized parts or the total number of objects of the set. • Explain the concept that the larger the denominator, the smaller the size of the piece. • Compare common fractions with like denominators and tell why one fraction is greater than, less than, or equal to the other. • Represent halves, thirds, fourths, sixths, and eighths using various fraction models. • Tell and write time to the nearest minute and measure time intervals in minutes. • Solve word problems involving addition and subtraction of time intervals in minutes, e.g. by representing the problem on a number line diagram.
Essential Questions
➢ How can fractions be represented? ➢ How does the denominator affect the size of the pieces? ➢ What do the denominator and numerator represent in a fraction? ➢ How can you compare unit fractions with same denominators? ➢ How can you compare fractions with the same numerator? ➢ How can you use visual models to compare simple equivalent fractions? ➢ What makes some fractions equivalent? ➢ How can fractions be represented on a number line?

Enduring Understandings

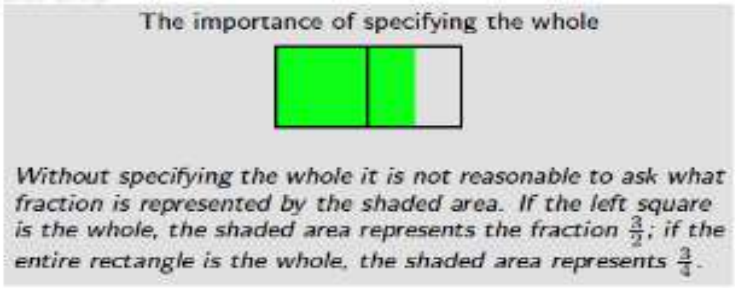
- A fraction is a number.
- A fraction is a quantity when a whole is partitioned into equal parts.
- The whole that the fraction refers to must be specified.
- Unit fractions are the basic building blocks of fractions in the same way that 1 is the basic building block of whole numbers.
- Understand the concept of numerator and denominator.
- As the number of equal parts in the whole increases, the size of the fractional pieces decreases.
- The denominator represents the number of equal parts in the whole.
- The numerator is the count of the number of equal parts.
- Equivalent fractions represent the same size or the same point on a number line.
- When comparing fractions, each fraction must refer to the same whole.
- Fractions with common numerators or common denominators can be compared by reasoning about the number of parts or the size of the parts.
- Know fractions can represent parts of a whole, a point on a number line as well as distance on a number line.
- Understand that the size of a fractional part is relative to the size of the whole.
- Compare and order unit fractions.
- Compare and order fractions with like denominators.

Common Core State Standards

3.NF.1	Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction *a/b* as the quantity formed by a parts of size 1/*b*.

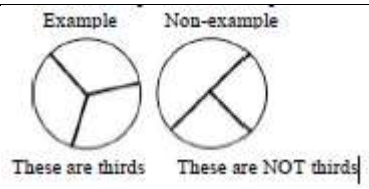
This standard refers to the sharing of a whole being partitioned. Fraction models in third grade include only are (parts of a whole) models (circles, rectangles, squares)m and number lines. Set models (parts of a groups) are not addressed in Third Grade.

In 3.NF. 1 students start with unit fractions (fractions with numerator 1), which are formed by partitioning a whole into equal parts and reasoning about one part of the whole, e.g. if a whole is partitioned into 4 equal parts then each part is 1/4 of the whole, and 4 copies of the that part make the whole. Next, students build fractions from unit fractions, seeing the numerator 3 of 3/4 as saying that 3/4 is the quantity you get by putting 3 of the 1/4's together. There is no need to introduce "improper fraction" initially.



Some important concepts related to developing understanding of fractions include:

- Understand fractional parts must be equal-sized.



- The number of equal parts tell how many make a whole.
- As the number of equal pieces in the whole increases, the size of the fractional pieces decreases.
- The size of the fractional part is relative to the whole.

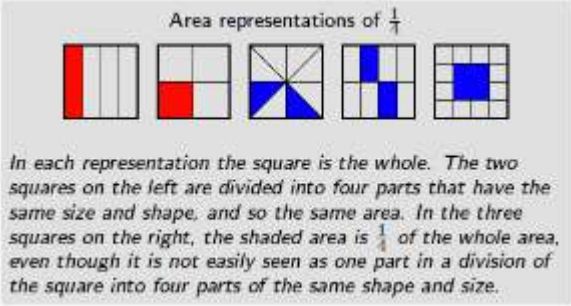
o One-half of a small pizza is relatively smaller than one-half of a large pizza.

- When a whole is cut into equal parts, the denominator represents the number of equal parts.
- The numerator of a fraction is the count of the number of equal parts.

o .means that there are 3 one-fourths.
o Students can count *one fourth, two fourths, three fourths.*

Students express fractions as fair sharing or, parts of a whole. They use various contexts (candy bars, fruit, and cakes) and a variety of models (circles, squares, rectangles, fraction bars, and number lines) to develop understanding of fractions and represent fractions. Students need many opportunities to solve word problems that require them to create and reason about fair share.

Initially, students can use an intuitive notion of "same size and same shape" (congruence) to explain why the parts are equal, e.g., when they divide a square into four equal squares or four equal rectangles. Students come to understand a more precise meaning for "equal parts" as "parts with equal measurements." For example, when a ruler is partitioned into halves or quarters of an inch, they see that each subdivision has the same length. In area models they reason
about the area of a shaded region to decide what fraction of the whole it represents.

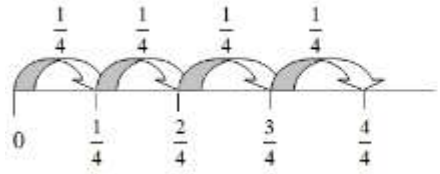


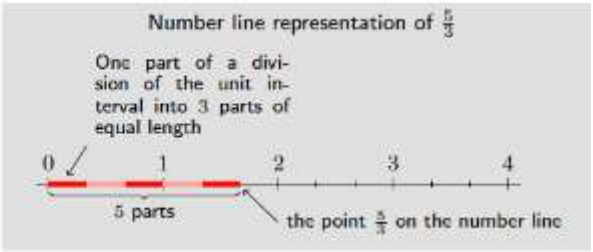
3.NF.2	Understand a fraction as a number on the number line, represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint

	locates the number a/b on the number.

The number line diagram is the first time students work with a number line for numbers that are between whole numbers (e.g., that 1/2 is between 0 and 1). Students need ample experiences folding linear models (e.g., strings, sentence strips) to help them reason about and justify the location of fractions, such that 1/2 lies exactly between 0 and 1.

In the number line diagram, the space between 0 and 1 is divided (partitioned) into 4 equal regions. The distance from 0 to the first segments is 1 of the 4 segments from 0 to 1 or 1/4. Similarly, the distance from 0 to the third segment is 3 segments that are each one-fourth long, Therefore, the distance of 3 segments from 0 is the fraction 3/4/.





3.NF.3	Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. Recognize and generate simple equivalent fractions, e.g. 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 = 1 at the same point of a number line diagram. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >,=, or <, and justify the conclusions, e.g., by using visuals fraction model.

An important concept when comparing fractions is to look at the size of the parts and the number of the parts. For example, 1/8 is smaller than 1/2 because when 1 whole is cut into 8 pieces, the pieces are much smaller than when 1 whole is cut into 2 pieces.

3.NF.3a and 3.NF.3b These standards call for students to use visual fraction models (area models) and number lines to explore the idea of equivalent fractions. Students should only explore equivalent fractions using models, rather than using algorithms or procedures.

This standard includes writing whole numbers as fractions. The concepts relates to fractions as division problems, where the fraction 3/1 is 3 wholes divide into one group. This standard is the building block for later work where students divide set of objects into a specific number of groups. Students understand the meaning of a/1

Example:

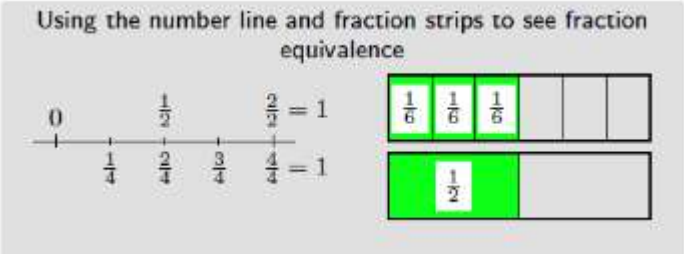
If 6 brownies are shared between 2 people, how many brownies would each person get?

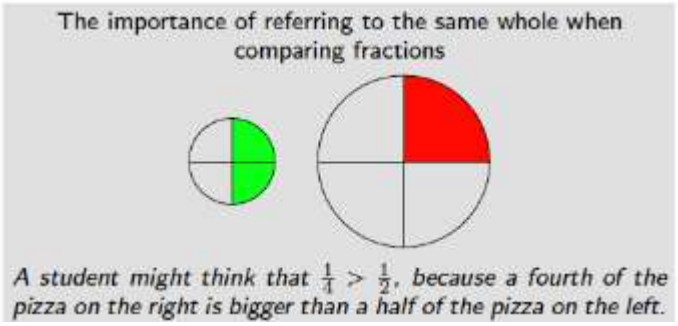
This standard involves comparing fractions with or without visual fraction models including number lines. Experiences should encourage students to reason about the size of pieces, the fact that 1/3 of a cake is larger than 1/4 of the same cake. Since the same cake (the whole) is split into equal pieces, thirds are larger than fourths.

In this standard, students should also reason that comparisons are only valid if the wholes are identical. For example, 1/2 of a large pizza is a different amount that 1/2 of a small pizza. Students should be given opportunities to discuss and reason about which 1/2 is larger.

Previously, in second grade, students compared lengths using a standard measure unit. In third grade they build on this idea to compare fractions with the same denominator. They see that for fractions that have the same denominator, the underlying unit fractions are the same size, so the fraction with the greater numerator is greater because it is made of more unit fractions. For example, segment from 0 to 3/4 is shorter than the segment from 0 to 5/4 because it measures 3 units of 1/4 as opposed to 5 units of 1/4, therefore 3/4 < 5/4.

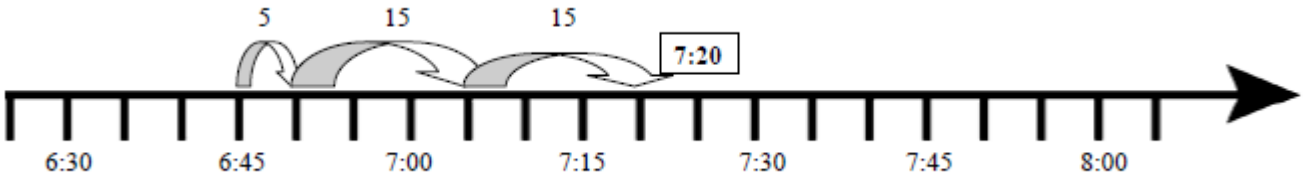
Students also see that for unit fractions, the one with the larger denominator is smaller, by reasoning, for example, that in order for more (identical) pieces to make the same whole, the pieces must be smaller. From this they reason that for fractions that have the same numerator, the fraction with the smaller denominator is greater. For example, 2/5 > 2/7, because 1/7 < 1/5, so 2 lengths of 1/7 is less than 2 lengths of 1/5. As with equivalence of fractions, it is important in comparing fractions to make sure that each fraction refers to the same whole.





3.MD.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g by representing the problem on a number line diagram.

This standard calls for students to solve elapsed time, including word problems. Students could use clock models or number lines to solve. On the number line, students should be given the opportunities to determine the intervals and size of jumps on their number line. Students could use pre-determine number lines (intervals every 5 or 15 minutes) or open number lines (intervals determined by students).



M : Major ContentS: Supporting ContentA : Additional Content

21st Century Career Ready Practices

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills.
CRP3. Attend to personal health and financial well-being.
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP9. Model integrity, ethical leadership and effective management.
CRP10. Plan education and career paths aligned to personal goals.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence.

MIF Lesson Structure

	LESSON STRUCTURE	RESOURCES	COMMENTS
PRE TEST	**Chapter Opener** Assessing Prior Knowledge *The Pre Test serves as a diagnostic test of readiness of the upcoming chapter*	**Teacher Materials** Quick Check PreTest (Assessm'tBk) Recall Prior Knowledge **Student Materials** Student Book (Quick Check); Copy of the Pre Test; Recall prior Knowledge	Recall Prior Knowledge (RPK) can take place just before the pre-tests are given and can take 1-2 days to front load prerequisite understanding Quick Check can be done in concert with the RPK and used to repair student misunderstandings and vocabulary prior to the pre-test ; Students write Quick Check answers on a separate sheet of paper Quick Check and the Pre Test can be done in the same block *(See Anecdotal Checklist; Transition Guide)* Recall Prior Knowledge – Quick Check – Pre Test
DIRECT ENGAGEMENT	**Direct Involvement/Engagement** Teach/Learn *Students are directly involved in making sense, themselves, of the concepts – by interacting the tools, manipulatives, each other, and the questions*	**Teacher Edition** 5-minute warm up Teach; Anchor Task **Technology** Digi **Other** Fluency Practice	• The Warm Up activates prior knowledge for each new lesson • Student Books are CLOSED; Big Book is used in Gr. K • Teacher led; Whole group • Students use concrete manipulatives to explore concepts • A few select parts of the task are explicitly shown, but the majority is addressed through the hands-on, constructivist approach and questioning • Teacher facilitates; Students find the solution
GUIDED LEARNING	**Guided Learning and Practice** Guided Learning	**Teacher Edition** Learn **Technology** Digi **Student Book** Guided Learning Pages Hands-on Activity	Students-already in pairs /small, homogenous ability groups; Teacher circulates between groups; Teacher, anecdotally, captures student thinking **Small Group w/Teacher circulating among groups** Revisit Concrete and Model Drawing; Reteach Teacher spends majority of time with struggling learners; some time with on level, and less time with advanced groups Games and Activities can be done at this time

INDEPENDENT PRACTICE	**Independent Practice** *A formal formative assessment*	**Teacher Edition** Let's Practice **Student Book** Let's Practice **Differentiation Options** All: Workbook Extra Support: Reteach On Level: Extra Practice Advanced: Enrichment	**Let's Practice** determines readiness for Workbook and small group work and is used as formative assessment; Students not ready for the Workbook will use Reteach. The Workbook is continued as Independent Practice. Manipulatives **CAN** be used as a communications tool as needed. Completely Independent On level/advance learners should finish all workbook pages.
ADDITIONAL PRACTICE	**Extending the Lesson**	Math Journal Problem of the Lesson Interactivities Games	
	Lesson Wrap Up	Problem of the Lesson Homework (Workbook , Reteach, or Extra Practice)	Workbook or Extra Practice Homework is only assigned when students fully understand the concepts (as additional practice) Reteach Homework (issued to struggling learners) should be checked the next day
POST TEST	**End of Chapter Wrap Up and Post Test**	**Teacher Edition** Chapter Review/Test Put on Your Thinking Cap **Student Workbook** Put on Your Thinking Cap **Assessment Book** Test Prep	Use Chapter Review/Test as "review" for the End of Chapter Test Prep. Put on your Thinking Cap prepares students for novel questions on the Test Prep; Test Prep is graded/scored. The Chapter Review/Test can be completed • Individually (e.g. for homework) then reviewed in class • As a 'mock test' done in class and doesn't count • As a formal, in class review where teacher walks students through the questions Test Prep is completely independent; scored/graded Put on Your Thinking Cap (green border) serve as a capstone problem and are done just before the Test Prep and should be treated as Direct Engagement. By February, students should be doing the Put on Your Thinking Cap problems on their own.

TRANSITION LESSON STRUCTURE (No more than 2 days)

- **Driven by Pre-test results, Transition Guide**
- **Looks different from the typical daily lesson**

Transition Lesson – Day 1 **Objective:**	
CPA Strategy/Materials	**Ability Groupings/Pairs (by Name)**
Task(s)/Text Resources	**Activity/Description**

MIF Pacing Guide

Activity	Common Core Standards	Estimated Time (# of block)	Lesson Notes
Pre-Test 14	3.NF.1, 3N.F.2, 3.NF.3	1/2 block	
Fraction Exploration Activity/ Creating Fraction Strips then using them to solve problems	3.NF.1, 3N.F.2, 3.NF.3	2 blocks	All of the fraction activities that are in bold writing are scripted, and the script is attached to this document.
Comparing Fraction Part 1 Activity	3.NF.2 and 3.NF.3	2 blocks	
Comparing Fraction Part 2 Activity	3.NF.2 and 3.NF.3	2 blocks	
USING FRACTION STRIPS TO EXPLORE THE NUMBER LINE	3.NF.1, 3N.F.2, 3.NF.3	2-3 blocks	
Pattern Block Game	3.NF.1, 3N.F.2, 3.NF.3	1 block	This activity can be ongoing throughout the year as a workstation or center
Make a Hexagon Game Build the hexagon	3.NF.1, 3N.F.2, 3.NF.3	1 block	This activity can be ongoing throughout the year as a workstation or center
14.1 Understanding Fractions	3.NF.2, 3N.F.3	2 blocks	Have students count by fractions and highlight the different roles that the numerator and denominator have. Continually connect the vocabulary to models. . Read fractions with meaning. Example: 3/4 reads, "3 out of 4 equal parts".
14.2 Understanding Equivalent Fractions	3.NF.1, 3N.F.2, 3.NF.3	2 blocks	
14.3 More Equivalent Fractions	3.NF.1, 3N.F.2, 3.NF.3	2 blocks	
14.4 Comparing Fractions	3.NF.2 and 3.NF.3	3 blocks	
Chapter 14 Wrap Up/Review	3.NF.1, 3N.F.2, 3.NF.3	1 block	Reinforce and consolidate chapter skills and concepts
Chapter 14 Test	3.NF.1, 3N.F.2, 3.NF.3	1 block	

Mini Assessment #6 / Authentic Assessment #9 Daily rainfall	3.NF.1, 3.N.F.2, 3.NF.3	1 block	
Pre-test Chapter 16	3.MD.1	½ block	
16.1 Telling Time	3.MD.1	1 block	**Student must understand the units of time in order to successfully be able to add and subtract time.** Students may use open number lines or a drawing of an analog clock to add or subtract time.
16. 2 Converting Hour and Minutes	3.MD.1	1 block	<u>Three Main Parts In Elapsed Time</u> • Start Time • Time that Passed • End Time Usually one of these parts is unknown
16. 3 Adding Hours and Minutes	3.MD.1	1 block	
16.4 Subtracting Hours and Minutes	3.MD.1	1 block	
16.5 Elapsed Time	3.MD.1	3 blocks	
Chapter 16 Wrap Up/Review	3.MD.1	2 block	Reinforce and consolidate chapter skills and concepts
Test Prep Chapter 16	3.MD.1	1 block	
Mini Assessment #7 (3.MD.1) Authentic Assessment #10	3.MD.1	1 block	
PARCC Review		5 blocks	
PARCC Assessment		5 blocks	
Total Time		**45 Blocks**	

Resources for Special Needs and English Language Learners

Chapter 14

Additional Support

For English Language Learners

Select activities that reinforce the chapter vocabulary and the connections among these words, such as having students

- add terms, definitions, and examples to the Word Wall
- draw and label pictures that represent fractions
- fold a piece of paper into different numbers of equal parts and describe the relationships among the parts
- discuss the Chapter Wrap Up, encouraging students to use the chapter vocabulary

For Extra Support

Select activities that go back to the appropriate stage of the Concrete-Pictorial-Abstract spectrum, such as having students

- use fraction bars to name equivalent fractions
- use two-color counters or centimeter cubes of different color to represent and name fractions of a set
- draw polygons divided into parts to represent fractions
- relate fractions to the markings on a ruler

See also pages 119–120, 132–133, and 150.

If necessary, review:

- Chapter 9 (Using a Bar Model: Multiplication and Division)

Chapter 16

Additional Support

For English Language Learners

Select activities that reinforce the chapter vocabulary and the connections among these words, such as having students

- add terms, definitions, and examples to the Word Wall
- draw and label an analog clock with the words *hour*, *past*, and *minute*
- draw a thermometer and use it to talk about *hot*, *cold*, *cool*, and *warm* temperatures
- discuss the Chapter Wrap Up, encouraging students to use the chapter vocabulary

For Extra Support

Select activities that go back to the appropriate stage of the Concrete-Pictorial-Abstract spectrum, such as having students

- use real or play analog clocks to show and identify times
- use real or play analog clocks to count and identify elapsed times
- work backward to find or check an answer related to elapsed time
- have students touch warm, cool, and cold water to establish referents

See also page 257–258.

If necessary, review:

- Chapter 3 (Addition Up to 10,000)
- Chapter 4 (Subtraction Up to 10,000)
- Grade 2 Chapter 14 (Time)

For Advanced Learners

See suggestions on page 242

Pacing Calendar

January/February						
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
	30 **Pre-Test 14**	**31** Fraction Exploration Activity	**1** Fraction Exploration Activity	**2** Comparing Fraction Part 1 Activity	**3** Comparing Fraction Part 1 Activity	**4**
5	**6** Comparing Fraction Part 2 Activity	**7** Comparing Fraction Part 2 Activity	***8*** Using Fraction Strips to Explore the Number Line	**9** Using Fraction Strips to Explore the Number Line	**10** Using Fraction Strips to Explore the Number Line(1/2 block)**Pattern Block Game**	**11**
12	**13** Using Fraction Strips to Explore the Number Line(1/2 block)**Pattern Block Game**	**14 Pattern Block Game Activity**	***15 Start 14.1***	**16**	***17***	**18**
19	***20 No School***	**21** ***No School***	**22** ***No School***	**23** ***No School***	***24 No School***	**25**
26	**27**	**28**				

March

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
			1	**2**	**3**	**4**
5	**6**	**7**	**8 Chapter 14 Test**	***9 Authentic Assessment # 9***	**10 Mini Assessment #6**	**11**
12	**13 Chapter 16 Pre-Test**	**14 Start 16.1**	**15**	**16**	**17**	**18**
19	**20**	**21**	**22**	**23 Chapter 16 Test**	**24 Authentic Assessment #10/ Mini Assessment #7**	**25**
26	**27 PARCC Review**	**28 PARCC Review**	**29 PARCC Review**	**30 PARCC Review**	**31 PARCC Review**	

April

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3 PARCC Assessment	4	5	*6*	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

Unit 3 Math Background

During their elementary mathematics education, third-grade students will have prior knowledge/experience related to the concepts and skills identified in this unit. In first grade, students are expected to partition circles and rectangles into two or four equal shares, and use the words, halves, half of, a fourth of, and quarter of. In second grade, students are expected to partition circles and rectangles into two, three, or four equal shares, and use the words, halves, thirds, half of, a third of, fourth of, quarter of. Students should also understand that decomposing into more equal shares equals smaller shares, and that equal shares of identical wholes need not have the same shape.

Students learned to read time from an analog clock to the hour and half hour, and relate time to daily activities using terms such as o'clock and half past. Students learned about the minute hand, and the fact that time after the hour can be read in skips of 5 minutes. They learned the digital notation of time and the use of a.m. for time from midnight and p.m. for the time from noon.

Transition Guide References:

Chapter : 14 Fractions				
Transition Topic: Fractions				
Chapter 14 **Grade 3** **Pre-test Items**	**Grade 3 Chapter 1 Pre-Test Item Objective**	**Additional Reteach Support** **Grade 2 Reteach**	**Additional Extra Practice Support** **Grade 2 Extra Practice**	**Teacher Edition Support** **Grade 2 TE**
Items 1;3	Read, write, and identify unit fractions for halves, thirds, and fourths	2B p. 52	Lesson 12.1	2B Chapter 12 lesson 1
Items 1;3	Show fractions and a whole using model drawings.	2B p. 51-52	Lesson 12.1	2B Chapter 12 lesson 1
Items 1;3	Compare and order two or more unit fractions with or without the use of models.	2B p. 55 -56	Lesson 12.2	2B Chapter 12 lesson 2
Items 1;3	Add and subtract like fractions with or without the use of models	2B p. 57-60	Lesson 12.3	2B Chapter 12 lesson 3

PARCC Assessment Evidence/Clarification Statements

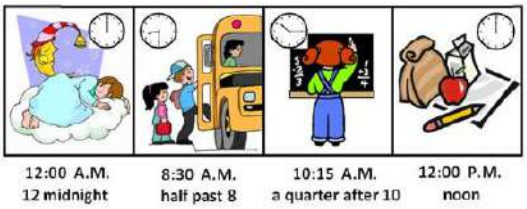
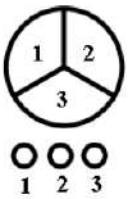
NJSLS	Evidence Statement	Clarification	Math Practices
3.NF.1	Understand a fraction *1/b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a/b* as the quantity formed by a parts of size *1/b.*	i) Tasks do not involve the number line	2
3.NF.2	Understand a fraction as a number on the number line, represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number.	i) Fractions may include values greater than 1. ii) Fractions equal whole numbers in 20% of these tasks. iii) Tasks have "thin context" or no context. iv) Tasks are limited to fractions with denominators 2,3,4,6, and 8.	5
3.NF.3a-1	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size.	i) Tasks do not involve the number line. ii) Tasks are limited to fractions with denominators 2,3,4,6, and 8. iii) The explanation aspects of 3.NF.3 is not assessed here.	5
3.NF.3a-2	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same point on a number line.	i) Tasks are limited to fractions with denominators 2,3,4,6, and 8. ii) The explanation aspects of 3.NF.3 is not assessed here.	5
3.NF.3b-1	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. b. Recognize and generate simple equivalent fractions, (e;g; 1/2 =2/4, 4/6 = 2/3).	i) Tasks are limited to fractions with denominators 2,3,4,6, and 8. ii) The explanation aspects of 3.NF.3 is not assessed here.	7
3NF.3c	Explain equivalence of fractions in special cases and compare fractions by reasoning about their size. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.	i) Tasks are limited to fractions with denominators 2,3,4,6, and 8. ii) The explanation aspects of 3.NF.3 is not assessed here.	-
3.MD.1-1	Tell time and write time to the nearest minute and measure time intervals in minutes.	i) Time intervals are limited to 60 minutes. ii) No more than 20% of items require	

		determine a time interval from clock readings having different hour values Acceptable intervals: ex Start time 1:20, end time 2:10 - time intervals is 50 minutes. Unacceptable intervals: ex. Start time 1:20, end time 2:30 - time interval exceeds 60 minutes.	
3.MD.1-2	Solve word problems involving addition and subtraction of time intervals in minutes, e.g. by representing the problem on a number line diagram.	i) Only the answer is required (methods, representations, etc. are not assessed here). ii) Tasks do not involve reading start/stop times from a clock nor calculating elapsed time.	1, 4, 2,5

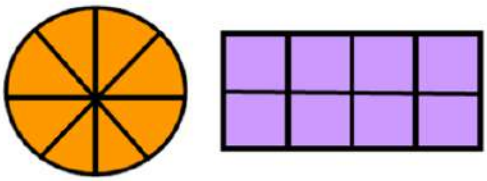
Connections to the Mathematical Practices

1	**Make sense of problems and persevere in solving them**
	In **third** grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Third graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try approaches. They often will use another method to check their answers.
2	**Reason abstractly and quantitatively**
	In **third** grade, students should recognize that number represents a specific quantity. They connect quantity to written symbols and create logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities.
3	**Construct viable arguments and critique the reasoning of others**
	In **third** grade, mathematically proficient students may construct viable arguments using concrete referents, such as objects, pictures, and drawings. They refine their mathematical communication skills as they participate in mathematical discussions involving questions like, "How did you get that?" and "Why is it true?" They explain their thinking to others and respond to others' thinking.
4	**Model with mathematics**
	Mathematically proficient students experiment with representing problem situations in multiple ways including numbers, words (mathematical language) drawing pictures, using objects, acting out, making chart, list, or graph, creating equations etc…Students need opportunities to connect different representations and explain the connections. They should be able to use all of the representations as needed. **Third** graders should evaluate their results in the context of the situation and reflect whether the results make any sense.
5	**Use appropriate tools strategically**
	Third graders should consider all the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For example, they might use graph paper to find all possible rectangles with the given perimeter. They compile all possibilities into an organized list or a table, and determine whether they all have the possible rectangles.
6	**Attend to precision**
	Mathematical proficient **third** graders develop their mathematical communication skills; they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying their units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle the record their answer in square units.
7	**Look for and make use of structure**
	In **third** grade, students should look closely to discover a pattern of structure. For example, students properties of operations as strategies to multiply and divide. (commutative and distributive properties.
8	**Look for and express regularity in repeated reasoning**
	Mathematically proficient students in third **grade** should notice repetitive actions in computation and look for more shortcut methods. For example, students may use the distributive property.

Visual Vocabulary

Visual Definition **The terms below are for teacher reference only and are not to be memorized by students.** Teachers should first present these concepts to students with models and real life examples. Students should understand the concepts involved and be able to recognize and/or use them with words, models, pictures, or numbers.		
a.m.		A time between 12:00 midnight and 12:00 noon.
analog clock		A clock that shows the time by the positions of the hour and minute hand.
denominator	$\frac{1}{3}$  • **Parts in all** • **Whole** • **Set** • **Total**	The quantity below the line in a fraction. It tells how many equal parts are in the whole.
digital clock		A clock that shows the time with numbers of hours and minutes, usually separated with a colon. (:)

eighths

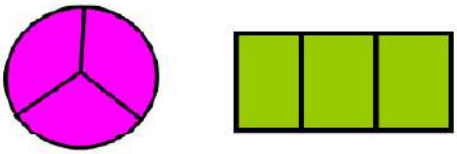


The parts you get when you divide something into eight equal parts.

elapsed time

The amount of time that has passed. (also known as time interval)

equal parts



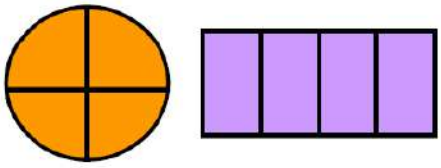
3 equal parts

Parts of an object or group that have been divided equally into pieces.

equivalent fractions

Fractions that have the same value.

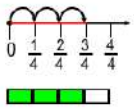
fourths



The parts you get when you divide something into 4 equal parts.

fraction

Measurement Model



Bar Diagram
(thickened number line)

Set Model

Area Model

A way to describe a part of a whole or a part of a group by using equal parts.

fraction greater than one

$$\frac{7}{6}$$ ← greater than denominator

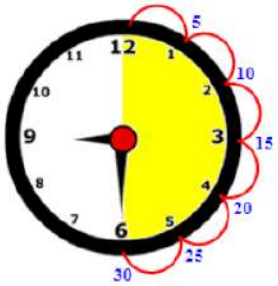
A fraction with the numerator greater than the denominator.

fraction less than one

$$\frac{5}{6}$$ ← less than denominator

A fraction with the numerator less than the denominator.

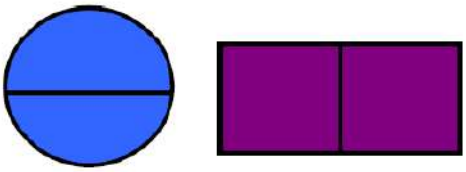
half hour



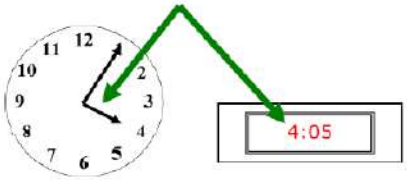
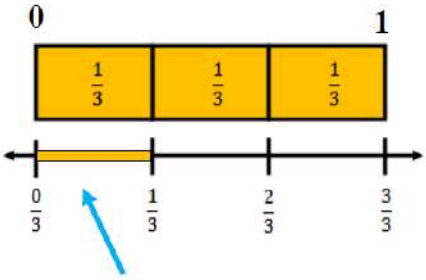
30 minutes = one half-hour

A unit of time equal to 30 minutes.

halves

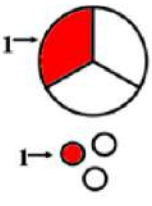


The parts you get when you divide something into 2 equal parts.

hour (hr)		Units of time. 1 hour = 60 minutes 24 hours = 1 day
interval		The distance between two points.
midnight		12:00 at night.
minute (min)		A unit used to measure short amounts of time; there are 60 minutes in one hour.
noon		12:00 in the day.

numerator

$\frac{1}{3}$



- Parts shaded
- Parts we are using

The number written above the line in a fraction. It tells how many equal parts are described in the fraction.

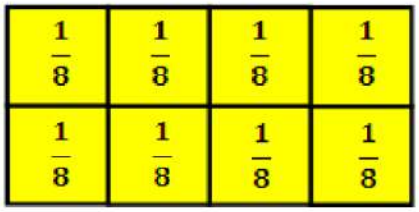
order

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

In order from least to greatest.

A sequence or arrangement of things. To order fractions, compare two fractions at a time.

partition



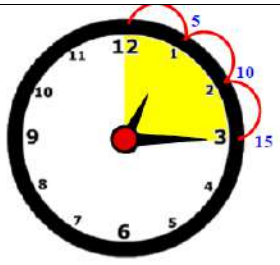
eight $\frac{1}{8}$ equal parts

An action to divide shapes into smaller parts.

p.m.

The time between 12:00 noon and 12:00 midnight.

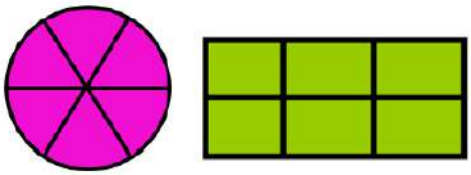
quarter hour



15 minutes = 1 quarter hour

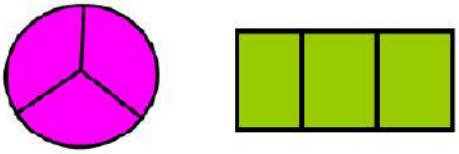
A unit of time worth 15 minutes.

sixths



The parts you get when you divide something into six equal parts.

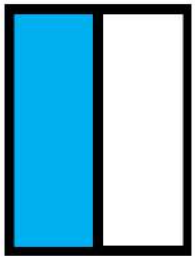
thirds



The parts you get when you divide something into 3 equal parts.

unit fraction

$\frac{1}{2}$



Example

A fraction that has 1 as its numerator. A unit fraction names 1 equal part of a whole.

whole

1 whole pie

1 whole rectangle

All of an object, a group of objects, shape, or quantity.

Potential Student Misconceptions

Fractions

- Students misunderstand the meaning of the numerator and denominator.
- Students see the numbers in fractions as two unrelated whole numbers separated by a line
- . Read fractions with meaning.

Example: 3/4 reads, "3 out of 4 equal parts".

- Students believe that fractions are not numbers. Use number lines to demonstrate placement and value of fractions and whole numbers.

- Students believe that the larger the denominator, the larger the piece or fraction.

(This can result from students incorrectly memorizing "the larger the denominator the smaller the piece." Rather than simple memorization, have students make sense of this relationship themselves. For example, have students investigate whether they would prefer to eat one-hundredth of a pizza or one-fourth of a pizza. Have them defend their answer in terms of what you've heard other students say, that 100 is more than 4, so one-hundredth must be greater.)

- Students believe that the numerator alone determines the size of the fraction.

Fractions are a part to whole relationship. Have students create models of fractions, and associate the written fraction to the relationship between that part to its whole. Have students confront this relationship using a wide variety of fraction models. Continually connect the vocabulary for fraction names to models.

- Students create models that do not represent equal groups. Students may struggle with understanding that when partitioning a whole shape, number line, or a set into unit fractions, the intervals must be equal.

- Students may think all shapes can be partitioned the same way.

- Students may have difficulty perceiving the unit on a number line diagram. Students might not count correctly on the number line

. **For example, students may count the hash mark at zero as the first unit fraction. In the early stages of instruction, use area models and paper strips to highlight the importance of identifying the whole. Subdividing these models can transfer to subdividing a linear unit.**

- Student plot points based on understanding fractions as whole numbers instead of fractional parts.**For example. Students order fractions using the numerator or students order unit fractions by the denominator.**

- Students do not understand the importance of the whole of a fraction and identifying it.

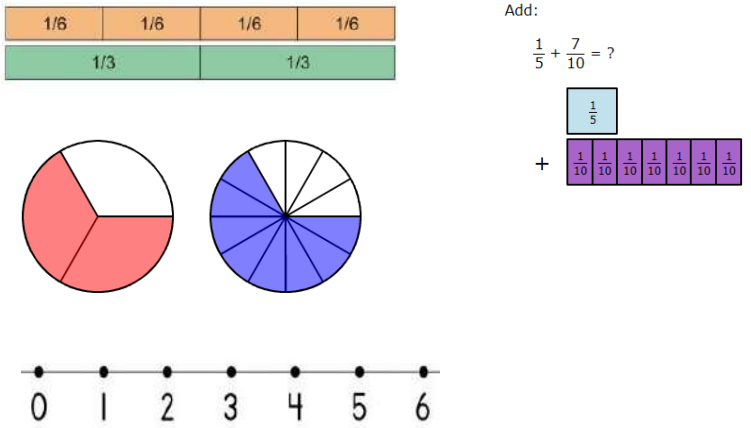
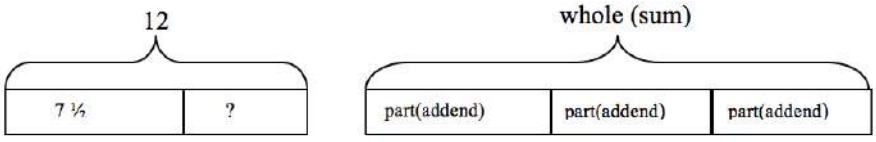
For example, students may use a fixed size of 1/4 based on the manipulatives used or previous experience with a ruler.

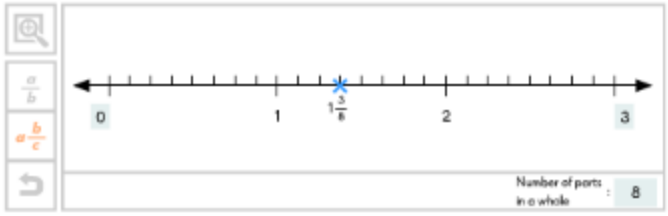
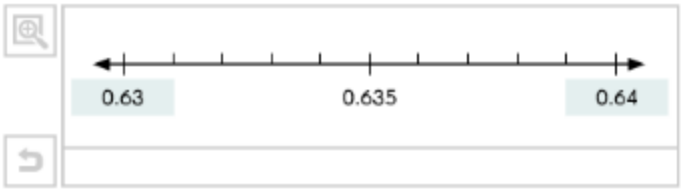
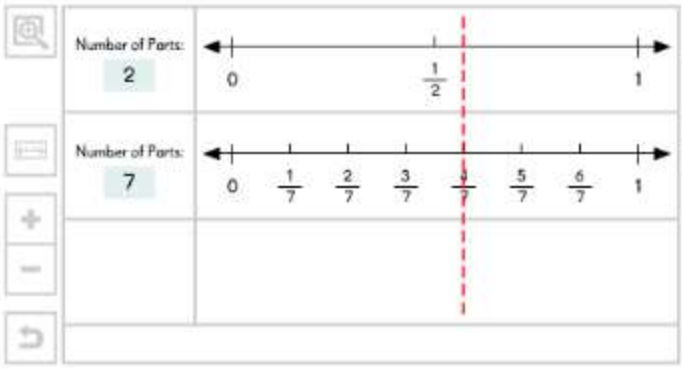
- Students might have difficulty understanding there are many fractions less than 1.
- Students may be confronted with the challenge of understanding that there are fractions greater that 1.

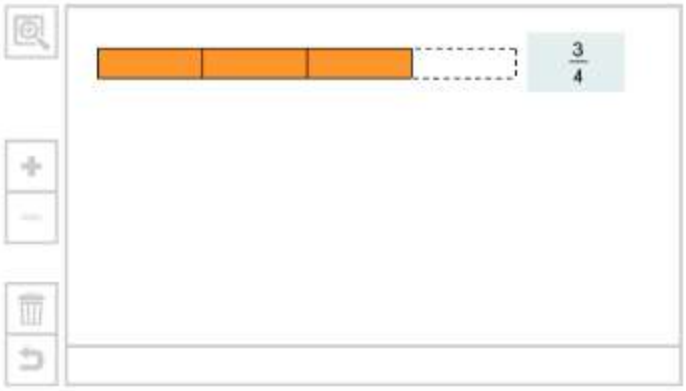
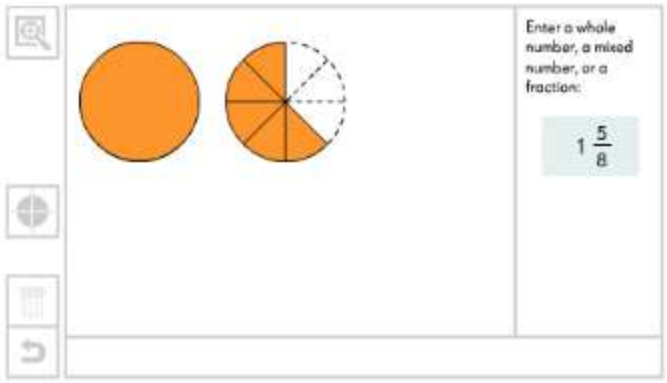
- Students may confuse time before and after the hour. Remind students to read the numbers in a clockwise direction.

Teaching Multiple Representations

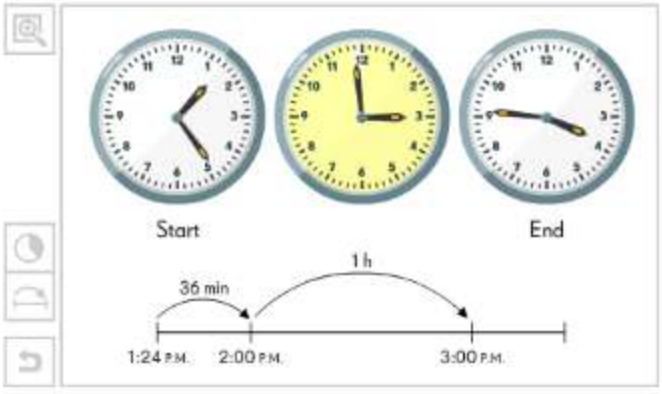
Multiple Representations Framework

Concrete and Pictorial Representations	
Equal Partitioning and Unitizing ***Using Visual Fraction Models*** • **Fraction Strips** • **Fraction Circles** • **Number line**	
Bar Model	*Leticia read 7 ½ books for the read-a-thon. She wants to read 12 books in all. How many more books does she have to read?*  12 - 7 ½ = ?or 7 ½ + ? = 12 so Leticia needs to read 4 ½ more books.
Benchmark Fractions	**1/2, 1/3, 1/4, 1/5, 1/8, 1/10**

Mixed Number Line 	• To represent fractions or mixed numbers • To rename mixed numbers as improper fractions
Number Line 	• To round a decimal • To multiply tenths by a 1-digit whole number
Fraction Number Line 	• To compare fractions • To represent probability

Fraction Bar Model 	• To compare fractions • To check if fractions are equivalent and/or in simplest form
Fraction Circular Model 	• To subtract like fractions • To relate improper fractions and mixed numbers • To express improper fractions in simplest form • To rename improper fractions
Analog Clock 	• To show time using an analog clock

Elapsed Time Clock



- To find elapsed time

Assessment Framework

Unit 3 Assessment / Authentic Assessment Framework				
Assessment	**NJSLS**	**Estimated Time**	**Format**	**Graded ?**
Chapter 14				
Pre Test14	3.NF.1, 3.NF.2, and 3.NF.3	1/2 block periods	Individual	No
Test Prep 14	3.NF.1, 3.NF.2, and 3.NF.3	1 block	Individual	Yes
Authentic Assessment #9 Daily Rainfall / Mini Assessment #6	3.NF.1, 3.NF.2, and 3.NF.3	1/2 block	Individual	Yes
Chapter 15				
Pre-test	3.MD.1	½ block	Individual	no
Test Prep	3.MD.1	½ block	Individual	yes
Authentic Assessment *#10*	3.MD.1	½ block	Individual	yes
Mini Assessment #7	3.MD.1	½ block	Individual	yes

	PLD	**Genesis Conversion**
Rubric Scoring	PLD 5	100
	PLD 4	89
	PLD 3	79
	PLD 2	69
	PLD 1	59

Name:_____

Authentic Assessment #9– Measuring Daily Rainfall

Materials	Measuring Daily Rainfall handouts, fraction manipulatives, pencils, paper
Task	• Distribute Measuring Daily Rainfall handouts. • Read: *Since the local weatherman predicted rain for the whole week, Ms. Moore's class decided to measure the amount of daily rainfall. The chart below shows their data. Use this chart to answer each question.* **Daily Rainfall** **Day** / **Inches of Rain** Sunday: $\frac{1}{4}$ Monday: $\frac{2}{6}$ Tuesday: $\frac{1}{8}$ Wednesday: $\frac{4}{6}$ Thursday: $\frac{4}{8}$ Friday: $\frac{\square}{2}$ Saturday: $\frac{4}{4}$ • Read each question aloud: ○ *Did more rain fall on Sunday or Tuesday?* ○ *Which day had less rain: Monday or Wednesday?* ○ *Someone erased part of Friday's measurement! If an equal amount of rain fell on Thursday and Friday, what is Friday's measurement? Prove that your answer is correct using objects, drawings, a number line, or words.* ○ *What is another way to record the amount of rain that fell on Saturday? Use objects, drawings, a number line, or words to explain why you can represent this measurement in more than one way.*

Authentic Assessment #9

3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

- **3.NF.3a**Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.
- **3.NF.3b**Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model.
- **3.NF.3c** Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3in the form 3=3/1; recognize that 6/1=6; locate 4/4and 1at the same point of a number line diagram.

3.NF.3d Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

Level 5: Distinguished Command	Level 4: Strong Command	Level 3: Moderate Command	Level 2: Partial Command	Level 1: No Command
Student gives all 5 correct answers. Clearly constructs and communicates a complete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction relationship Response includes an **efficient** and logical progression of steps.	**Student gives all 5 correct answers.** Clearly constructs and communicates a complete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response includes a **logical** progression of steps	**Student gives all 4 correct answers.** Constructs and communicates a complete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response includes a **logical but incomplete** progression of steps. Minor calculation errors.	**Student gives 3 correct answers.** Constructs and communicates an incomplete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response includes an **incomplete or illogical** progression of steps.	**Student gives less than 3 correct answers.** The student shows no work or justification.

Name:_____.

Measuring Daily Rainfall

Since the local weatherman predicted rain for the whole week, Ms. Moore's class decided to measure the amount of daily rainfall. The chart below shows their data.

Use this chart to answer each question.

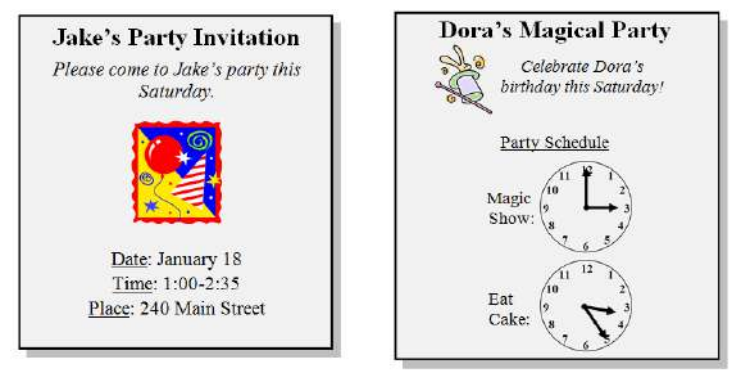
Daily Rainfall	
Day	Inches of Rain
Sunday	$\frac{1}{4}$
Monday	$\frac{2}{6}$
Tuesday	$\frac{1}{8}$
Wednesday	$\frac{4}{6}$
Thursday	$\frac{4}{8}$
Friday	$\frac{\square}{2}$
Saturday	$\frac{4}{4}$

1. Did more rain fall on Sunday or Tuesday?

2. Which day had less rain: Monday or Wednesday?

3. Someone erased part of Friday's measurement! If an equal amount of rain fell on Thursday and Friday, what is Friday's measurement? Prove that your answer is correct using objects, drawings, a number line, or words.

4. What is another way to record the amount of rain that fell on Saturday? Use objects, drawings, a number line, or words to explain why you can represent this measurement in more than one way.

Edna's Busy Day 3.MD.1 – Task 2	
Domain	**Measurement and Data**
Cluster	**Solve problems involving measurement and estimation.**
Standard(s)	**3.MD.1** Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram
Materials	Edna's Busy Day handout, pencils, rulers
Task	**Part 1:** • Distribute Edna's Busy Day handout. • Draw students' attention to the invitations on the handout.  • Read: *It takes Edna 23 minutes to drive from Jake's party to Dora's party. Will Edna arrive at Dora's party in time for the magic show? Explain your solution using a number line, chart, or words.* **Part 2:** • Read: *Guests at Dora's party leave as soon as they finish eating cake. If the guests spend 15 minutes eating cake, how long does Dora's party last? Explain your solution using a number line, chart, or words.*

Performance Task Scoring Rubric #10:

Level 5: Distinguished Command	Level 4: Strong Command	Level 3: Moderate Command	Level 2: Partial Command	Level 1: No Command
Student gives all 5 correct answers. Clearly constructs and communicates a complete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction relationship Response includes an **efficient** and logical progression of steps.	**Student gives all 5 correct answers.** Clearly constructs and communicates a complete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response includes a **logical** progression of steps	**Student gives all 4 correct answers.** Constructs and communicates a complete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response includes a **logical but incomplete** progression of steps. Minor calculation errors.	**Student gives 3 correct answers.** Constructs and communicates an incomplete response based on explanations/reasoning using the: • properties of operations • relationship between addition and subtraction • relationship between multiplication and division Response includes an **incomplete or illogical** progression of steps.	**Student gives less than 3 correct answers.** The student shows no work or justification.

Authentic Assessment #10 – Edna's Busy Day

Edna was invited to two parties on the same day!

Jake's Party Invitation

Please come to Jake's party this Saturday.

Date: January 18
Time: 1:00-2:35
Place: 240 Main Street

Dora's Magical Party

Celebrate Dora's birthday this Saturday!

Party Schedule

Magic Show:

Eat Cake:

It takes Edna 23 minutes to drive from Jake's party to Dora's party. Will Edna arrive at Dora's party in time for the magic show? Explain your solution using a number line, chart, or words.

Guests at Dora's party leave as soon as they finish eating cake. If the guests spend 15 minutes eating cake, how long does Dora's party last? Explain your solution using a number line, chart, or words.

Problem Solving Bank Questions

1. Diego cuts a round pizza into eight equal slices. What is the name for the parts?

2. Madison is making a place mat. She divides it into 6 equal parts to color. What is the name for the parts?

3. Anna cut an apple into 4 equal pieces. She gave 1 piece to her sister. What fraction of the apple did Anna give to her sister?

4. Lucas makes a flag. It has 6 equal parts. Five of the parts are red. What fraction of the flag is red?

5. A missing fraction on a number line is located exactly halfway between 3/6 and 5/6. What is the missing fraction?

6. Sandra makes a pizza. She puts mushrooms on 2/8 of the pizza. She adds green peppers to 5/8 of the pizza. Which toppings covers more of the pizza?

7. The jars of paint in the art room have different amounts of paint. The green paint jar is 4/8 full. The purple paint jar is 4/6 full. Which paint jar is less full?

8. Jan has a recipe for bread. She uses 2/3 cup of flour and 1/3 cup of chopped onion. Which ingredient does she use more of, flour or onion?

9. Edward walked 3/4 mile from his home to the park. Then he walked 2/4 mile from the park to the library. Which distance is shorter?

10. Ben mowed 5/6 of his lawn in one hour. John mowed 4/6 of his lawn in one hour. Who mowed less of his lawn in one hour?

11. Darcy baked 8 muffins. She put blueberries in 5/8 of the muffins. She put raspberries in 3/8 of the muffins. Did more muffins have blueberries or raspberries?

12. Javier is buying food in the lunch line. The tray of salad plates is 3/8 full. The tray of fruit plates is 3/4 full. Which tray is more full?

13. Rachel bought some buttons. Of the buttons, 2/4 are yellow and 2/8 are red. Rachel bought more of which color buttons?

14. At the third grade party, two groups each had their own pizza. The blue group ate 7/8 pizza. The green group ate 2/8 pizza. Which group ate more of their pizza?

15. Ben and Antonio both take the same buss to school. Ben's ride is 7/8 mile. Antonio's ride is 3/4 mile. Who has a longer bus ride?

16. Mr. Jackson ran 7/8 mile on Monday. He ran 3/8 mile on Wednesday and 5/8 mile on Friday. On which day did Mr. Jackson run the shortest distance?

17. Brett shaded 4/8 of a sheet of notebook paper. Aisha says he shaded 1/2 of the paper. Are the two fractions equivalent? If so, what is another equivalent fraction?

18. Mike says that 3/3 of his fraction model is shaded blue. Ryan says that 6/6 of the same model is shaded blue. Are the two fractions equivalent? If so, What is another equivalent fraction?

Additional Resources--Supplement Activities

FRACTIONS EXPLORATION

ESSENTIAL QUESTIONS

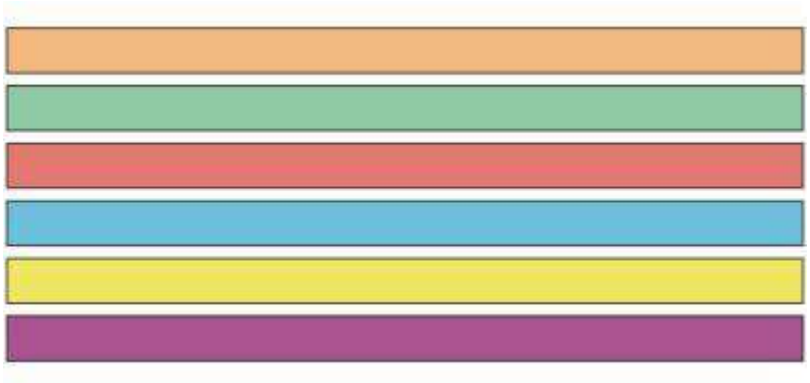
- What is a fraction?
- How can I represent fractions of different sizes?
- What relationships can I discover about fractions?

MATERIALS

- Fraction Exploration task sheet
- 9” x 12” sheets of paper in six different colors (cut into 1” x 12” strips) Each child will need 6 strips, one of each color.
- Scissors
- File folder (1 for each child)
- Glue or tape

To assess prior knowledge, ask students to create a list of ways they use fractions in their daily lives. Some examples may include dividing a snack in half (1/2), eating 3/8 of a pizza, using measuring cups or spoons while baking, money (half a dollar), time (quarter of an hour).

To begin the lesson, give students six strips of paper in six different colors. Specify one color and have students hold up one strip of this color. Tell students that this strip will represent the whole. Have students write “one whole” on the fraction strip. The term **whole** is included in the labeling instead of 1 because it helps eliminate confusion between the numeral 1 in fractions such as ½.



Next, ask students to pick a second strip and fold it into two equal pieces. Have students draw a line on the fold. Ask students what they think each of these strips should be called (one-half or ½). It is important, here, for students to understand how fractions are named. Discuss the names numerator and denominator with students. Have students label their strips accordingly using both the word and the fractional representation. Label both sides of the strip “1/2 one-half.”

Have students take out another strip, fold it in half twice, and divide it into four congruent pieces. Ask them what they think each of these strips should be called (one-fourth or ¼). Students should draw

lines on the folds and label the strips using both the word and the fraction. Label all four sections of the strip “1/4 one-fourth”. Repeat the process of folding in half and naming eighths.
Students will take out another strip, fold it in thirds and divide it into three congruent pieces. Ask them what they think each of these strips should be called (one-third or 1/3). Have students draw lines on the folds and label the strips using both the word and the fraction. Label all three sections of the strip “1/3 one-third”. Repeat the process of folding in thirds and then in half to create sixths. Label each section “1/6 one-sixth.”

After folding and labeling strips of paper for the whole, halves, thirds, fourths, sixths, and eighths, ask students to glue or tape the strips on their file folder in order (largest fractional pieces to smallest fractional pieces). Make sure the students line up the strips evenly so that they begin to see equivalences. Suggestion: Secure the ½ strip first with the half mark on the crease in the file folder. Place every other paper strip in line with one-half.

Have students work in small groups to answer the questions below. The teacher should monitor the groups, asking questions, and encouraging students to explore the concept of fractions. Have groups (at least 2-3) share their solution to question number seven. Try to pick groups who presented different ways of dividing the sandwich.

FORMATIVE ASSESSMENT QUESTIONS

- Is your strip folded into equal parts? How do you know?
- What relationships did you discover about fractions?
- What does the numerator represent?
- What does the denominator represent?

Name: _____ Date: _____

EXPLORING FRACTIONS

1. Using complete sentences and math words, write 3 observations you and your group made about the Fraction Strips.

Use your Fraction Strips to answer the following questions.

2. How many thirds does it take to equal one whole?

3. How many sixths does it take to equal one whole?

4. What do you think three 1/8 strips might be called? How would you write that fraction?

5. If you made a 1/9 fraction strip, how many ninths would it take to make a whole?

Think a little deeper…

6. What would a 1/10 Fraction Strip look like? Sketch and label the Fraction Strip in the space below.

7. Pretend you are having a party for 6 people. For refreshments, you are serving a 12” sub sandwich. On the back of this paper, draw and label a 12” sub (just like your Fraction Strips). Show how you would equally divide the sandwich for 6 people. Use pictures, words, and numbers to explain your reasoning

COMPARING FRACTIONS I

Students will use their fraction bars from the previous lesson to find inequalities and express those inequalities as number sentences.

ESSENTIAL QUESTIONS

- How can I show that one fraction is greater (or less) than another using my Fraction Strips?
- How can I compare fractions when they have the same denominators?
- How can I compare fractions when they have the same numerators?

MATERIALS

- Strategies for Comparing Fractions task sheet
- Fraction strips from previous task

Students will need their six strips of paper in six different colors from the previous task. Briefly review concepts covered in previous lessons.

Part I

Guide students to compare fraction strips, this time encourage students to compare individual strips and explore which ones are longer and shorter. Arrange students in small groups of 2-3 students. Give them approximately ten minutes to write down their observations from comparing the Fraction Strips. Have each group share some of their comments. Lead the groups to consider questions such as:

- What special relationships do you notice among the different colored strips?
- Place a ½ strip on your desk. How many strips are less than ½?
- Place a 1/8 strip on your desk. How many strips are less than 1/8?

Part II

Instruct students to compare two fraction strips: ½ and ¼. Discuss which one is longer and which one is shorter. Have students discuss how they might write the inequality statements: ½ > ¼ and ¼ < ½. Guide them to the use of the symbols if they don't do this independently. Repeat the activity with several additional fraction strips. Be sure to include equivalent fractions such as ½ = 2/4.

Part III

Same Denominators/Different Numerator:

Have students work in groups of 4. Ask them to arrange 3 groups of fractions in their work space. In row one, place 1 - 1/3 strip. In row two, place 2 – 1/3 strips. In row three, place 3 – 1/3 strips. On a sheet of paper, have the students write the names of the strips in order from shortest to longest (1/3, 2/3, 3/3). Encourage students to look for patterns. What do they observe about the denominators? (All are three.) What do they observe about the denominators? (They go in order getting larger each time.) How do the numerators relate to the size of the fraction strips? (The larger the numerator, the larger the strip of paper.) Why? (The larger the numerator, the more equal sized pieces you have.)

Ask students to repeat the above activity with their 1/4th strips. Discuss the students' observations.

Same Numerator/Different Denominator:
Have students place one of each color Fraction Strip in their work space. At this time, do not include one whole. Ask students to arrange the strips from shortest to longest. Have the students write the names of the strips in order from shortest to longest (1/8, 1/6, ¼, 1/3, 1/2). Encourage students to look for patterns. What do they observe about the numerators? (All are one.) What do they observe about the denominators? (They go in order getting smaller each time.) How do the denominators relate to the size of the fraction strips? (The smaller the denominator, the larger the strip of paper.) Why? (The larger the denominator, the more pieces it takes to make the whole.)
Repeat this activity using 2 of each strip. Ask students to once again arrange the pairs of strips in order from smallest to largest (2/8, 2/6, 2/4, 2/3, 2/2). Discuss the students' observations.

Part IV
Have students work in small groups to answer the questions in the task sheet. The teacher should monitor the groups, asking questions, and encouraging students to explore the concept of fractions. At least two or three groups should share their solution to question number 6. Try to pick groups who presented different ways of solving the problems. After this lesson, have students store their Fraction Strips in their sandwich bag.

FORMATIVE ASSESSMENT QUESTIONS
- What relationships did you discover about fractions?
- How can you compare fractions with the same denominators?
- How can you compare fractions with the same numerators?

Name: _____ Date: _____

COMPARING FRACTIONS I

1. Using complete sentences and math words, write 3 observations you and your group made about fraction inequalities, comparing fractions with the same denominators, and comparing fractions with the same numerators.

Use your Fraction Strips to answer the following questions.

2. Write an inequality statement for the fractions ½ and 3/8.

3. Write two inequality statements using 1/6, 1/8, 1/3, 1/2, 1/4.

Think a little deeper…

4. Pretend you had fraction strips for 1/5. Put the following fractions in order from smallest to largest: 1/5, 5/5, 3/5, 4/5, 2/5. Draw a picture below to help explain your answer.

5. Using what you have learned about comparing fractions, put the following fractions in order from least to greatest: ¾, 3/7/ 3/3, 3/8. Draw a picture below to help explain your answer. Stretch your brain- where would 3/2 go? What might 3/2 look like?

6. For the class party, Robin and Shawn each made a pan of brownies. Their pans were exactly the same size. Robin sliced her brownies into 9 pieces. Shawn sliced his into 12 pieces. Which student had the largest brownie pieces? On the back of this paper, make a sketch of Robin and Shawn's brownies. Explain your reasoning using words, pictures, and numbers.

Comparing Fractions II

ESSENTIAL QUESTIONS

- What relationships can I discover about fractions?
- How can I compare fractions?
- What equivalent groups of fractions can I discover using Fraction Strips?

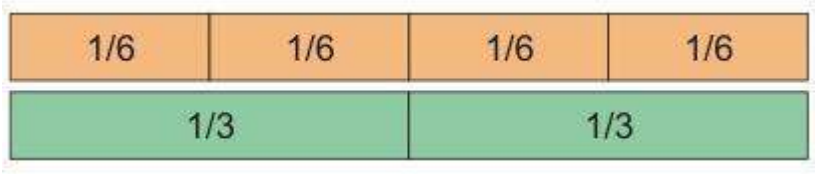
MATERIALS

- Comparing Fractions task sheet
- 9" x 12" sheets of paper in six different colors (cut into 1" x 12" strips) Each child will need 6 strips, one of each color.
- Scissors

Give students six strips of paper in six different colors. Repeat the Fraction Strip folding and labeling activity from the Fraction Exploration Task. This time, ask students to separate the Fraction Strips by cutting on the folds giving them 2 - ½ strips, 3 – 1/3 strips, and so forth. Give each student a plastic sandwich bag or envelope to store the strips. (You can also use fraction bars)
Arrange students in small groups of 2-3 students. Give them approximately ten minutes to write down their observations about the separated Fraction Strips. Have each group share some of their comments. Lead the groups to consider questions such as:

- Do you see any special relationships among the different colored strips?
- Place a ½ strip on your desk. How many strips or combinations of strips are the same size as ½?
- When fractions are the same size, they are called *equivalent*. What other equivalent sets of fractions can you create?

Have students line up their fraction strips and find as many relationships as they can. For instance, they might notice that three of the 1/6 pieces are equal to four of the 1/8 pieces, or that two of the 1/3 pieces are equal to four of the 1/6 pieces. Have students record these relationships on paper. When they have finished, have them share the relationships they have discovered. Record the relationships on chart paper and discuss.



Students will notice that one whole is the same as 2/2, 4/4, 8/8, 3/3, or 6/6. Another example includes the relationship between ½, 2/4, 4/8, and 3/6. Tell students that when fraction strips are the same length, they represent equivalent fractions. Students may also notice that for each of these fractions, the numerator is ½ of the denominator.

Part II

Students will work in small groups to answer the questions in the activity sheet. The teacher should monitor the groups, asking questions, and encouraging students to explore the concept of fractions.

Have groups (at least 2-3) share their solution to question numbers 6 and 7. Try to pick groups who presented different ways of solving the problems. After this lesson, have students store their Fraction Strips in a plastic sandwich bag.

Part III

Students can practice comparing fractions using the following activity:

> The friends below are playing red light-green light. Who is winning? Use your fraction strips to determine how far each friend has moved.
> Mary – ¾ Harry – ½ Larry – 5/6
> Sam – 5/8 Michael – 5/9 Angie – 2/3

FORMATIVE ASSESSMENT QUESTIONS

- What relationships did you discover about fractions?
- How can you compare fractions?
- What equivalent groups of fractions did you discover?

Name: _____ Date: _____

COMPARING FRACTIONS II

1. Using complete sentences and math words, write 3 observations you and your group made about the Fraction Strips.

Use your Fraction Strips to answer the following questions.

2. What fraction is equivalent to 2 of your 1/4 strips?

3. What fraction is equivalent to 3/6?

4. What fraction is equivalent to 6/8?

5. If you had made a fraction strip for 1/10s, how many tenths would it take to make to equal 1/2?

Think a little deeper…

6. In the space below, draw a Fraction Strip divided into fourths. Draw 2 additional shapes divided into fourths. Make one of your drawings a real-life example of something you might partition (divide) into fourths.

USING FRACTION STRIPS TO EXPLORE THE NUMBER LINE

Students create fraction number lines using strips of paper and use the number lines to find equalities and inequalities.

ESSENTIAL QUESTIONS

- What fractions are on the number line between 0 and 1?
- What relationships can I discover about fractions?
- How are tenths related to the whole?

MATERIALS

- Using Fraction Strips to Explore the Number Line Activity task sheet
- 9" x 12" sheets of paper in six different colors (cut into 1" x 12" strips) Each child will need one strip of paper in each color.
- Scissors
- File folder (1 for each child) or math journal
- Glue or tape

Students make and use a set of fraction strips to represent the interval between zero and one on the number line, discover fraction relationships, and work with equivalent fractions.

Part I

To begin the lesson, give students six strips of paper in six different colors. Specify one color and have students hold up one strip of this color. Tell students that this strip will represent the number line from zero to one. Have students glue or tape the strip to the back of their file folder or math journal. The students will label folder above the left-hand side of the strip "0" and above the right-hand edge of the strip "1."

Next, ask students to pick a second strip and fold it into two equal pieces. Have students label above this strip with the numerals 0, ½, 1.

Have students take out another strip, fold it twice, and divide it into four congruent pieces. Have students label the space above the strip using 0, ¼, 2/4, ¾, 1. Repeat this process of folding, cutting, and naming strips for thirds, and sixths. Have students use a ruler and label the last strip in 12ths by drawing a line at every inch. This particular number line will represent 1 foot. The inches are showing fractions of a foot. 1/12, 2/12, and so on.

Part II

Arrange students in small groups of 2-3 students. Give them approximately ten minutes to write down their observations from comparing the Number Lines. Have each group share some of their comments. Lead the groups to consider questions such as:

- How are the Fraction Strips and Number Lines similar?
- How are they different?

Remind students that the fraction strip is equal to the length of a ruler which is one foot. Ask

students to label ½ a foot with the letter A. Ask students to label 2/3 of a foot with B. Continue asking students to label fractional parts of a foot with letters.

Part III

Have students work in small groups to answer the questions below. The teacher should monitor the groups, asking questions, and encouraging students to explore the concept of fractions on the Number Line.

Have groups (at least 2-3) share their solution to question numbers 6 and 7. Try to pick groups who presented different ways of solving the problems. After this lesson, have students store their Fraction Strips in their sandwich bag.

FORMATIVE ASSESSMENT QUESTIONS

- What fractions are on the number line between 0-1?
- How did you determine the various fractions between 0-1?

Name: _____ Date: _____

USING FRACTION STRIPS TO EXPLORE THE NUMBER LINE

1. Using complete sentences and math words, write 3 observations you and your group made about fractions between 0 and 1 on the Number Line.

Use your Number Lines to answer the following questions.
2. How many sixths are between 0 and 1?

3. How many 12ths are equivalent to 1 whole?

4. What fraction on the Number Line is equivalent to 2/6?

Think a little deeper…

5. If 3/3 is equivalent to the whole number 1, how many thirds are in the whole number 2?

6. What would the fraction 12/4 represent? Draw a picture in the space below to explain your answer.

PATTERN BLOCKS

Students will partition pattern blocks using various sized wholes.

ESSENTIAL QUESTIONS

- How can I use pattern blocks to name fractions?
- How does the size of the whole affect the size of the fractions?
- Is ¼ always the same size? How do you know?

MATERIALS

- Pattern Blocks
- Pattern Blocks Activity Sheet

TASK DESCRIPTION, DEVELOPMENT AND DISCUSSION

Part I

Begin this task by presenting the students with 2 different sized pieces of construction paper. (If you wish, you can name it a pan of brownies or pizza.) Pose the question: Is ¼ always the same size? With the students fold the larger piece of paper into fourths, then do the same with the smaller piece. Verify with the students that each piece was evenly folded into fourths. Ask the question, "Which ¼ of a pan of brownies would you like to have?" This will lead to a discussion around the size of the whole.

Part II

Lead students in a discussion including questions such as:

- What if you use two yellow hexagon blocks to represent the whole?
- What fractional part of the whole will one yellow hexagon be?
- What block will represent ¼? What other relationships do you see?

Have students work together to complete the task sheet. Students should model each question with pattern blocks and make a sketch of the required blocks.

FORMATIVE ASSESSMENT QUESTIONS

- How did you determine ¼?
- How did the size of ½ change from the whole on page 1 to the whole on page 2?
- How does the size of the whole affect the size of the fractional piece?
- Can you find any equivalent fractions? How do you know?

PATTERN BLOCKS:

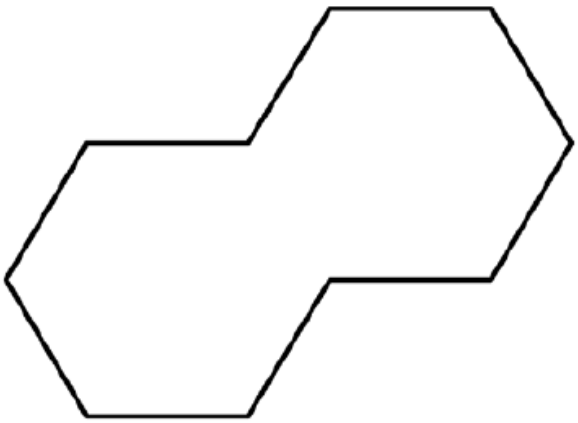
Name _____ Date _____

Pattern Block Fractions

- Use the pattern blocks to solve the riddles below.
- Draw the shape and label each fractional part.

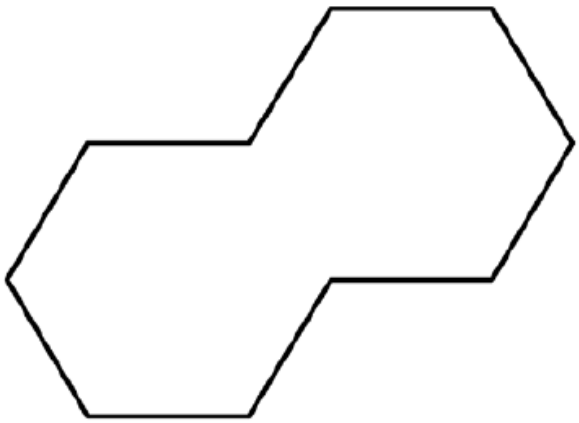
If this is one whole, what is ½?

(Draw and label)

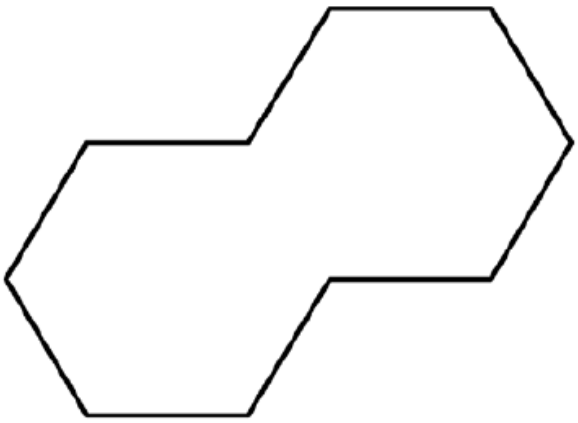


If this is one whole, what is ¼?

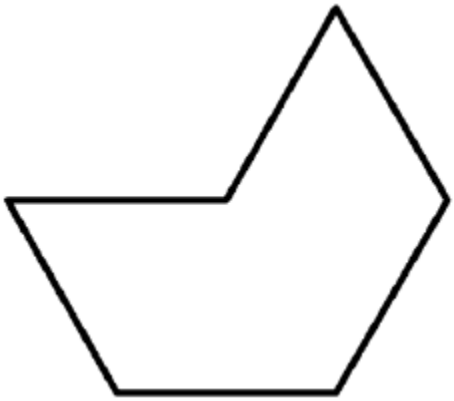
(Draw and label)



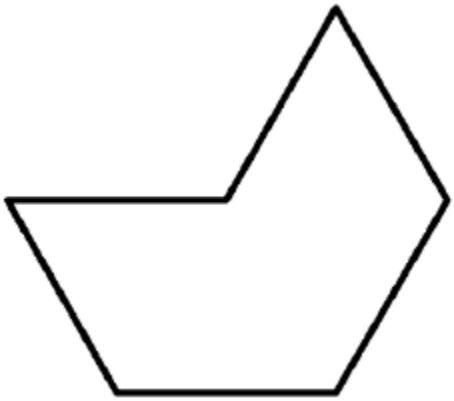
If this is one whole, what is 1/6?
(Draw and label)



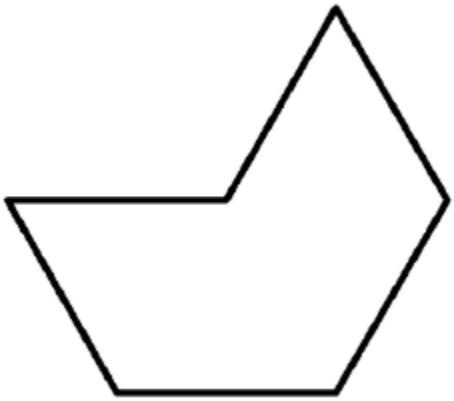
If this is one whole, what is ½?
(Draw and label)



If this is one whole, what is ¼?
(Draw and label)



If this is one whole, show 1 ½. (Draw and label)



MAKE A HEXAGON GAME

Students will play a game where they create a fraction with dice and build their fraction on hexagons using pattern blocks.

TASK DESCRIPTION

Instruct students to work with a partner. For the game, students will take turns rolling two dice. The largest number rolled is the denominator and the smaller number is the numerator. Students build the fractional amount rolled on the game board using pattern blocks. Students may use equivalent fractions. If students roll a fraction they cannot build, they lose a turn. Play continues until one player has covered all the hexagons on his game board.

FORMATIVE ASSESSMENT QUESTIONS

- What does the top number (numerator) tell us?
- What does the bottom number (denominator) tell us?
- What happened in the game if you rolled the same number on both dice?
- Did you have to trade triangles for other shape blocks? What equal trades did you make?

Build a Hexagon

Materials: game board for each player, dice, pattern blocks (hexagon, triangles, trapezoids, blue rhombi)

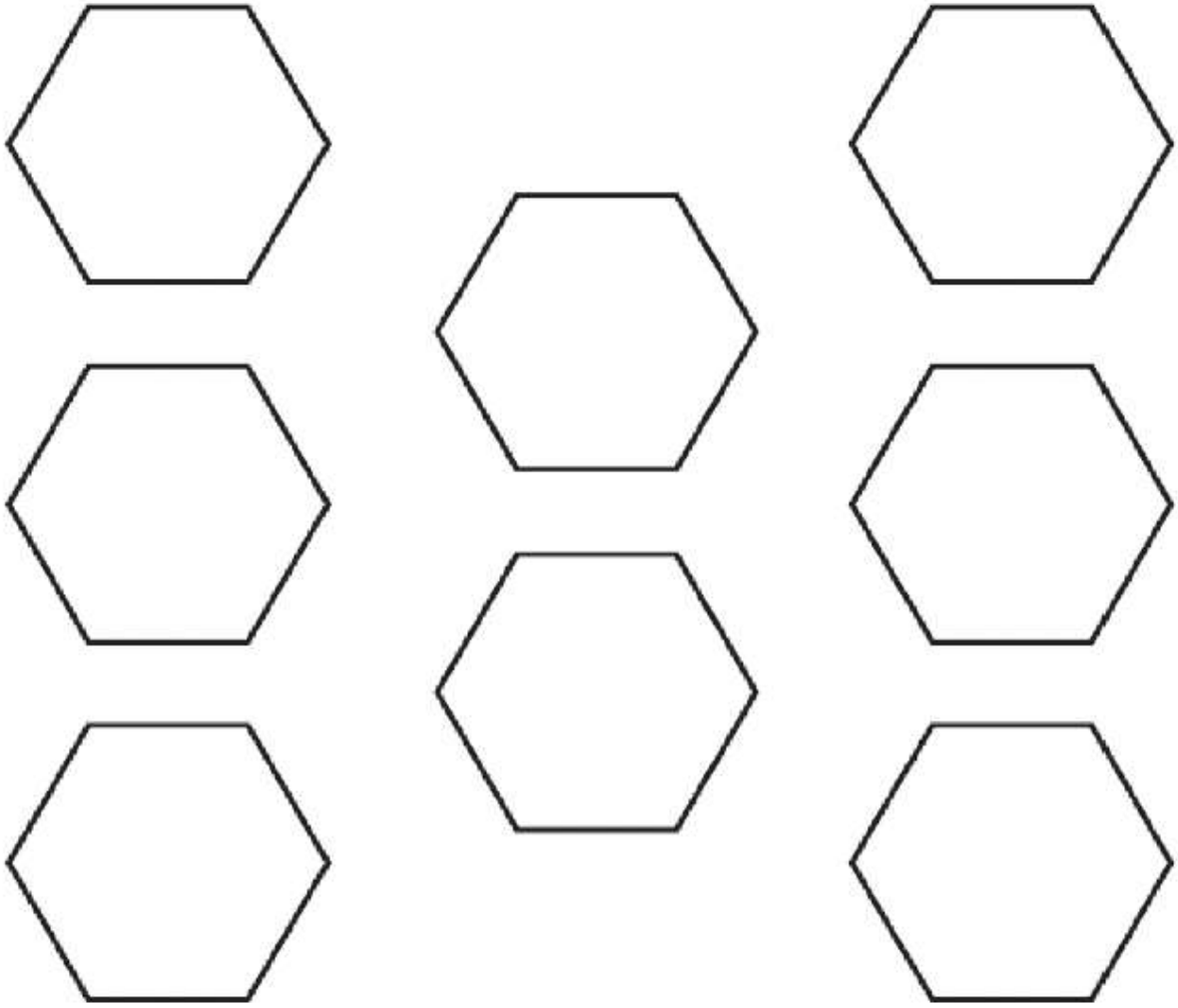
Work with a partner. Take turns to roll two dice. The largest number you roll is the denominator and the smaller number is the numerator.

1. Use pattern blocks to build the fractional amount you rolled on the game board. You may use equivalent fractions.

2. If you roll a denominator that you can't build, you lose a turn.

3. Keep going until one player has covered all the hexagons on his/her game board.

Build a Hexagon



PIZZAS MADE TO ORDER

Students will fill pizza orders by representing the ordered ingredients on the appropriate fractional parts of a pizza cut-out.

ESSENTIAL QUESTIONS

- What is a fraction?
- How can I represent fractions of different sizes?
- What relationships can I discover about fractions?
- What does the numerator of a fraction represent?
- What does the denominator of a fraction represent?
- What is a real-life example of using fractions?

MATERIALS

- Scissors
- Glue or paste
- Crayons
- One large sheet of black paper
- One half sheet of brown paper
- Small pieces of various colored paper including red, white, green, yellow, black
- Pizza Order Directions – One per child

TASK DESCRIPTION

Part I

To assess prior knowledge, brainstorm with students about food that is divided into equal pieces. Possible suggestions may include a chocolate bar, apple pie, pizza, and an orange.

Part II

To begin the lesson, give students a half sheet of brown paper. Instruct them to draw and cut out a circle from the brown paper. Then give each child a Pizza Order. Instruct the students to use their pencil to divide their circles into the fractional part used in the Pizza Order (fourths or eights). Then have the students trace over their pencil lines with a dark crayon. Next, give students small sheets of the colored paper (red, white, green, yellow, black). Instruct students to cut pieces of the colored paper to represent the pizza toppings. The toppings should be glued onto the appropriate number of pizza slices.

After the toppings have been successfully glued to the brown circle, give each student a sheet of black construction paper. Have the students glue their pizzas and Pizza Order Directions to the paper.

FORMATIVE ASSESSMENT QUESTIONS

- What fraction of your pizza is covered with peppers?
- What topping covers most of your pizza?
- Are black olives covering more or less than half your pizza?
- How did you divide your pizza into equal parts?
- How many equal parts did you need? How did you know?
- If your whole pizza was divided into fourths, how many slices did you cover with toppings? How would you write this as equivalent fractions? (4/4 = 1)
- If your pizza is covered with 1/8 mushrooms and 3/8 green peppers, does it have more mushrooms or green peppers? How do you know? (Encourage students to explain in terms of the pizza size and by comparing numerators in the fraction.)
- Some of you covered 4/8 of your pizzas with pepperoni. Can you name equivalent fractions for 4/8?
- Were any pizzas covered with ½ cheese? Why did your Pizza Order ask for 2/4 cheese?
- Do you see any other examples of equivalent fractions on the pizzas?

PIZZAS MADE TO ORDER: **PIZZA ORDER DIRECTIONS**

I would like to order a pizza that is 1/8 green peppers,
8/8 pepperoni, and 3/8 mushrooms.

I would like to order a pizza that is
¼ mushrooms, 2/4 cheese, and ¼ pepperoni.

I would like to order a pizza that is
1/8 black olives, 8/8 mushrooms, and
4/8 pepperoni.

I would like to order a pizza that is
¼ mushrooms, ¼ black olives, and
½ pepperoni.

I would like to order a pizza that is
¼ cheese, ¼ black olives, ¼ pepperoni, and
¼ green peppers.

3.NF.3

Distances Swam

Each member of the boys swim team swam for one minute. This chart shows the distance each boy swam.

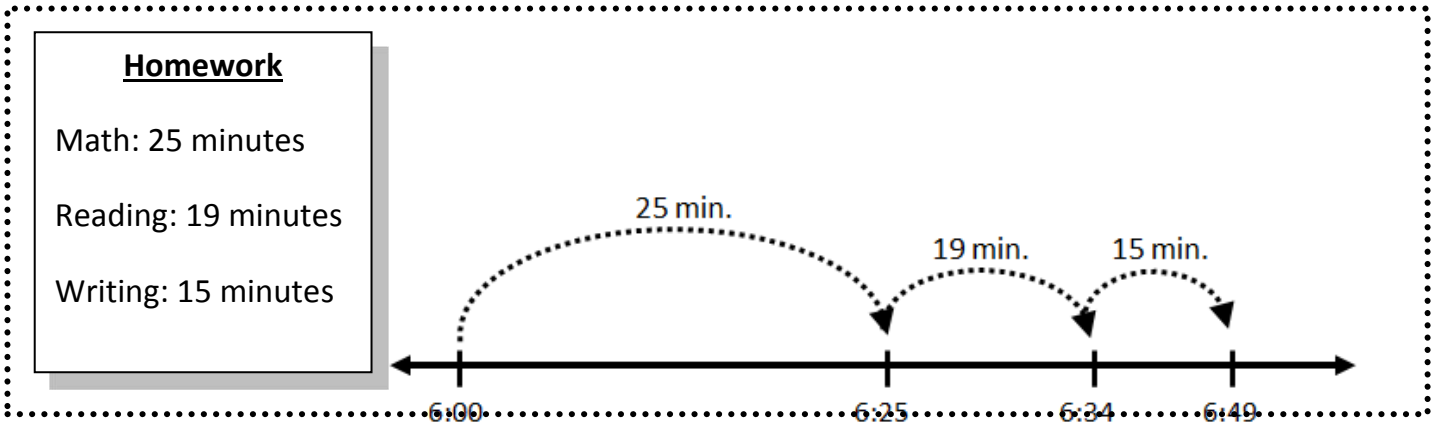
Distances Swam by Boys Swim Team	
Name	**Fraction of a Mile Swam**
Chris	2/8
Brooks	3/4
Drew	7/8
Zak	1/2
Sean	3/6
Michael	1/4
Juan Pablo	

Which boys swam the same amount? Prove your answer using at least two different representations (i.e., number line, fraction models, drawings, or words, or numbers).

Between Brooks and Sean, who swam a longer distance? Write a sentence to explain how you know that you are correct.

Norman's Number Line

Norman is going to start his homework at 6:00. In order to make sure he finishes in time for a 7:00 TV show, Norman draws this number line.



Is Norman's number line correct? Will Norman finish his homework in time for the 7:00 TV show? Prove your answer using a drawing, chart, numbers, or words.

Extension: Think of some activities you did one evening. Draw a number line representing the amount of time if took you to do each activity. Write a question about your number line and see if a classmate can answer it.

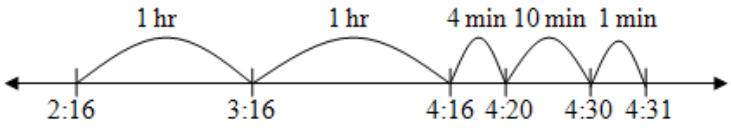
TIME TO GET CLEAN
3.MD.1

In this lesson, students will examine a family's morning bathroom routine. They will discuss and explore telling time to the minute as well as elapsed time.

BACKGROUND

In this task, students will record and draw time to the nearest minute and calculate elapsed time in 15, 30, and 60 minute intervals. Teachers may want to begin with a discussion of daily activities in students' lives and the amount of time those activities typically take. For example, getting ready for school may begin at 7:06 AM and end at 7:36 AM, a 30 minute duration. Then engage students in a discussion of activities that typically happen during the school day and their estimates of the duration of these activities.
As the calculations are made, you should encourage students to explore a linear model of time as well as a traditional analog clock. The linear model can be created using an open number line. Jumps are made from the beginning time to the ending time much like movement on a number line and increments of time may be recorded above the jumps. An example is shown below:

To find the elapsed time from 2:16 pm to 4:31 pm,
- start with an open number line
- add the starting time, and
- then count up to the ending time using jumps that make sense to the students:



If telling time is built into daily routines, students should have had classroom experiences with telling time to the nearest minute. Daily routines can be extended to elapsed time by asking students the stopping time if they start work now and work for 15 minutes or 30 minutes. Additionally, students could be asked what time they will return to the classroom if they will be returning in one hour.

ESSENTIAL QUESTIONS
- What strategies can I use to help me tell and write time to the nearest minute and measure time intervals in minutes?
- How can we determine the amount of time that passes between two events?
- What part does elapsed time play in our daily living?
- How can I demonstrate my understanding of the measurement of time?

MATERIALS
- "Morning Routines" student recording sheet
- clock (classroom clock or individual clocks for each student)
- empty number line, or any material students may need to assist them with measuring elapsed time

TASK DESCRIPTION

Students will follow the directions below from the "Morning Routines" student recording sheet.

- Closely examine the *Morning Routines* chart below.
- With a partner or small group, fill in the missing parts of this schedule.
  - Answer the questions below about the bathroom schedule. ○ Who spends the most time in the bathroom?
  - ○ Who spends the shortest time in the bathroom?
  - ○ How long to Dad and Grandpa spend in the bathroom in all?
  - ○ How much longer does Meagan spend in the bathroom than Carl?
  - ○ The first person goes into the bathroom at 6AM. It is in use until everyone is finished getting clean. At what time will the bathroom be free each day?
  - ○ Choose one person's bathroom slot. Tell how you figured out their missing information.

FORMATIVE ASSESSMENT QUESTIONS

- What strategies did you use to figure out the missing times on the chart?
- What connections can you make to parts of the hour? (half hour, quarter hour, etc?)
- What is the hardest part about telling time to the nearest minute and elapsed time?
- What part of this task did you find was easiest to complete?
- How did you determine the elapsed time?
- Is there more than one way to figure out elapsed time?

DIFFERENTIATION

Extension

- Have students make and use a list of other values and their equivalents (i.e. ½ hour = 30 minutes).
- Have students create their own schedule with missing values for a classmate to complete.
- Have students prepare a "Telling Time Toolkit" for a visitor from prehistory (or at least before clocks were invented) explaining everything they need to know about telling time to the nearest minute and explaining how to figure out elapsed time.

Intervention

- Provide beginning and ending times for activities that do not cross the hour mark. For example, show a beginning time of 11:15 and an ending time of 11:45 for a given activity. Be sure students understand the elapsed time of 30 minutes before moving to activities of a longer duration that begin and end in different hours.
- Only provide the elapsed time in minute form.
- Allow students to use clock, calculators, and number lines for help.
- Facilitate a teacher-guided group.

Morning Routines!
3.MD.1

The Freeman Family Bathroom is a busy place in the mornings! So, the Freeman kids decided to create a chart for everyone to follow so things wouldn't get too crowded. There's one problem. Baby Freeman (Georgie) erased some important parts of the schedule. The Freeman kids are very nervous about this because they will have to show their new schedule to the family tonight and be ready to explain it. Can you help them?

- Closely examine the Freeman Family Morning Bathroom Schedule below.
- Fill in the missing parts of the schedule. Use clocks or other tools to help you.
- Answer the questions about the schedule on the space provided.

Part I: The Freeman Family Morning Bathroom Schedule

Person	Activities	Start Time	End Time	Time Taken
Megan	Shower, wash hair, dry hair, brush teeth		6:30	**½ hour**
Carl	Shower, brush teeth	6:30	6:56	
Baby Georgie	Take a bath	6:56		24 minutes
Mom	Shower, brush teeth		8:05	¾ hour
Dad	Shower, shave, brush teeth	8:05	8:47	
Grandpa	Take a bath, shave	8:47		35 minutes

Part II: Explanations for the Family Meeting

1. Who spends the most time in the bathroom? _____
2. Who spends the shortest time in the bathroom? _____
3. How long to Dad and Grandpa spend in the bathroom in all? _____
4. How much longer does Meagan spend in the bathroom than Carl? _____
5. The first person goes into the bathroom at 6AM. It is in use until everyone is finished getting clean. At what time will the bathroom be free each day? _____
6. Choose one person's bathroom slot. Tell how you figured out their missing information below.

_____

_____

TASK: DAILY SCHEDULE
3.MD.1

In this task, students will record and draw time to the nearest minute and calculate elapsed time in 15, 30, and 60 minute intervals.

ESSENTIAL QUESTIONS

- How can we determine the amount of time that passes between two events?
- What part does elapsed time play in our daily living?
- What does it mean to tell time to the minute?
- What strategies can I use to help me tell and write time to the nearest minute and measure time intervals in minutes?

MATERIALS

- "Daily Schedule" student recording sheet
- Clock (Classroom clock or individual clocks for each student)

TASK DESCRIPTION

Note: As students record daily events, be sure the elapsed time is in 15, 30, or 60 minute intervals. Alternatively, provide a daily schedule that is already filled in with start and stop times. Then have students calculate the elapsed time, or duration, of each activity and record it on the chart.

Students will follow the directions below from the "Daily Schedule" student recording sheet.

- In the Daily Routineschart below, record six of your class' daily activities.
- Then calculate the elapsed time, or duration, of each activity and record it on the chart.
- Choose three events. List the event and record the start time and end time for each event on the clock faces below.
- Choose one of the events above and explain how you found the elapsed time.

FORMATIVE ASSESSMENT QUESTIONS

- How did you determine your start and end times?
- What kinds of activities can you typically complete in a quarter-hour, half-hour and hour?
- How did you determine the elapsed time?
- Is there more than one way to figure out elapsed time?

DIFFERENTIATION

Extension

- Have students use a digital camera to create an interactive slide show, flipchart, or schedule chart for display of the daily school events.

Intervention

- Provide beginning and ending times for activities that do not cross the hour mark. For example, show a beginning time of 11:15 and an ending time of 11:45 for a given activity. Be sure students understand the elapsed time of 30 minutes before moving to activities of a longer duration that begin and end in different hours.
- On a paper divided into fourths, have students list as many things as they can that last approximately 15 minutes/30 minutes/1 hour/more than 1 hour.
- Ask students to complete a similar chart for a typical weekend day.

Name _____ Date _____

Daily Routines

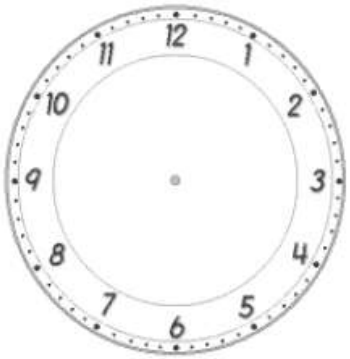
In the Daily Routines chart below, record six of your daily class activities. Then calculate the elapsed time, or duration, of each activity and record it on the chart.

Daily Routines			
Event	**Start Time**	**Stop Time**	**Duration of Event**

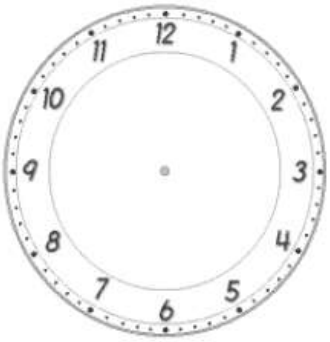
Choose three events from your chart. List the event and record the start time and end time for each event on the clock faces below.

1. Event: _____

Start Time

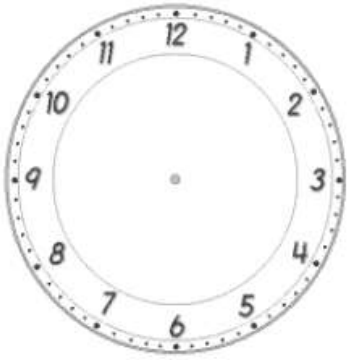


End Time

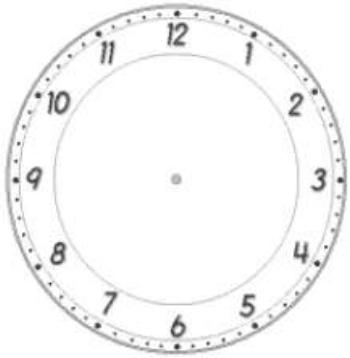


2. Event: _____

Start Time

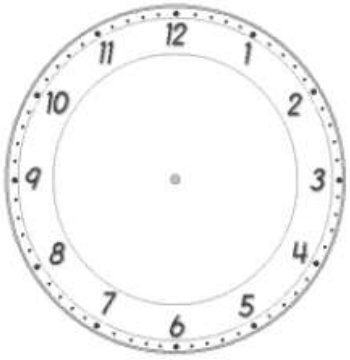


End Time

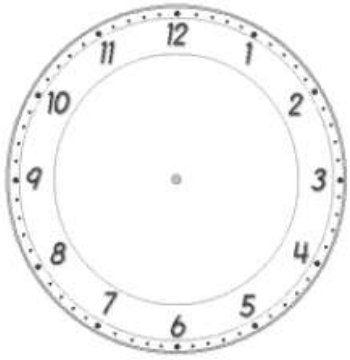


3. Event: _____

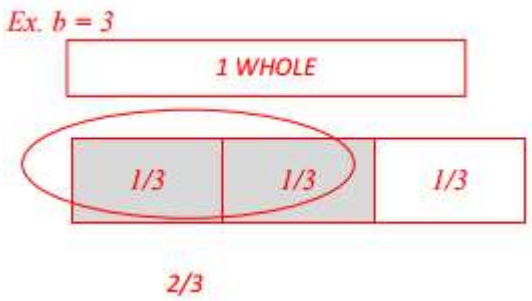
Start Time

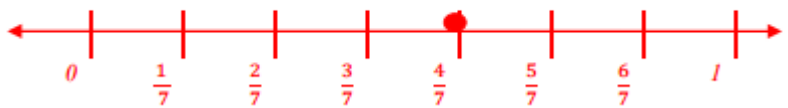


End Time



4. Choose one of the events and explain how you found the elapsed time.

Grade level	Standard	Revised Standard
3	3.OA.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7.	3.OA.1 Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5 × 7.
3	3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.	3.OA.2 Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.
3	3.NF.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b	3.NF.1 Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b. 
3	3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and	3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and

	partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.	that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. *Ex. $a = 4; b = 7$* 
3	3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).
4	4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two - column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),	4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm, mm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...
5	5.MD.5b. Apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole- number edge lengths in the context of solving real world and mathematical problems	5.MD.5b Apply the formulas V = l × w × h and V = B × h for rectangular prisms to find volumes of right rectangular prisms with whole- number edge lengths in the context of solving real world and mathematical problems
5	5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units.