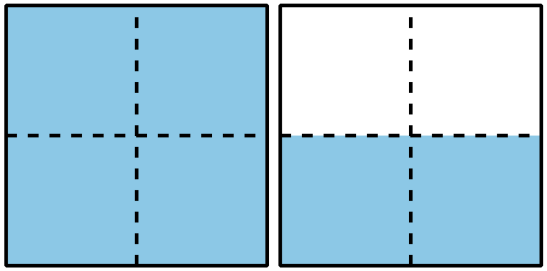
Course Title: Mathematics	Full Year	Required
Course Description: The mathematical work for grade 3 is partitioned into 8 units: 1. Introducing Multiplication 2. Area and Multiplication 3. Wrapping Up Addition and Subtraction within 1,000 4. Relating Multiplication to Division 5. Fractions as Numbers 6. Measuring Length, Time, Liquid Volume, and Weight 7. Two-dimensional Shapes and Perimeter 8. Putting it All Together		
Additional Course Information: The big ideas in grade 3 include: ● developing understanding of multiplication and division and strategies for multiplication and division within 100 ● developing understanding of fractions, especially unit fractions (fractions with numerator 1) ● developing understanding of the structure of rectangular arrays and of area ● describing and analyzing two-dimensional shapes	**Core Resources:** **Illustrative Mathematics** **Instructional Routines and Math Language Routines** **Glossary - Student-friendly** **Required Materials** **IM en Español** **Developing a Mathematical Community**	**Are there any attachments at the course level that teachers will need?** Scope and Sequence - This document should be reviewed at the start of the year and each unit for information on language routines, expectations, and possible misconceptions. Pacing Guide and Dependency Diagrams K-5

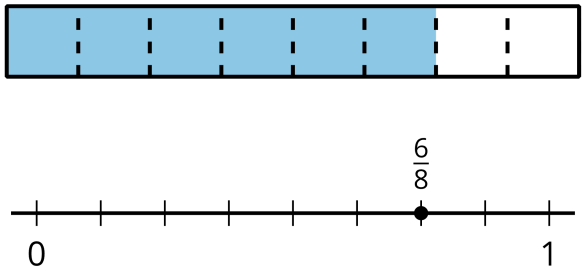
Unit 5: Fractions as Numbers	Duration: 19 - 20 days

Unit Overview - FOCUS:

In this unit, students make sense of fractions as numbers, using various diagrams to represent and reason about fractions, compare their size, and relate them to whole numbers. The denominators of the fractions explored here are limited to 2, 3, 4, 6, and 8.

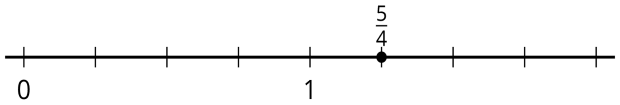
Next, they create fraction strips by folding strips of paper into equal parts and later represent the strips as tape diagrams.





Using fraction strips and tape diagrams to represent fractions prepare students to think about fractions more abstractly: as lengths and locations on the number line. This work builds on students' prior experience with representing whole numbers on the number line.

In each representation, students take care to identify 1 whole. This helps them reason about the size of the parts and whether a fraction is less or greater than 1. (Fractions greater than 1 are not treated as special cases.)

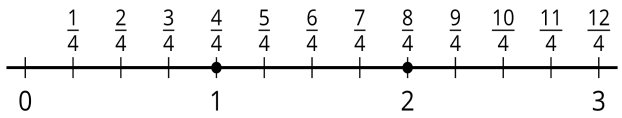


Students then use these representations to learn about equivalent fractions and to compare fractions.

Topic Titles:

- Section A: Introduction to Fractions
  - Understand that fractions are built from unit fractions such that a fraction $\frac{a}{b}$ is the quantity formed by a parts of size $\frac{1}{b}$.
  - Understand that unit fractions are formed by partitioning shapes into equal parts.
- Section B: Fractions on the Number Line
  - Understand a fraction as a number and represent fractions on the number line.
- Section C: Equivalent Fractions
  - Explain equivalence of fractions in special cases and express whole numbers as fractions and fractions as whole numbers.
- Section D: Fraction Comparisons
  - Compare two fractions with the same numerator or denominator, record the

They see that fractions are equivalent if they are the same size or at the same location on the number line, and that some fractions are the same size as whole numbers.



$3 = \frac{12}{4}$

Later in the unit, students compare fractions with the same denominator and those with the same numerator. They recognize that as the numerator gets larger, more parts are being counted, and as the denominator gets larger, the size of each part in a whole gets smaller.

results with the symbols >, =, or <.

Coherence: How does this unit build on and connect to prior knowledge and learning?

In grade 2, students partitioned circles and rectangles into equal parts and used the language “halves,” “thirds,” and “fourths.” Students begin this unit in a similar way, by reasoning about the size of shaded parts in shapes.

Essential Questions:

1. What is a fraction?
2. How can we compare fractions?

Enduring Understanding:

- **Fractions help us to describe parts of a whole.** As we develop our understanding of fractions, we make connections between the meaning, language, and notation of fractions - between what fractions represent and how they are expressed in words and numbers.
- **Understanding the characteristics of a fraction can help us compare different fractions**. We can use what we know about numerators, denominators, parts, and wholes to determine if one fraction is equivalent, less than, or greater than another fraction.

What Students Will Know:

- Fractions are numbers we write to describe the parts of a whole that has been partitioned into equal parts.
- Sixths and eighths are when we partition something into six or eight equal pieces.
- $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{8}$ are used to

What students will do:.

- Partition shapes into 2, 3, 4, 6, or 8 parts with equal area and name those parts as halves, thirds, fourths, sixths, and eighths.
- Recognize that equal-size parts in a shape can be named with numbers called fractions.
- Express the area of each part as a unit fraction of the whole.
- Partition shapes into halves, thirds, fourths, sixths,

Unit Specific Vocabulary:

Academic vocabulary
fraction (Lesson 1)
unit fraction (Lesson 3)
denominator (Lesson 7)
numerator (Lesson 7)
equivalent fractions (Lesson 10)

represent the parts described as one half, one third, one fourth, one sixth, and one eighth. ● When we partition shapes into equal parts, we express each equal-size part as a unit fraction. ● Unit fractions are written in the form $\frac{1}{b}$. ● A unit fraction is a fraction in which the numerator is 1 because it describes one of the equal=sized parts. ● All non-unit fractions are built from unit fractions. ● If all the parts are shaded in a diagram, then the non-unit fraction is equivalent to a whole number. ● Quantities that are not whole numbers can be represented on a number line. ● Fractions can be less than 1, equal to 1, or greater than 1 ● The numerator is the top number of a fraction ● The denominator is the bottom number of a fraction ● Whole numbers can be written as a fraction ● Different fractions can be equivalent if they are the same size of the same whole. ● Fractions that are the same size are equivalent fractions ● Fractions at the same location on a number line are equivalent ● Whole numbers can be written as fractions ● Fractions can be represented in	and eighths. ● Understand a fraction ● $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$. ● Build non-unit fractions and whole numbers from unit fractions. ● Extend understanding of whole numbers on the number line to see fractions on a number line. ● Partition the interval from 0 to 1 and locate unit fractions within that interval. ● Locate non-unit fractions on the number line (including fractions greater than 1). ● Locate whole numbers on the number line given the location of a unit fraction and express them as fractions. ● Recognize that whole numbers can be written as fractions. ● Locate 1 on the number line given the location of a non-unit fraction. ● Identify equivalent fractions. ● Understand two fractions as equivalent if they are the same size and the parts refer to the same whole. ● Use diagrams to explain or show fraction equivalence. ● Use diagrams to generate equivalent fractions. ● Identify and generate equivalent fractions. ● Understand two fractions as equivalent if they are at the same point on a number line. ● Express whole numbers as fractions. ● Recognize fractions that are equivalent to whole numbers. ● Represent and compare fractions in a way that makes sense to them. ● Compare two fractions with the same denominator by reasoning about their size. ● Compare two fractions with the same numerator by reasoning about their size.	

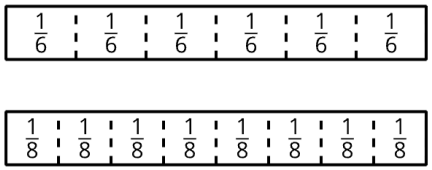
different ways (diagrams, fraction strips, and number lines) ● Comparisons of fractions are valid only when the fractions being compared refer to the same size whole ● Fractions with the same size denominator are composed of parts that are the same size or length, so the numerator, which describes the number of parts, determines which fraction is greater ● We can use symbols to record the results of comparison of fractions ● $>$, $=$, or $<$ ● Fractions with the same numerator have the same number of parts, and the denominator shows the size or length of those parts ● As the denominator increases, each part gets smaller ● We can use our knowledge of fractions to mark fractional lengths.	● Compare two fractions with the same numerator or the same denominator. ● Record the results of comparison with the symbols >, =, or <. ● Apply fraction understanding to create geometric designs.	
Entry Level Assessment and Connection to Unit: Section A: Pre-Unit Practice Problems Section B: Pre-Unit Practice Problems Section C: Pre-Unit Practice Problems Section D: Pre-Unit Practice Problems	**Unit Materials, Resources and Technology:** ● **Illustrative Mathematics** ● **Instructional Routines and Math Language Routines** ● **Glossary - Student-friendly** ● **Required Materials** ● **IM en Español** ● **Pacing Guide and Dependency Diagrams K-5**	

Opportunities for Interdisciplinary Connections:	
Any links, attachments and resources: Instructional Routines Document Family Support Materials	**Planning Ideas:** Components of a Typical IM Lesson What To Know About IM When Planning Where to Find the Mathematical Practices in the Units Assessing the Mathematical Practices

Topic # 1 (Section A)	Topic Name: Section A - Introduction to Fractions	Duration: Recommended: 4 days

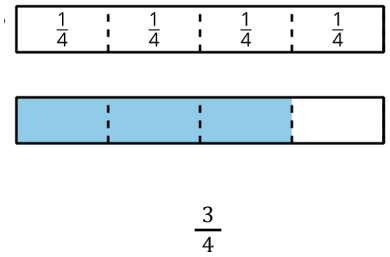
Topic Description:
In this section, students use shaded diagrams and fraction strips to learn about fractions, building on their prior knowledge of halves, thirds, and fourths.

Students partition rectangles into 6 or 8 equal parts and describe each part as "a sixth" or "an eighth" and write the notation $\frac{1}{6}$ or $\frac{1}{8}$.



They learn that the notation $\frac{1}{b}$ refers to a unit fraction, or the size of each part if the whole is partitioned into *b* parts. Working with fraction strips allows students to see non-unit fractions as being composed of unit fractions, so *a* parts of unit fractions of size $\frac{1}{b}$ gives a non-unit fraction.

For example, putting together 3 pieces of fourths or 3 parts of the unit fraction $\frac{1}{4}$ gives $\frac{3}{4}$.



As students develop their understanding, they make connections between the meaning, language, and notation of fractions—between what fractions represent and how they are expressed in words and in numbers. (The terminology "numerator" and "denominator" are not introduced until later so students can focus on meaning making.)

Section Learning Goals

- Understand that fractions are built from unit fractions such that a fraction $\frac{a}{b}$ is the quantity formed by *a* parts of size $\frac{1}{b}$.
- Understand that unit fractions are formed by partitioning shapes into equal parts.

Competencies Addressed:

Understanding and Applying Number Systems

Indicator 3 - I understand fractions hold value.

Operations and Algebraic Thinking

Indicator 4 - I can multiply and divide within 100.

Essential Question and Enduring Understanding Addressed in this Topic:

What is a fraction?

Fractions help us to describe parts of a whole. As we develop our understanding of fractions, we make connections between the meaning, language, and notation of fractions - between what fractions represent and how they are expressed in words and numbers.

In this Topic, students will know:

- Fractions are numbers we write to describe the parts of a whole that have been partitioned into equal parts.
- Sixths and eighths are when we partition something into six or eight equal pieces.
- $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, and $\frac{1}{8}$ are used to represent the parts described as one half, one third, one fourth, one sixth, and one eighth.
- When we partition shapes into equal parts, we express each equal-size part as a unit fraction.
- Unit fractions are written in the form $\frac{1}{b}$.
- A unit fraction is a fraction in which the numerator is 1 because it describes one of the equal=sized parts.
- All non-unit fractions are built from unit fractions.
- If all the parts are shaded in a diagram, then the non-unit fraction is equivalent to a whole number.

Topic Vocabulary:

Academic vocabulary
fraction (Lesson 1)
unit fraction (Lesson 3)

In this Topic, students will be able to:

- Partition shapes into 2, 3, 4, 6, or 8 parts with equal area and name those parts as halves, thirds, fourths, sixths, and eighths.
- Recognize that equal-size parts in a shape can be named with numbers called fractions.

Plan for Student Reflection:

Student Journal Prompts and Reflection Practices

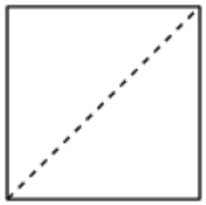
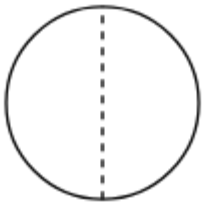
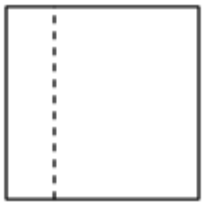
● Express the area of each part as a unit fraction of the whole. ● Partition shapes into halves, thirds, fourths, sixths, and eighths. ● Understand a fraction $\frac{a}{b}$ as the quantity formed by *a* parts of size $\frac{1}{b}$. ● Build non-unit fractions and whole numbers from unit fractions.	**Plan for Teacher Reflection:** ● Reviewing formative assessments ● Developing scaffolds ● Collaborative scoring ● PLCs ● Planning for small groups ● Teacher Reflection Prompts in Teacher Guides

Topic 1 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

Task Title: Topic 1 - Introduction to Fractions	**Grade Level and Unit: Grade 3, Unit 5**
Description of Task: Students use unit fractions to build "secret fractions," which are non-unit fractions. For example, to complete a secret fraction card with $\frac{3}{4}$students need three cards with $\frac{1}{4}$. After completing each secret fraction, they reveal the fraction they've made and shade the game board to represent it. The synthesis highlights strategies students used to build their non-unit fractions.	**Purpose of Task:** The purpose of this lesson is for students to build non-unit fractions and whole numbers from unit fractions.
Background of Students/Learning Progression: In the previous lesson, students named non-unit fractions and made sense of the notation used to write them. In this task, students play a game in which they build non-unit fractions from unit fractions (for example, they try to collect enough cards showing $\frac{1}{6}$ to make $\frac{3}{6}$). They record these fractions on a fraction strip diagram. Then, students partition and shade diagrams to represent situations involving fractional lengths and consider the location of the endpoint of a fractional length.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification
Getting Started: This warm-up prompts students to compare four shapes that have been partitioned and examine the features of the shapes and the partitions. The observations here prepare students to explore fractions later in the lesson and enable the teacher to hear how students describe the features that they see. During the synthesis, ask students to explain the meaning of any terminology they use, such as partition, whole, parts, pieces, equal, and halves. ● Groups of 2 ● Display the image. ● "Pick one that doesn't belong. Be ready to share why it doesn't belong." ● 1 minute: quiet think time ● "Discuss your thinking with your partner." ● 2–3 minutes: partner discussion ● Share and record responses.	

Which one doesn't belong?

A  B  C  D 

Section A

IM Lesson	L1: Name the Parts	L2: Name Parts as Fractions	L3: Non-unit Fractions	L4: Build Fractions from Unit Fractions
Learning Cycle Model	**Making Meaning**	**Investigate**	**Investigate**	**Create and Produce**
Naugatuck Math Competency	3.NS.3	3.NS.3	3.NS.3	3.NS.3, 3.OA.4
Math Practice Standards	MP 5, 6	MP 8	MP 7	MP 2
Lesson Purpose	The purpose of this lesson is for students to be introduced to fractions as numbers we write to describe the parts of a whole that has been partitioned into equal parts.	The purpose of this lesson is for students to partition shapes into equal parts and express each equal-size part as a unit fraction.	The purpose of this lesson is for students to understand non-unit fractions.	The purpose of this lesson is for students to build non-unit fractions and whole numbers from unit fractions.
Teacher Facing Learning Goal	• Partition shapes into 2, 3, 4, 6, or 8 parts with equal area and name those parts as halves, thirds, fourths, sixths, and eighths. • Recognize that equal-size parts in a shape can be named with numbers called fractions.	• Express the area of each part as a unit fraction of the whole. • Partition shapes into halves, thirds, fourths, sixths, and eighths.	Understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.	Build non-unit fractions and whole numbers from unit fractions.
Vocabulary Focus	fraction		unit fraction	
Lesson Materials/ Resources	Lesson 1 Slides	Lesson 2 Slides	Lesson 3 Slides	Lesson 4 Slides

<table>
<tr>
<td></td>
<td>Teacher Materials

Student Pages

Activity 1:
Create a set of cards from the blackline master for each group of 2.
Activity 2:
● Each student needs 4 copies of the rectangle from the blackline master.
● Have extra rectangles available for students who need more than one try to fold the rectangles into equal parts.
● Create poster for synthesis:
<table><tr><th>Number of equal parts</th><th>Number of each part</th></tr><tr><td>2</td><td>half</td></tr><tr><td>3</td><td>third</td></tr><tr><td>4</td><td>fourth</td></tr><tr><td>6</td><td></td></tr><tr><td>8</td><td></td></tr></table>Materials to Copy
Card Sort: Partitions

Fold and Name</td>
<td>Teacher Materials

Student Pages

Activity 1:
Use the blackline master to create one set of 6 equal-sized strips for each student.

Materials to Copy
Partition the Strips</td>
<td>Teacher Materials

Student Pages

Activity 2:
● Create a set of cards from the Fraction Match Part 1 blackline master for each group of 2.
● Create a set of 8 cards from the Fraction Match Part 2 blackline master for each group of 2.

Materials to Copy
Fraction Match Part 1

Fraction Match Part 2</td>
<td>Teacher Materials

Student Pages

Activity 1:
● Create a set of cards from the blackline master for each group of 2.
● Print extra gameboards for the launch and groups that have time for an extra game.
● Students might want a folder or divider so their partner doesn’t see their cards.

Materials to Gather
Colored pencils
Folders
Materials for creating a visual display

Materials to Copy
Secret Fractions Stage 1 Cards

Secret Fractions Stage 1 Gameboard</td>
</tr>
<tr>
<td></td>
<td>Cooldown: Partition a Rectangle</td>
<td>Cooldown: Label the Parts</td>
<td>Cooldown: Shaded Fraction</td>
<td>Cooldown: Represent a Fraction</td>
</tr>
<tr>
<td></td>
<td colspan="4">Additional Resource: Section A Practice Problems</td>
</tr>
<tr>
<td>Assessment</td>
<td colspan="4">Formative Assessment Strategies: observation, questioning, student discourse: Monitoring Sheet
See Section A Checkpoint Assessment, Section A Checkpoint Teacher’s Guide</td>
</tr>
</table>

Centers Materials	• Mystery Number (1–4), Stage 2: Three-digit Numbers (Supporting) • Number Line Scoot (2–3), Stage 1: Twos, Fives, and Tens (Supporting)	• Mystery Number (1–4), Stage 2: Three-digit Numbers (Supporting) • Number Line Scoot (2–3), Stage 1: Twos, Fives, and Tens (Supporting)	• Mystery Number (1–4), Stage 2: Three-digit Numbers (Supporting) • Number Line Scoot (2–3), Stage 1: Twos, Fives, and Tens (Supporting)	• Mystery Number (1–4), Stage 3: Fractions with Denominators 2, 3, 4, 6 (Addressing) • Number Line Scoot (2–3), Stage 2: Halves, Thirds and Fourths (Addressing)

Making Meaning:

Lesson 1: Name the Parts

- The purpose of this lesson is for students to be introduced to fractions as numbers we write to describe the parts of a whole that has been partitioned into equal parts.
- Teacher presentation materials
- Slides

Checkpoints: These documents for the above lessons provide teachers with a template for collecting data and information on student understanding of skills and concepts.

Checkpoint A: Assessment
Checkpoint A: Teacher Guide

Investigate:

Lesson 2: Name Parts as Fractions

- The purpose of this lesson is for students to partition shapes into equal parts and express each equal-size part as a unit fraction.
- Teacher presentation materials
- Slides

Lesson 3: Non-unit Fractions

- The purpose of this lesson is for students to understand non-unit fractions.
- Teacher presentation materials
- Slides

Create and Produce:

Lesson 4: Build Fractions from Unit Fractions

- The purpose of this lesson is for students to build non-unit fractions and whole numbers from unit fractions.
- Teacher presentation materials
- Slides

Communicate and Present:

"How did the earlier expressions help you find the value of the last expression?"
Consider asking:
"Did anyone have the same strategy but would explain it differently?"
"Did anyone approach the problem in a different way?"

"What strategies did you find helpful for building your secret fractions?" (When $\frac{5}{8}$ was my secret fraction, I was keeping track of how many $\frac{1}{8}$ cards I had to make . When I had $\frac{5}{8}$ as a secret fraction, I knew I needed $\frac{1}{8}$ cards, but I had a bunch of $\frac{1}{6}$ cards, so I traded for different secret fractions.)

Reflection:

Display some completed gameboards from the first activity and one of the diagrams that represents a situation from the second activity.

"How was making the fractions in the game like representing the situations? How was it different?" (The parts had to be equal-sized for both activities. We had to count the parts in both activities. The fractions were made from unit fractions. In the first activity, we had the pieces to build the fraction, but in the second activity, we had to partition and shade in the parts to make the fraction.)

Notes: Follow lessons in numerical order.

Complete File with Resources and Task:

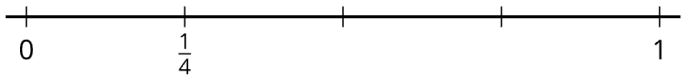
Task-Based Learning Plan Format for Topic 1

Topic # 2 (Section B)	Topic Name: Section B - Fractions on the Number Line	Duration: Recommended: 5 days

Topic Description:

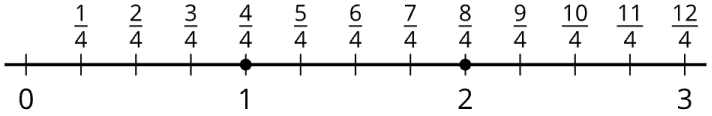
In this section, students reason about fractions on the number line. This work relies on two prior experiences: locating whole numbers on the number line, and partitioning a whole into equal parts.

Students have previously learned that numbers can be represented as distances from 0 on the number line. Here, students learn that the same is true about fractions. Students begin by partitioning the interval between 0 and 1 into equal parts, just as they had done with fraction strips and tape diagrams.



They then mark the first tick mark with a unit fraction $\frac{1}{b}$ and locate non-unit fractions by counting lengths the size of $\frac{1}{b}$. They reason that a tick mark that is *a* intervals away represents a fraction $\frac{a}{b}$. The terms “numerator” and “denominator” are introduced here.

Students also notice that certain fractions are in the same location as whole numbers on the number line. For example, $\frac{4}{4}$ and $\frac{8}{4}$ are at the same location as 1 and 2, respectively. This observation helps students understand that whole numbers can be represented as fractions.



Section Learning Goals

- Understand a fraction as a number and represent fractions on the number line.

Competencies Addressed:

Understanding and Applying Number Systems

Indicator 3 - I understand fractions hold value.
Indicator 4 - I can apply my understanding of fractions for equivalence and comparing.

Operations and Algebraic Thinking

Indicator 4 - I can multiply and divide within 100.

Essential Question and Enduring Understanding Addressed in this Topic:

What is a fraction?

Fractions help us to describe parts of a whole. As we develop our understanding of fractions, we make connections between the meaning, language, and notation of fractions - between what fractions represent and how they are expressed in words and numbers.

In this Topic, students will know:

- Quantities that are not whole numbers can be represented on a number line.
- Fractions can be less than 1, equal to 1, or greater than 1
- The numerator is the top number of a fraction
- The denominator is the bottom number of a fraction
- Whole numbers can be written as a fraction

Topic Vocabulary:

Academic vocabulary
denominator (Lesson 7)
numerator (Lesson 7)

In this Topic, students will be able to:

- Extend understanding of whole numbers on the number line to see fractions on a number line.
- Partition the interval from 0 to 1 and locate unit fractions within that interval.
- Locate non-unit fractions on the number line (including fractions greater than 1).
- Locate whole numbers on the number line given the location of a unit fraction and express them as fractions.
- Recognize that whole numbers can be written as fractions.
- Locate 1 on the number line given the location of a non-unit fraction.

Plan for Student Reflection:

Student Journal Prompts and Reflection Practices

Plan for Teacher Reflection:

- Reviewing formative assessments
- Developing scaffolds
- Collaborative scoring
- PLCs
- Planning for small groups
- Teacher Reflection Prompts in Teacher Guides

Topic 2 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

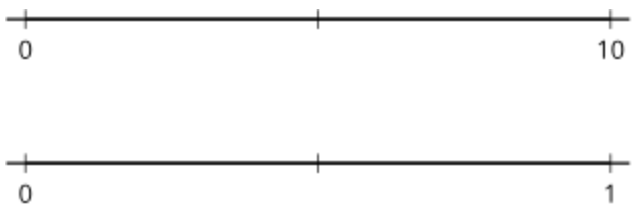
Task Title: Topic 2 - Fractions on the Number Line	**Grade Level and Unit: Grade 3, Unit 5**
Description of Task: In the first activity, students reinforce their understanding of the numerator and denominator of a fraction as they find 1 given a fraction greater than 1. They use the numerator of the given fraction to identify the size of a unit fraction and then to locate 1. Later, they locate a non-unit fraction given the location of a unit fraction with a different denominator. There, students use their knowledge of locating 1 first and then locating the non-unit fraction from 1.	**Purpose of Task:** The purpose of this task is for students to use the location of a unit fraction to locate another fraction with a different denominator on the number line.
Background of Students/Learning Progression: Previously, students have located fractions on the number line, including locating 1 when given a unit fraction.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification

Getting Started:

The purpose of this warm-up is to elicit the idea that number lines can be partitioned into intervals smaller than 1, which will be useful when students see number lines partitioned into fractions in a later activity. While students may notice and wonder many things, the idea that fractions can be represented on the number line is the important discussion point. Students do not need to identify the tick mark as showing $\frac{1}{2}$ in the warm-up, as that will be the focus later in the lesson.

- Groups of 2
- Display the image.
- “What do you notice? What do you wonder?”
- 1 minute: quiet think time
- “Discuss your thinking with your partner.”
- 1 minute: partner discussion
- Share and record responses.

What do you notice? What do you wonder?



Section B

IM Lesson	L5: To the Number Line	L6: Locate Unit Fractions on the Number Line	L7: Non-unit Fractions on the Number Line	L8: Fractions and Whole Numbers	L9: All Kinds of Numbers on the Number Line
Learning Cycle Model	**Make Meaning**	**Make Meaning**	**Investigate**	**Investigate**	**Create and Produce**
Naugatuck Math Competency	3.NS.3	3.NS.3	3.NS.3	3.NS.3, 3.OA.4	3.NS.3
Math Practice Standards	MP 7	MP 3		MP 8	MP 6
Lesson Purpose	The purpose of this lesson is for students to extend their understanding of whole numbers on the number line as they work with number lines partitioned into fractions.	The purpose of this lesson is for students to partition the interval from 0 to 1 and locate unit fractions within that interval.	The purpose of this lesson is for students to locate non-unit fractions on the number line.	The purpose of this lesson is for students to recognize fractions that are equivalent to whole numbers and, given the location of a unit fraction on the number line, to locate whole numbers.	The purpose of this lesson is for students to use their knowledge of fractions on the number line to locate 1 when given a non-unit fraction.
Teacher Facing Learning Goal	Extend understanding of whole numbers on the number line to see fractions on a number line.	Partition the interval from 0 to 1 and locate unit fractions within that interval.	Locate non-unit fractions on the number line (including fractions greater than 1).	• Locate whole numbers on the number line given the location of a unit fraction and express them as fractions. • Recognize that whole numbers	Locate 1 on the number line given the location of a non-unit fraction.

				can be written as fractions.	
Vocabulary Focus			denominator numerator		
Lesson Materials/ Resources	Lesson 5 Slides Teacher Materials Student Pages **Activity 1:** Create a set of cards from the blackline master for each group of 2. **Activity 2:** ● Each student needs at least 5 number lines from 0 to 1. Each copy of the blackline master contains a few extra number lines, in case students fold incorrectly at first. Create a number line folded into fourths and a fraction strip that shows fourths to display in the synthesis. **Materials to Gather** scissors **Materials to Copy** Card Sort: Number Lines Fold and Label the Number Line	Lesson 6 Slides Teacher Materials Student Pages	Lesson 7 Slides Teacher Materials Student Pages **Activity 1:** Each group of 2 students needs a number cube. Each student needs at least 5 base-ten cubes to use as game pieces. **Materials to Gather** Base-ten blocks Number cubes **Materials to Copy** Number Line Scoot Stage 2 Directions Number Line Scoot Stage 2 Gameboard	Lesson 8 Slides Teacher Materials Student Pages	Lesson 9 Slides Teacher Materials Student Pages
	Cooldown: Reflection	Cooldown: Locate and Label	Cooldown: Where is $\frac{5}{3}$?	Cooldown: Where is 1?	Cooldown: Where is 1 Now?
	Additional Resource: Section B Practice Problems				

Assessment	Formative Assessment Strategies: observation, questioning, student discourse: Monitoring Sheet See Section B Checkpoint Assessment, Section B Checkpoint Teacher's Guide				
Centers Materials	• Mystery Number (1–4), Stage 3: Fractions with Denominators 2, 3, 4, 6 (Addressing) • Number Line Scoot (2–3), Stage 2: Halves, Thirds and Fourths (Addressing)	• Mystery Number (1–4), Stage 3: Fractions with Denominators 2, 3, 4, 6 (Addressing) • Number Line Scoot (2–3), Stage 2: Halves, Thirds and Fourths (Addressing)	• Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Addressing) • Number Line Scoot (2–3), Stage 2: Halves, Thirds and Fourths (Addressing)	• Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Addressing) • Number Line Scoot (2–3), Stage 2: Halves, Thirds and Fourths (Addressing)	• Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Addressing)

Making Meaning:

Lesson 5: To the Number Line

- The purpose of this lesson is for students to extend their understanding of whole numbers on the number line as they work with number lines partitioned into fractions.
- Teacher presentation materials
- Slides

Lesson 6: Locate Unit Fractions on the Number Line

- The purpose of this lesson is for students to partition the interval from 0 to 1 and locate unit fractions within that interval.
- Teacher presentation materials
- Slides

Investigate:

Lesson 7: Non-unit Fractions on the Number Line

- The purpose of this lesson is for students to locate non-unit fractions on the number line.
- Teacher presentation materials
- Slides

Lesson 8: Fractions and Whole Numbers

- The purpose of this lesson is for students to recognize fractions that are equivalent to whole numbers and, given the location of a unit fraction on the number line, to locate whole numbers.

- Teacher presentation materials
- Slides

Create and Produce:

Lesson 9: All Kinds of Numbers on the Number Line

- The purpose of this lesson is for students to use their knowledge of fractions on the number line to locate 1 when given a non-unit fraction.
- Teacher presentation materials
- Slides

Checkpoints: These documents for the above lessons provide teachers with a template for collecting data and information on student understanding of skills and concepts.

Checkpoint B: Assessment
Checkpoint B: Teacher Guide

Communicate and Present:

"Share your written reasoning for one of the number lines with your partner. Take turns being the speaker and the listener. If you are the speaker, share your ideas and writing so far. If you are the listener, ask questions and give feedback to help your partner improve their work."
3–5 minutes: structured partner discussion
Repeat with 2–3 different partners.
"Revise your initial draft based on the feedback you got from your partners."

Ask the two selected students to display their work side-by-side for all to see.
"What do these strategies have in common? How are these representations different?"

Reflection:

Display fraction strips and a number line.

"Work with your partner to brainstorm all the things you've learned about fractions so far. Then, we'll share and record our ideas." (The numerator is the top part of a fraction and the denominator is the bottom part. Fractions can be represented with diagrams, fraction strips, and number lines. Number lines can be partitioned to show unit fractions and non-unit fractions, and fractions less than 1 and greater than 1. Non-unit fractions are built from unit fractions.)

Share and record ideas.

Notes: Follow the lessons in numerical order.

Complete File with Resources and Task:

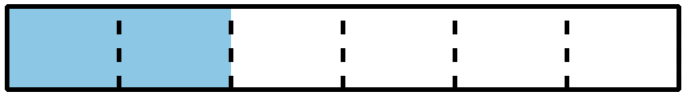
Task-Based Learning Plan Format for Topic 2

Topic # 3 (Section C)	Topic Name: Section C - Equivalent Fractions	Duration: Recommended: 4 days

Topic Description:
In this section, students learn that equivalent fractions are fractions that are the same size.

They first identify equivalent fractions by noticing parts that are of equal length on fraction strips and tape diagrams.

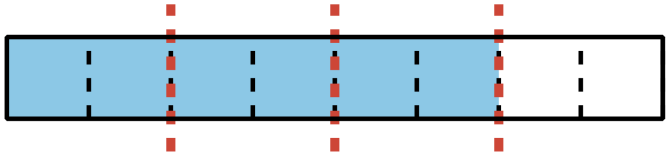
For example, the shaded third in the first diagram is the same size as the two shaded sixths in the second diagram, so $\frac{1}{3}$ and $\frac{2}{6}$ are equivalent.



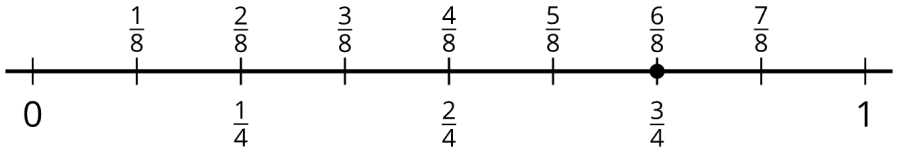
Students see that they can show equivalence by decomposing each fractional part into smaller parts, or by grouping fractional parts to make larger parts.

Suppose we want to show that the shaded parts of this diagram represent both $\frac{6}{8}$ and $\frac{3}{4}$.

If we group 2 eighths together, we have 4 equal groups, each being a fourth. We can see that the 6 shaded eighths and 3 shaded fourths are the same size.



Later, students learn that equivalent fractions are the same distance away from 0 and are therefore located at the same point on the number line. They write equations to express equivalence, including for fractions that are equivalent to whole numbers.



$\frac{6}{8} = \frac{3}{4}$

Section Learning Goals

- Explain equivalence of fractions in special cases and express whole numbers as fractions and fractions as whole numbers.

Competencies Addressed:

Understanding and Applying Number Systems

Indicator 4 - I can apply my understanding of fractions for equivalence and comparing.

Operations and Algebraic Thinking

Indicator 3 - I can apply the properties of operations to multiply and divide.

Essential Question and Enduring Understanding Addressed in this Topic:

How can we compare fractions?

- **Understanding the characteristics of a fraction can help us compare different fractions**. We can use what we know about numerators, denominators, parts, and wholes to determine if one fraction is equivalent, less than, or greater than another fraction.

In this Topic, students will know:

- Different fractions can be equivalent if they are the same size of the same whole.
- Fractions that are the same size are equivalent fractions
- Fractions at the same location on a number line are equivalent
- Whole numbers can be written as fractions

Topic Vocabulary:

Academic vocabulary
equivalent fractions (Lesson 10)

In this Topic, students will be able to:	**Plan for Student Reflection:**
● Identify equivalent fractions. ● Understand two fractions as equivalent if they are the same size and the parts refer to the same whole. ● Use diagrams to explain or show fraction equivalence. ● Use diagrams to generate equivalent fractions. ● Identify and generate equivalent fractions. ● Understand two fractions as equivalent if they are at the same point on a number line. ● Express whole numbers as fractions. ● Recognize fractions that are equivalent to whole numbers.	Student Journal Prompts and Reflection Practices **Plan for Teacher Reflection:** ● Reviewing formative assessments ● Developing scaffolds ● Collaborative scoring ● PLCs ● Planning for small groups ● Teacher Reflection Prompts in Teacher Guides

Topic 3 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

<table>
<tr><td>Task Title: Topic 3 - Equivalent Fractions</td><td>Grade Level and Unit: Grade 3, Unit 5</td></tr>
<tr><td>Description of Task:
This task uses a “carousel” structure in which students complete a rotation of tasks. Consider demonstrating the steps before students begin.

Have students work with their group to complete the table. Start by writing two fractions that are equivalent to each whole number: 4, 5, and 6.”

“Pass your paper to your right. On the paper you receive, write one new fraction that is equivalent to a whole number of your choice.” “Keep passing and writing one additional fraction for a whole number until the table is complete.” Encourage students to ask clarifying questions before they begin. “Be prepared to explain how you know what fractions to write for each whole number.”</td><td>Purpose of Task:
The purpose of this activity is for students to write whole numbers as fractions. Students may reason in any way that makes sense to them, including using patterns they noticed previously. When students observe patterns as they write whole numbers as fractions, they look for and make use of structure (MP7).</td></tr>
<tr><td>Background of Students/Learning Progression:
In previous lessons, students noticed fractions at the same location as whole numbers on the number line. In this lesson, students develop more fully the idea that whole numbers can be written as fractions and learn to recognize fractions that are equivalent to whole numbers. Students encounter and make sense of fractions with 1 for the denominator.</td><td>Ensure all competencies are addressed in the task:

▢ Yes, all competencies are addressed
▢ No - Task needs modification</td></tr>
<tr><td colspan="2">Getting Started:
The purpose of this Choral Count is to invite students to practice counting by $\frac{1}{2}$ and notice patterns in the count. These understandings help students develop fluency and will be helpful later in this lesson when students recognize and generate equivalent fractions. In the synthesis, students have the opportunity to notice that $\frac{2}{2}$ and $\frac{2}{4}$ are both equal to 1 whole.
● Count by $\frac{1}{2}$, starting at $\frac{1}{2}$.”
● Record as students count. Record 2 fractions in each row, then start a new row. There will be 4 rows.
● Stop counting and recording at $\frac{8}{2}$.</td></tr>
</table>

Section C

IM Lesson	L10: Equivalent Fractions	L11: Generate Equivalent Fractions	L12: Equivalent Fractions on a Number Line	L13: Whole Numbers and Fractions
Learning Cycle Model	**Make Meaning**	**Make Meaning**	**Investigate**	**Create and Produce**
Naugatuck Math Competency	3.NS.4	3.NS.4, 3.OA.3	3.NS.4	3.NS.4
Math Practice Standards	MP 6	MP 3, 7	MP 2	MP 7, 8
Lesson Purpose	The purpose of this lesson is for students to see that different fractions can be equivalent if they are the same size of the same whole.	The purpose of this lesson is for students to generate equivalent fractions.	The purpose of this lesson is for students to use the number line to determine whether fractions are equivalent.	The purpose of this lesson is for students to recognize fractions that are equivalent to whole numbers and write whole numbers as fractions.
Teacher Facing Learning Goals	• Identify equivalent fractions. • Understand two fractions as equivalent if they are the same size and the parts refer to the same whole.	• Use diagrams to explain or show fraction equivalence. • Use diagrams to generate equivalent fractions.	• Identify and generate equivalent fractions. • Understand two fractions as equivalent if they are at the same point on a number line.	• Express whole numbers as fractions. • Recognize fractions that are equivalent to whole numbers.
Vocabulary Focus	equivalent fractions			
Lesson Materials/ Resources	Lesson 10 Slides Teacher Materials Student Pages **Materials to Gather** Materials from a previous lesson **Warm-up:** Have recording of choral count by one-fourth available, from a	Lesson 11 Slides Teacher Materials Student Pages	Lesson 12 Slides Teacher Materials Student Pages **Materials to Gather** number cubes **Activity 3:** Each group of 2 needs 6 number cubes.	Lesson 13 Slides Teacher Materials Student Pages

	previous lesson. **Activity 2:** Students need the fraction strips they made in a previous lesson.			
	Cooldown: Find the Equivalent Fractions	Cooldown: Two Fraction Names for Each Diagram	Cooldown: Equivalence on the Number Line	Cooldown: Fraction to Whole Number and Whole Number to Fraction
	Additional Resource: Section C Practice Problems			
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse: Monitoring Sheet** **See Section C Checkpoint Assessment, Section C Checkpoint Teacher's Guide**			
Centers Materials	• Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Addressing)	• Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Addressing)	• Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Addressing)	• Rolling for Fractions (3–5), Stage 1: Equivalent Fractions (Addressing) • Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing)

Making Meaning:

Lesson 10: Equivalent Fractions

- The purpose of this lesson is for students to see that different fractions can be equivalent if they are the same size of the same whole.
- Teacher presentation materials
- Slides

Lesson 11: Generate Equivalent Fractions

- The purpose of this lesson is for students to generate equivalent fractions.
- Teacher presentation materials
- Slides

Investigate:

Lesson 12: Equivalent Fractions on a Number Line

- The purpose of this lesson is for students to use the number line to determine whether fractions are equivalent.
- Teacher presentation materials
- Slides

Create and Produce:

Lesson 13: Whole Numbers and Fractions

- The purpose of this lesson is for students to recognize fractions that are equivalent to whole numbers and write whole numbers as fractions.
- Teacher presentation materials
- Slides

Checkpoints: These documents for the above lessons provide teachers with a template for collecting data and information on student understanding of skills and concepts.

Checkpoint C: Assessment

Checkpoint C: Teacher Guide

Communicate and Present:

- Invite a group of students to display their completed table.
- Select previously identified students to share how they knew what fractions to write for each whole number.
- Invite the class to share other strategies for generating equivalent fractions.
- "What new patterns do you notice in the completed table?" (Sample responses:
  - In fractions that are equivalent to 4, you can get the numerator by skip-counting by the denominator 4 times.
  - In the row with thirds, the numerator increases by 3. In the row for fourths, it increases by 4.)

Reflection:

"Over the last few lessons, we've learned about equivalent fractions."

"What are some important things you've learned about fraction equivalence?" (Fractions that are the same size are equivalent. Fractions at the same point on the number line are equivalent. Some fractions are equivalent to whole numbers, but some are not. Whole numbers can be written as fractions.)

Notes: Follow the lessons in numerical order.

Complete File with Resources and Task:

Task-Based Learning Plan Format for Topic 1

Topic # 4 (Section D)	Topic Name: Section D - Fraction Comparisons	Duration: Recommended: 5 days

Topic Description:

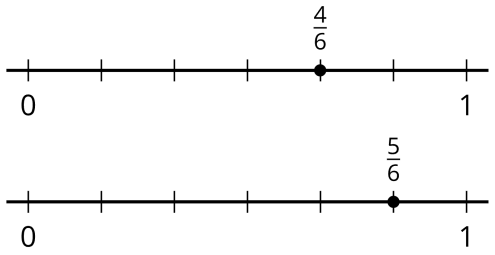
In this section, students compare fractions using any representation or reasoning strategies that make sense to them. They learn that comparisons are only valid if the fractions being compared refer to the same whole.

Students begin by deciding if two fractions are equivalent. They use diagrams, number lines, and the meaning of fractions to support their reasoning.

Next, students compare fractions with the same denominator. They see that these fractions are composed of parts of the same size, so to compare them involves looking at the numerators to see which fraction has more parts.

For example, there are 4 sixths in $\frac{4}{6}$ and 5 sixths in $\frac{5}{6}$, so $\frac{4}{6}$ is less than $\frac{5}{6}$. On the number line, $\frac{4}{6}$ would to the left of $\frac{5}{6}$, closer to 0.

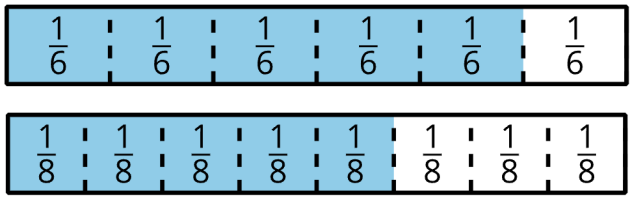
$$\frac{4}{6} < \frac{5}{6}$$



In contrast, fractions with the same numerator have the same number of parts, so to compare them involves looking at the denominators to see which fraction is made up of larger parts.

For instance, 5 sixths is greater than 5 eighths because a sixth is larger than an eighth.

$$\frac{4}{6} < \frac{5}{6}$$



The work here reinforces the idea that as the denominator increases, the size of each part gets smaller.

Section Learning Goals

- Compare two fractions with the same numerator or denominator, record the results with the symbols >, =, or <.

Competencies Addressed: 3.NF.A.2, 3.NF.A.3, 3.NF.A.3.c, 3.NF.A.3.d

Understanding and Applying Number Systems

Indicator 3 - I understand fractions hold value.
Indicator 4 - I can apply my understanding of fractions for equivalence and comparing.

Essential Question and Enduring Understanding Addressed in this Topic:

How can we compare fractions?

- **Understanding the characteristics of a fraction can help us compare different fractions**. We can use what we know about numerators, denominators, parts, and wholes to determine if one fraction is equivalent, less than, or greater than another fraction.

In this Topic, students will know:

- Fractions can be represented in different ways (diagrams, fraction strips, and number lines)
- Comparisons of fractions are valid only when the fractions being compared refer to the same size whole
- Fractions with the same size denominator are composed of parts that are the same size or length, so the numerator, which describes the number of parts, determines which fraction is greater
- We can use symbols to record the results of comparison of fractions $>$, $=$, or $<$
- Fractions with the same numerator have the same number of parts, and the denominator shows the size or length of those parts
- As the denominator increases, each part gets smaller
- We can use our knowledge of fractions to mark fractional lengths.

Topic Vocabulary:

Academic vocabulary

In this Topic, students will be able to:	**Plan for Student Reflection:**
● Represent and compare fractions in a way that makes sense to them. ● Compare two fractions with the same denominator by reasoning about their size. ● Compare two fractions with the same numerator by reasoning about their size. ● Compare two fractions with the same numerator or the same denominator. ● Record the results of comparison with the symbols >, =, or <. ● Apply fraction understanding to create geometric designs.	Student Journal Prompts and Reflection Practices **Plan for Teacher Reflection:** ● Reviewing formative assessments ● Developing scaffolds ● Collaborative scoring ● PLCs ● Planning for small groups ● Teacher Reflection Prompts in Teacher Guides

Topic 4 Task Development

Each Topic has its own Task that serves as a roadmap for instruction during the unit. The task follows the Learning Cycle Model that drives teaching and learning in Naugatuck Public Schools.

Task Title: Topic 4 - Fraction Comparisons	**Grade Level and Unit: Grade 3, Unit 5**
Description of Task: Students partition each side of a given square into halves and mark a length of $\frac{1}{2}$ on each side. They connect those midpoints to form another shape, partition the sides into halves again, and repeat the process to make increasingly smaller shapes. Students notice that the resulting shapes are also squares, and the squares in the pattern alternate between having vertical and horizontal sides and diagonal sides.	**Purpose of Task:** The purpose of this task is for students to apply their understanding of fractions to create geometric designs.
Background of Students/Learning Progression: In this lesson, students apply their understanding of fractions to create geometric designs, starting with a given square. They are tasked with marking a fractional length ($\frac{1}{2}$ or $\frac{1}{4}$) of each side of the square with a point. They then connect the points, which creates a new shape within the square. Students iterate this process of marking a fractional length and connecting points to generate their designs.	**Ensure all competencies are addressed in the task:** ▢ Yes, all competencies are addressed ▢ No - Task needs modification

Getting Started:

This Number Talk encourages students to use what they know about the meaning of fractions and about properties of operations to mentally relate fractions that are equivalent to whole numbers.

Find the whole number that each fraction is equivalent to.

- $\frac{16}{1}$
- $\frac{16}{2}$
- $\frac{16}{4}$
- $\frac{20}{4}$

Section D

IM Lesson	L14: How Do You Compare Fractions?	L15: compare Fractions with the Same Denominator	L16: Compare Fractions with the Same Numerator	L17: Compare Fractions	L18: Design WIth Fractions
Learning Cycle Model	**Make Meaning**	**Investigate**	**Investigate**	**Investigate**	**Create and Produce**
Naugatuck Math Competency	3.NS.4	3.NS.4	3.NS.4	3.NS.3, 3.NS.4	3.NS.3
Math Practice Standards	MP 6	MP 2	MP 7	MP 2	
Lesson Purpose	The purpose of this lesson is for students to represent and compare fractions in a way that makes sense to them.	The purpose of this lesson is for students to compare two fractions with the same denominator.	The purpose of this lesson is for students to compare two fractions with the same numerator.	The purpose of this lesson is for students to compare two fractions with the same numerator or the same denominator in and out of context and to justify their conclusions.	The purpose of this lesson is for students to apply their understanding of fractions to create geometric designs.
Teacher Facing Learning Goals	Represent and compare fractions in a way that makes sense to them.	Compare two fractions with the same denominator by reasoning about their size.	Compare two fractions with the same numerator by reasoning about their size.	Compare two fractions with the same numerator or the same denominator. Record the results of comparison with the symbols >, =, or <.	Apply fraction understanding to create geometric designs.
Vocabulary Focus					
Lesson Materials/ Resources	Lesson 14 Slides Teacher Materials	Lesson 15 Slides Teacher Materials	Lesson 16 Slides Teacher Materials	Lesson 17 Slides Teacher Materials	Lesson 18 Slides Teacher Materials

	Student Pages **Materials to Gather** Materials for creating a visual display	Student Pages **Activity 2:** Each group of 2 needs a paperclip for their spinner. **Materials to Gather** Colored pencils Paper clips **Materials to Copy** Spin to Win Recording Sheet Spin to Win Spinner	Student Pages	Student Pages	Student Pages
	Cooldown: How Would You Decide?	Cooldown: Same Denominator	Cooldown: Same Numerator	Cooldown: All Kinds of Comparisons	
	Additional Resource: Section D Practice Problems				
Assessment	**Formative Assessment Strategies: observation, questioning, student discourse: Monitoring Sheet** **See Section D Checkpoint Assessment, Section D Checkpoint Teacher's Guide** **Unit 5 Assessment, Unit 5 Assessment Teacher Guide**				
Centers Materials	• Rolling for Fractions (3–5), Stage 1: Equivalent Fractions (Addressing) • Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Supporting)	• Rolling for Fractions (3–5), Stage 1: Equivalent Fractions (Addressing) • Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Supporting))	• Rolling for Fractions (3–5), Stage 1: Equivalent Fractions (Addressing) • Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Supporting))	• Rolling for Fractions (3–5), Stage 1: Equivalent Fractions (Addressing) • Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Supporting)	• Rolling for Fractions (3–5), Stage 1: Equivalent Fractions (Addressing) • Number Line Scoot (2–3), Stage 3: Halves, Thirds, Fourths, Sixths and Eighths (Addressing) • Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Supporting)

Making Meaning:

Lesson 14: How Do You Compare Fractions?

- The purpose of this lesson is for students to represent and compare fractions in a way that makes sense to them.
- Teacher presentation materials
- Slides

Investigate:

Lesson 15: Compare Fractions with the Same Denominator

- The purpose of this lesson is for students to compare two fractions with the same denominator.
- Teacher presentation materials
- Slides

Lesson 16: Compare Fractions with the Same Numerator

- The purpose of this lesson is for students to compare two fractions with the same numerator.
- Teacher presentation materials
- Slides

Lesson 17: Compare Fractions

- The purpose of this lesson is for students to compare two fractions with the same numerator or the same denominator in and out of context and to justify their conclusions.
- Teacher presentation materials
- Slides

Create and Produce:

Lesson 18: Design With Fractions

- The purpose of this lesson is for students to apply their understanding of fractions to create geometric designs.
- Teacher presentation materials
- Slides

Checkpoints: These documents for the above lessons provide teachers with a template for collecting data and information on student understanding of skills and concepts.

Checkpoint D: Assessment

Checkpoint D: Teacher Guide	
Communicate and Present: ● Select students to share their strategies for partitioning each side into fourths. Ask them to demonstrate their methods as needed. ● Invite students who created different designs to share the decisions they made along the way. ● "How did you decide which endpoint to use as a starting point for marking $\frac{1}{4}$ of the side length?" ● "Did you mark the length the same way each time?" ● "Why do you think we ended up with different designs when the fraction is $\frac{1}{4}$?" (We didn't mark off $\frac{1}{4}$ from the same starting point or using the same order, so the locations of the points and the shapes from connecting the points were different.)	**Reflection:** "Today we used fractions to partition the sides of geometric shapes and create designs." "How was partitioning the sides of a shape and marking points on them like partitioning and marking points on number lines? How was it different?" "What did you enjoy about the process of designing with fractions? What was challenging?"
Notes: Follow lessons in numerical order.	**Complete File with Resources and Task:** Task-Based Learning Plan Format for Topic 1