

Course Title: Mathematics	Full Year	Required
<p>Course Description: The mathematical work for Grade 4 is partitioned into 9 units:</p> <ul style="list-style-type: none"> ● Understanding Factors and Multiples ● Fraction Equivalence and Comparison ● Extending Operations to Fractions ● From Hundredths to Hundred-thousands ● Multiplicative Comparison and Measurement ● Multiplying and Dividing Multi-digit Numbers ● Angles and Angle Measurement ● Properties of Two-dimensional Shapes ● Putting it All Together 		
<p>Additional Course Information: The big ideas in Grade 4 include:</p> <ul style="list-style-type: none"> ● generalizing place value understanding for multi-digit whole numbers. ● using place value understanding and properties of operations to perform multi-digit arithmetic and solve problems. ● developing understanding and fluency with multi-digit multiplication ● developing understanding of dividing to find quotients involving multi-digit dividends ● building fractions from unit fractions by applying and extending previous understandings of operations with whole numbers. ● developing an understanding of fraction equivalence and ordering, as well as addition and subtraction of fractions with like denominators ● multiplication of fractions by whole numbers ● understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures, and 	<p>Core Resources:</p> <p>Illustrative Mathematics</p> <p>Instructional Routines and Math Language Routines</p> <p>Grade 4 Glossary</p> <p>Required Materials</p> <p>IM en Español: (Grade 4 en Español)</p> <p>Developing a Mathematical Community</p>	<p>Grade 4 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.</p> <p>Pacing Guide and Dependency Diagrams K-5</p>

<p>symmetry.</p> <ul style="list-style-type: none"> Required fluency: Add and subtract within 1,000,000 (4.NBT.B.4) 		
--	--	--

Unit 1: Factors and Multiples	Duration: 8-10 days
<p>Unit Overview - FOCUS:</p> <p>In this unit, students extend their knowledge of multiplication, division, and the area of a rectangle to deepen their understanding of factors and to learn about multiples.</p> <p>In grade 3, students learned that they can multiply the two side lengths of a rectangle to find its area, and divide the area by one side length to find the other side length. To represent these ideas, they used area diagrams, wrote expressions and equations, and learned the terms “factors” and “products.”</p> <p>In this unit, students return to the concept of area to make sense of factors and multiples of numbers. Given a rectangle with a particular area, students find as many pairs of whole-number side lengths as they can. They make sense of those side lengths as factor pairs of the whole-number area, and the area as a multiple of each side length. Students also learn that a number can be classified as prime or composite based on the number of factor pairs it has.</p> <p>Throughout the unit, students encounter various contexts related to school, gatherings, and celebrations. They are intended to invite conversations about students’ lives and experiences. Consider them as opportunities to learn about students as individuals, to foster a positive learning community, and to shape each lesson based on insights about students.</p>	<ul style="list-style-type: none"> Section A- Understand Factors and Multiples <ul style="list-style-type: none"> Determine if a number is prime or composite. Explain what it means to be a factor or a multiple of a whole number. Relate the side lengths and area of a rectangle to factors and multiples Section B- Find Factor Pairs and Multiples <ul style="list-style-type: none"> Apply multiplication fluency within 100 and the relationship between multiplication and division to find factor pairs and multiples.

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

In grade 3, students learned that they can multiply the two side lengths of a rectangle to find its area, and divide the area by one side length to find the other side length. To represent these ideas, they used area diagrams, wrote expressions and equations, and learned the terms “factors” and “products.” In this unit, students return to the concept of area to make sense of factors and multiples of numbers. They will use their previous understanding of area, factors, and products to understand how factors and multiples relate to side lengths and area, as well as what it means to be a factor or a multiple of a whole number, and how to determine if a number is prime or composite.

Later in the unit, students will also apply their Grade 3 knowledge of multiplication within 100 and the relationship between multiplication and division to find factor pairs and multiples. Students will deepen their understanding of the ideas of factors and multiples as they play games and solve problems in context.

Throughout the unit, students encounter various contexts related to school, gatherings, and celebrations. They are intended to invite conversations about students’ lives and experiences. Consider them as opportunities to learn about students as individuals, to foster a positive learning community and to shape each lesson based on insights about students.

Note that the first unit of the grade level includes multiple opportunities in which teachers and students [build a mathematical community](#) collaboratively. It is imperative that teachers spend time within the first unit building a mathematical community as Illustrative Mathematics is structured around students working collaboratively together to develop key mathematical concepts.

<p>Essential Questions:</p> <ol style="list-style-type: none">1. How can I use what I know about factors and multiples to solve real-life math problems?	<p>Enduring Understanding:</p> <p>Students apply understanding of multiplication and area to work with factors and multiples. Students extend their previous understandings of factors and products, the area of a rectangle, and the relationship between multiplication and division and explore connections to, and deepen their understanding of factors, multiples, and whole numbers. They will use multiplication and division concepts to determine if numbers are prime or composite, find factor pairs, distinguish factors from multiples, and determine if a number is a multiple of a given factor.</p>	
<p>What Students Will Know:</p> <ul style="list-style-type: none">● Factors● Multiples	<p>What students will do:</p> <ul style="list-style-type: none">● Find all factor pairs for a whole number in the range 1–100.	<p>Unit Specific Vocabulary:</p> <ul style="list-style-type: none">composite numberfactor pair of a whole numbermultiple of a number

<ul style="list-style-type: none"> ● Prime and Composite Numbers ● Relationship between Area, Factors, Multiples ● Relationship between Multiplication and Division ● Commutative Property of Multiplication 	<ul style="list-style-type: none"> ● Recognize that a whole number is a multiple of each of its factors. ● Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. ● Determine whether a given whole number in the range 1–100 is prime or composite 	<p>prime number</p> <p>Academic vocabulary: rectangle side length Area square units multiplication division representations</p>
<p>Entry Level Assessment and Connection to Unit:</p> <p>Grade 4 Unit 1 Entry-Level Assessment</p>	<p>Unit Materials, Resources and Technology:</p> <ul style="list-style-type: none"> ● Illustrative Mathematics ● Instructional Routines and Math Language Routines ● Grade 4 Unit 1 Glossary ● Grade 4 Glossary ● Required Materials ● IM en Español ● Grade 4 en Español ● Pacing Guide and Dependency Diagrams K-5 	
<p>Opportunities for Interdisciplinary Connections:</p> <p>Throughout the unit, students will be learning about the attributes of different numbers and will lead students to learning essential concepts such as multiples and factors. These concepts can be reinforced as students engage with tasks that focus on finding area and determining side lengths of rectangles. Thus, some opportunities for interdisciplinary connections are as follows:</p> <ul style="list-style-type: none"> ● Designing spaces (both interior and exterior spaces, such as a garden) ● Art ● Arrays 		

<p>Any links, attachments and resources:</p> <p>Instructional Routines Document</p> <p>Family Support Materials</p>	<p>Planning Ideas:</p> <p>Components of a Typical IM Lesson</p> <p>What To Know About IM When Planning</p> <p>Where to Find the Mathematical Practices in the Units</p> <p>Assessing the Mathematical Practices</p>
--	--

Topic # 1 (Section A)	Section A: Understand Factors and Multiples	Duration: Recommended: 4-5 days (4 lessons)
------------------------------	--	--

Topic Description:

Section A Learning Goals

- Determine if a number is prime or composite.
- Explain what it means to be a factor or a multiple of a whole number.
- Relate the side lengths and area of a rectangle to factors and multiples

In this section, students revisit the ideas of area and factors from grade 3 and encounter the idea of multiples. They begin by building rectangles given specific side lengths and identifying possible areas when only one side length is known. Students use tiles and diagrams to build their understanding before learning new terminology.

Next, students build rectangles given a certain area. They see that the side lengths of the rectangles represent the factor pairs of the given area value. Students also observe the commutative property of multiplication when they see that rectangles with the same pair of side lengths have the same area, regardless of their orientation.

Build 5 different rectangles with the given width. Record the area of each rectangle in the table.

	area of rectangle				
2 tiles wide					
3 tiles wide					
4 tiles wide					

Students discover that for some whole-number values of area, only one rectangle can be built, and for other values, more than one rectangle is possible. Likewise, some numbers have only one factor pair (the number itself and 1) and other numbers have more than one factor pair.

Students learn that we call the former “prime numbers” and the latter “composite numbers.”

The section closes with an optional game day, which is an opportunity to see students' fluency with multiplication and division within 100.

Competencies Addressed:

Operations and Algebraic Thinking

1. I can generate, analyze, and explain patterns and relationships using the properties of operations.
(4.OA.B.4, 4.OA.C.5)

Essential Question and Enduring Understanding Addressed in this Topic:

Essential Questions

How can I use what I know about factors and multiples to solve real-life math problems?

Enduring Understandings:

Students apply understanding of multiplication and area to work with factors and multiples.

Students extend their previous understandings of factors and products, the area of a rectangle, and the relationship between multiplication and division and explore connections to, and deepen their understanding of factors, multiples, and whole numbers. They will use multiplication and division concepts to determine if numbers are prime or composite, find factor pairs, distinguish factors from multiples, and determine if a number is a multiple of a given factor.

In this Topic, students will know:

- Factors
- Multiples
- Prime and Composite Numbers
- Relationship between Area, Factors, Multiples
- Relationship between Multiplication and Division
- Commutative Property of Multiplication

Topic Vocabulary

composite number
factor pairs of a whole number
multiple of a number
prime number

Academic vocabulary

rectangle
side length

	<p>Area square units multiplication division representations</p>
<p>In this Topic, students will be able to:</p> <ul style="list-style-type: none"> ● Recognize that a whole number is a multiple of each of its factors. ● Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. ● Determine whether a given whole number in the range 1–100 is prime or composite 	<p>Plan for Student Reflection:</p> <p>Student Journal Prompts and Reflection Practices</p> <p>Teacher Reflection Questions:</p> <p>Lesson 1: In grade 3, students fluently multiplied and divided within 100 and related area to multiplication and addition. How is that prior knowledge supporting students in understanding multiples in this lesson?</p> <p>Lesson 2: Which question asked during the synthesis gave the most information about students' understanding of the learning goal for the lesson? What did you hear or see that made you feel this way?</p> <p>Lesson 3: Which voices went unheard in math class today? How might you leverage each student's ideas and support them being heard and seen in tomorrow's lesson?</p> <p>Lesson 4: What new insight did you gain about how individual students think or reason about multiplication? How might you use what you learned about these students during tomorrow's</p>

	<p>lesson?</p> <p>Utilize additional strategies for Teacher Reflection:</p> <ul style="list-style-type: none">● Reviewing formative assessments● Developing scaffolds● Collaborative scoring● PLCs● Planning for small groups
--	--

Topic 1 (Section A) 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 - Understand Factors and Multiples	Grade Level and Unit: Fourth Grade, Unit 1
Description of Task: Students will determine if a number is prime or composite, explain what it means to be a factor or a multiple of a whole number, and relate the side lengths and area of a rectangle to factors and multiples.	Purpose of Task: The purpose of this task is for students to understand that factors are multiplied together to make a product, and in certain cases, side lengths (factor pairs) are multiplied together to determine the area (product) of a rectangle. Students will make connections between these understandings, and use them to determine whether a number is prime or composite.
Background of Students/Learning Progression: In this section, students revisit the ideas of area and factors from grade 3 and encounter the idea of multiples. They begin by building rectangles given specific side lengths and identifying possible areas when only one side length is known. Students use tiles and diagrams to build their understanding before learning new terminology. Next, students build rectangles given a certain area. They see that the side lengths of the rectangles represent the factor pairs of the given area value. Students also observe the commutative property of multiplication when they see that rectangles with the same pair of side lengths have the same area, regardless of their orientation. Students discover that for some whole-number values of area, only one rectangle can be built, and for other values, more than one rectangle is possible. Likewise, some numbers have only one factor pair (the number itself and 1) and other numbers have more than one factor pair. Students learn that we call the former “prime numbers” and the latter “composite numbers.” The section closes with an optional game day, which is an opportunity to see students' fluency with multiplication and division within 100.	Ensure all competencies are addressed in the task: <ul style="list-style-type: none"><input type="checkbox"/> Yes, all competencies are addressed<input type="checkbox"/> No - Task needs modification
Getting Started: To begin this unit, students will be engaging with concepts that surround area. Thus, to get students started with the topic, utilize the following image and questions:	

What shapes do you see?
 How would you describe them?
 How many squares do you think are on all of the sides of the cube toy? How do you know?



Learning Cycle Model Process

Section A

IM Lesson	L1: Multiples of a Number	L2: Factor Pairs	L3: Prime and Composite Numbers	L4: Multiplication Practice
Learning Cycle Model	Making Meaning	Investigating	Create & Produce	Reflect
Naugatuck Math Competency	4.OA.1	4.OA.1	4.OA.1	4.OA.1
Math Practice Standards	MP 6, 7	MP 7	MP 8	MP 8
Lesson Purpose	The purpose of this lesson is for students to apply their understanding of area to explore multiples.	The purpose of this lesson is for students to investigate and learn the meaning of factor pairs by building rectangles with a specified area.	The purpose of this lesson is for students to identify factor pairs and determine whether a given whole number in the range 1–100 is prime or composite.	The purpose of this lesson is for students to practice multiplication within 100.
Vocabulary Focus	factor pairs of a whole number multiple of a number	factor pairs of a whole number multiple of a number	composite number factor pairs of a whole number multiple of a number prime number	composite number factor pairs of a whole number multiple of a number prime number

<p>Lesson Materials/ Resources</p>	<p>Lesson 1 Slides</p> <p>Teacher presentation materials</p> <p>Student Pages</p> <p><i>Activity 1:</i></p> <ul style="list-style-type: none"> Each group of 2 needs at least 36 tiles <p><i>Activity 2:</i></p> <ul style="list-style-type: none"> Each group of 2 needs at least 36 tiles from the previous activity Each group of 2 needs access to grid paper (centimeter grid paper standard) <p>L1 Cool Down</p>	<p>Lesson 2 Slides</p> <p>Teacher presentation materials</p> <p>Student Pages</p> <p><i>Activity 1:</i></p> <ul style="list-style-type: none"> Each of the 8 groups needs tools for creating a visual display Give each group access to inch tiles, grid paper, poster paper, scissors, and glue Each group needs access to grid paper (centimeter grid paper standard) <p>L2 Cool Down</p>	<p>Lesson 3 Slides</p> <p>Teacher presentation materials</p> <p>Student Pages</p> <p><i>Activity 1:</i></p> <ul style="list-style-type: none"> Create a set of cards from the blackline master for each group of 2 (Card Sort: Area) Give each group access to grid paper and inch tiles <p><i>Activity 2:</i></p> <ul style="list-style-type: none"> Give each group of 2 access to inch tiles and grid paper <p>L3 Cool Down</p>	<p>Lesson 4 Slides</p> <p>Teacher Presentation Materials</p> <p>Student Pages</p> <p><i>Activity 1:</i></p> <ul style="list-style-type: none"> Create a set of multiplication fluency cards from the blackline master for each group of 2 (Card Sort: Multiplication) <p><i>Activity 2:</i></p> <ul style="list-style-type: none"> Give each group a copy of Find the Number Stage 1 Directions and Gameboard and centimeter cubes <p>L4 Cool Down</p>
<p>Assessment</p>	<p>Formative Assessment Strategies: observation, questioning, student discourse : Monitoring Sheet See Section A Checkpoint Assessment, Section A Checkpoint Teacher's Guide</p>			
<p>Centers Materials</p>	<p>Can You Build It? (3–5), Stage 2: Multiple Rectangles (Addressing)</p> <p>Can You Build It? (3–5), Stage 1: Rectangles (Supporting)</p>	<p>Can You Build It? (3–5), Stage 2: Multiple Rectangles (Addressing)</p> <p>Can You Build It? (3–5), Stage 1: Rectangles (Supporting)</p>	<p>Find the Number (4), Stage 1: Factors (Addressing)</p> <p>Five in a Row: Multiplication (3–5), Stage 1: Factors 1–5 and</p>	<p>Section A Practice Problems</p> <p>Find the Number (4), Stage 1: Factors (Addressing)</p> <p>Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9</p>

	Capture Squares (1–3) , Stage 7: Multiply with 6–9 (Supporting)	Capture Squares (1–3) , Stage 7: Multiply with 6–9 (Supporting)	10 (Supporting)	(Addressing) Secret Fraction (3) , Stage 1: Building Non-Unit Fractions (Supporting)
--	---	---	-----------------	--

Making Meaning:

[Lesson 1: Multiples of a Number](#)

- The purpose of this lesson is for students to apply their understanding of area to explore multiples.
- [Teacher presentation materials](#)
- [Lesson 1 Slides](#)

During the Lesson 1 Warm Up, students have to analyze and compare differences in rectangles with different areas and explain which one doesn't belong. In Activity 1, the students find the area of a rectangle by tiling and to recall that the area can also be found by multiplying the side lengths. Students use inch tiles to build rectangles with a given side length and find the area of those rectangles. They work together to compare and explain the strategies used to find the area of rectangles and make connections between strategies (Making meaning). In Activity 2 of this lesson, students develop a new meaning of multiples as they explore how increasing tiles on a rectangle creates multiples of a factor.

Investigation:

[Lesson 2: Factor Pairs](#)

- The purpose of this lesson is for students to learn the meaning of factor pairs by building rectangles with a specified area
- [Teacher presentation materials](#)
- [Lesson 2 Slides](#)

In Lesson 2, students investigate factor pairs and area, by building rectangles with a specified area and reasoning about their side lengths. The warm-up activates prior knowledge, eliciting strategies and previous understanding of multiplying factors and developing fluency. In Activity 1 (How Many Rectangles?) students are given the area of a rectangle, and they must find all the possible rectangles that could be made using that area. They create a poster for display, and take a gallery walk during Activity 2 (How Many Rectangles: Gallery Walk) to understand that factor pairs are the side lengths of a rectangle and are multiplied together to find its area.

Create and Produce:

[Lesson 3: Prime and Composite Numbers](#)

- The purpose of this lesson is for students to identify factor pairs and determine whether a given whole number in the range 1–100 is prime or composite.
- [Teacher presentation materials](#)
- [Lesson 3 Slides](#)

In Activity 1 (Card Sort: Area), students are sorting cards based on their area, recording their thinking, and creating another rectangle with the same area, but different side lengths. Students share their reasoning, and begin to communicate their working definitions for prime and composite numbers. In Activity 2 (Prime or Composite?) students use the area of rectangles to find all the factor pairs of a given number, create a table to display, and explain or show how they know if the number is prime or composite. Students synthesize and communicate what they have learned about prime and composite numbers, and how finding rectangles with a given area can help determine if a number is prime or composite.

Communicate and Present:

[Lesson 3: Prime and Composite Numbers](#)

- The purpose of this lesson is for students to identify factor pairs and determine whether a given whole number in the range 1–100 is prime or composite.
- [Teacher presentation materials](#)
- [Lesson 3 Slides](#)

Select 2–3 students to share the rectangles they added to each category.

- “Why were you able to create more rectangles for some areas and not others?” (Some of the numbers had more factor pairs. For some numbers, there was only one possible factor pair.)
- Revoice student reasoning. “Only one rectangle can be made for the area of 7. Numbers like this are called prime numbers. Prime numbers have only one factor pair: 1 and itself.”
- “Numbers like 15 that have more than one factor pair are called composite numbers.”

Reflection:

[Lesson 4: Multiplication Practice \(optional\)](#)

- The purpose of this lesson is for students to practice multiplication within 100.
- [Lesson 4 Slides](#)
- [Teacher presentation materials](#)

In this lesson, students practice multiplication within 100, identify facts that they still need practice with, and reflect on strategies they can use to help find products they do not know from memory yet, including factors that are larger than 10. By being asked, “What strategies do you remember from grade 3? What new strategy did you learn today?” Students reflect on ways to break facts apart, use known facts, or use what they know about equal groups to determine unknown factors.

<ul style="list-style-type: none">• “What other composite numbers did you work with? How do you know they are composite?” (Twenty-four is a composite number because I can make 2 rows of 12 or 4 rows of 6. Eighteen is composite because it has factor pairs of 2 and 9 and 3 and 6.)	
Notes:	Complete File with Resources and Task: Task-Based Learning Plan Format for Gr 4 Unit 1 Topic 1

Topic # 2 (Section B)	Section B: Find Factor Pairs and Multiples	Duration: Recommended: 4-5 days (4 lessons)
------------------------------	---	---

Topic Description:

- Apply multiplication fluency within 100 and the relationship between multiplication and division to find factor pairs and multiples.

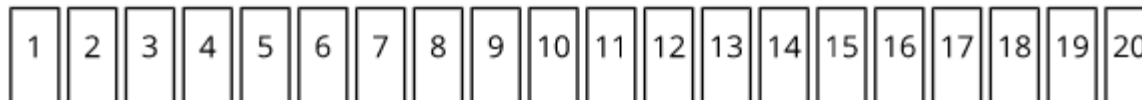
In this section, students apply and deepen their understanding of the ideas of factors and multiples as they play games and solve problems in context. The activities prompt students to look for patterns in factors, multiples, and prime and composite numbers, and use them to make predictions and generalize their observations.

Twenty students are playing a game with 20 lockers in a row.

The first student starts with the first locker and opens all the lockers.

The second student starts at the second locker and shuts every other locker.

The third student stops at every third locker and opens it if it is closed or closes it if it is open.



*Which locker numbers does the third student touch?
How many students touch locker 17?*

In the last lesson, students have a chance to use the ideas from this unit to create geometric art.

PLC: Lesson 6, Activity 1, Questionable Lockers

<p>Competencies Addressed:</p> <p>Operations and Algebraic Thinking</p> <p>1. I can generate, analyze, and explain patterns and relationships using the properties of operations. (4.OA.B.4, 4.OA.C.5)</p>	<p>Essential Question and Enduring Understanding Addressed in this Topic:</p> <p>Essential Questions: How can I use what I know about factors and multiples to solve real-life math problems?</p> <p>Enduring Understandings: Students apply understanding of multiplication and area to work with factors and multiples. Students extend their previous understandings of factors and products, the area of a rectangle, and the relationship between multiplication and division and explore connections to, and deepen their understanding of factors, multiples, and whole numbers. They will use multiplication and division concepts to determine if numbers are prime or composite, find factor pairs, distinguish factors from multiples, and determine if a number is a multiple of a given factor.</p>
<p>In this Topic, students will know:</p> <ul style="list-style-type: none"> ● Factors ● Multiples ● Prime and Composite Numbers ● Relationship between Multiplication and Division 	<p>Topic Vocabulary:</p> <p>Academic vocabulary composite number factor pair of a whole number multiple of a number prime number</p>

In this Topic, students will be able to:

- Find all factor pairs for a whole number in the range 1–100.
- Recognize that a whole number is a multiple of each of its factors.
- Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number.
- Determine whether a given whole number in the range 1–100 is prime or composite

Plan for Student Reflection:

[Student Journal Prompts and Reflection Practices](#)

Teacher Reflection Questions:

Lesson 5: What strategies do students use most often to decide if a number is a multiple of a given whole number?

Lesson 6: As students worked in their small groups today, whose ideas were heard, valued, and accepted? How can you adjust the group structure tomorrow to ensure each student's ideas are a part of the collective learning?

Lesson 7: As you finish up this section, reflect on the norms and activities that have supported each student in learning math. How have you seen each student grow as a young mathematician throughout this work? How have you seen yourself grow as a teacher?


Lesson 8: With which math ideas from today's lesson did students grapple most? Did this surprise you or was this what you expected?

Utilize additional strategies for Teacher Reflection:

- Reviewing formative assessments
- Developing scaffolds
- Collaborative scoring
- PLCs
- Planning for small groups

Topic 2 (Section B) 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 - Section B	Grade Level and Unit: Grade 4 Unit 1
Description of Task: Students will have opportunities to solve problems and create representations that will require them to use their knowledge of factors, multiples, area, prime and composite numbers and problem-solving throughout this section of the unit.	Purpose of Task: The purpose of this task is to apply multiplication fluency within 100 and the relationship between multiplication and division to find factor pairs and multiples.
Background of Students/Learning Progression: In the previous topic, students developed their understanding of factors, multiples, and prime and composite numbers. In this section, students apply and deepen their understanding of the ideas of factors and multiples as they play games and solve problems in context. The activities prompt students to look for patterns in factors, multiples, and prime and composite numbers, and use them to make predictions and generalize their observations.	Ensure all competencies are addressed in the task: <ul style="list-style-type: none"><input type="checkbox"/> Yes, all competencies are addressed<input type="checkbox"/> No - Task needs modification
Getting Started: Prime or Composite? Is the number of gloves prime or composite? How do you know? (4.OA.B.4)  In the lessons that make up Topic 2 (Section B) of Unit 1, students will be asked to apply what they have learned previously about factors and multiples to solve problems. This problem will serve as an entry point to this section and to review their understanding from the previous topic.	

Learning Cycle Model Process

Section B

IM Lesson	L5: More Multiples	L6: The Locker Problem	L7: Find Factors and Multiples	L8: Mondrian's Art (optional)
Learning Cycle Model	Making Meaning	Investigate	Investigate	Create & Produce
Naugatuck Math Competency	4.OA.2 4.OA.1	4.OA.1	4.OA.1	4.OA.1
Math Practice Standards	MP 1, 2, 3, 4	MP 1, 4	MP 3, 6	MP 4, 6
Lesson Purpose	The purpose of this lesson is for students to use multiples of single-digit numbers to solve real-world problems. This includes situations with multiple solutions and situations with no solutions.	The purpose of this lesson is for students to examine factors of numbers from 1 to 20 and use them to solve problems.	The purpose of this lesson is for students to find factors and multiples of a given whole number from 1–100.	The purpose of this lesson is for students to apply their understanding of the area of rectangles and factor pairs to create and analyze Mondrian-inspired art.
Vocabulary Focus	factor pairs of a whole number multiple of a number	factor pairs of a whole number multiple of a number	factor pairs of a whole number multiple of a number	factor pairs of a whole number multiple of a number
Lesson Materials/ Resources	Lesson 5 Slides Teacher presentation materials Student Pages	Lesson 6 Slides Teacher presentation materials Student Pages <i>Activity 1:</i> <ul style="list-style-type: none"> Give students access to two-color counters, index cards, coins, and other materials that may be helpful to them 	Lesson 7 Slides Teacher presentation materials Student Pages <i>Activity 2:</i> <ul style="list-style-type: none"> Give each group of 2 students a copy of the Find the Number Stage 2 Directions and Gameboard and centimeter cubes 	Lesson 8 Slides Teacher presentation materials Student Pages <i>Activity 1:</i> <ul style="list-style-type: none"> Each student will need a black marker or crayon Give students a (Centimeter Grid Paper-Standard), a straightedge or ruler, and black markers or

	L 5 Cool Down	L 6 Cool Down	L 7 Cool Down	<p>crayons</p> <p><i>Activity 2:</i></p> <ul style="list-style-type: none"> ● Give access to colored pencils, crayons, or markers for students to color their artwork ● Give students materials needed for gallery walk: glue or tape for displaying their artwork and sticky notes for writing comments or questions
Assessment	<p>Formative Assessment Strategies: observation, questioning, student discourse: Monitoring Sheet</p> <p>See : Section B Checkpoint , Section B Checkpoint Teacher Guide</p> <p>End of Unit Assessment, End of Unit Assessment Teacher Guide</p>			
				Section B Practice Problems
Centers Materials	<p>Can You Build It? (3–5), Stage 2: Multiple Rectangles (Addressing)</p> <p>Find the Number (4), Stage 2: Factors and Multiples (Addressing)</p> <p>Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Addressing)</p> <p>Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Supporting)</p>	<p>Find the Number (4), Stage 2: Factors and Multiples (Addressing)</p> <p>Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Addressing)</p> <p>Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Supporting)</p>	<p>Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Addressing)</p> <p>Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Supporting)</p>	<p>Five in a Row: Multiplication (3–5), Stage 2: Factors 1–9 (Addressing)</p> <p>Secret Fraction (3), Stage 1: Building Non-Unit Fractions (Supporting)</p>

Making Meaning:

In previous lessons, students used the area of rectangles to develop an understanding of factors and multiples. They also worked on their fluency with multiplication facts. In this lesson, they apply these understandings to solve problems.

In some problems, the solutions are whole-number results of multiplying or dividing. For example: If eggs come in packages of 12, how many eggs are in 5 packages? (60 eggs). But in others, students need to make sense of products or quotients in terms of the situation. For instance: How many packages should we buy if we need exactly 50 eggs? Students reason that it is impossible to get exactly 50 eggs, since there are 48 eggs in 4 packages and 60 eggs in 5 packages.

As they examine the numbers in these situations, including interpreting remainders in division problems, students make sense of problems and persevere in solving them (MP1) and reason quantitatively and abstractly (MP2).

[Lesson 5: More Multiples](#)

- The purpose of this lesson is for students to use multiples of single-digit numbers to solve real-world problems. This includes situations with multiple solutions and situations with no solutions.
- [Teacher presentation materials](#)
- [Lesson 5 Slides](#)

Investigation:

In previous lessons, students used multiples to solve problems about equal-size groups (tables that accommodate certain numbers of seats and packages that contain certain numbers of items). In Lesson 6, students apply their knowledge of factors, multiples, prime numbers, and composite numbers to solve problems about a game involving opening and closing of lockers. Students look for patterns in the factors or multiples of numbers and use them to make predictions about the lockers that will have been touched after all 20 players of the game have a turn.

The purpose of Lesson 7 is for students to use the language of factors and multiples to describe numbers within 100. Students look for all factors of numbers and decide whether a given number is prime or composite. Students are encouraged to find patterns in composite numbers which help to identify a factor. For example, if the last digit of a number is 0 then 2, 5, and 10 are all factors of that number.

[Lesson 6: The Locker Problem](#)

- The purpose of this lesson is for students to examine factors of numbers from 1 to 20 and use them to solve problems.
- [Teacher presentation materials](#)
- [Lesson 6 Slides](#)

[Lesson 7: Find Factors and Multiples](#)

- The purpose of this lesson is for students to find factors and multiples of a given whole number from 1–100.
- [Teacher presentation materials](#)
- [Lesson 7 Slides](#)

Create and Produce:

This lesson is optional because it does not address new mathematical content standards. It does give students an opportunity to develop mathematical modeling skills while applying the ideas of area, factors, multiples, prime numbers, and composite numbers.

Students create a piece of artwork that is based on area of rectangles and multiplication facts within 100. They begin by learning about Piet Mondrian and analyzing a number of his abstract paintings. They recognize that the paintings are composed of rectangles—some with the same area and some with different areas.

Students then outline their own composition, by dividing a 18-by-24 grid into rectangular spaces with certain requirements. Next, students examine a peer's artwork. They identify rectangles with equal areas and those that represent prime or composite numbers.

When students isolate and describe the mathematical elements in art and adhere to mathematical constraints to create art, they model with mathematics (MP4).

This lesson may take more than 60 minutes, as students may need additional time to color, analyze, and present their designs. Consider modifying the activities or expanding the lesson across 2 days to meet students' needs and any time constraints.

[Lesson 8: Mondrian's Art](#)

- The purpose of this lesson is for students to apply their understanding of the area of rectangles and factor pairs to create Mondrian-inspired art, including some specific criteria.
- In Activity 2, students present and compare their pieces of Mondrian-inspired art, looking for specific types of rectangles, factors, multiples, prime and composite numbers.
- [Teacher presentation materials](#)
- [Lesson 8 Slides](#)

Communicate and Present:

[Lesson 8: Mondrian's Art \(Activity 2\)](#)

- In this activity, students use their understanding of factor pairs, prime, and composite numbers to analyze their peers' artwork. They look for rectangles

Reflection:

Utilize the Lesson Synthesis to provide students with opportunities to reflect on their own work as well as their peers' work.

<p>that have the same area and those with a prime number or a composite number for their area. Students practice communicating with precision as they identify rectangles and how they know the rectangles meet these conditions (MP6). After students share their analyses with their partner and a brief class discussion, give students time to color their artwork and to prepare it for display.</p> <ul style="list-style-type: none"> ● Teacher presentation materials ● Lesson 8 Slides 	<p>Some questions that can be utilized are as follows:</p> <p>“Today you had a chance to create artwork and display it like in an art gallery.”</p> <p>“What was the most challenging part about creating the artwork?”</p> <p>“What connections do you see between the mathematics and art we experienced today?”</p> <p>These questions can be reflected on through the use of a math journal, turn and talk, or whole group discussion.</p>
<p>Notes:</p>	<p>Complete File with Resources and Task: Task Based Learning Plan for Grade 4 Unit 1 Topic 2</p>