Scope and Sequence for Grado 5

The big ideas in grade 5 include: developing fluency with addition and subtraction of fractions, developing understanding of multiplication and division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions), extending division to two-digit divisors, developing understanding of operations with decimals to hundredths, developing fluency with whole number and decimal operations, and developing understanding of volume.

The mathematical work for grade 5 is broken into 8 units:

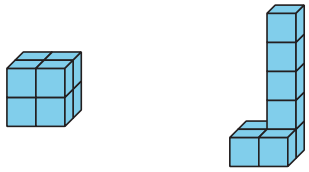
1. Finding Volume
2. Fractions as Quotients and Fraction Multiplication
3. Multiplying and Dividing Fractions
4. Wrapping Up Multiplication and Division with Multi-digit Numbers
5. Place Value Patterns and Decimal Operations
6. More Decimal and Fraction Operations
7. Shapes on the Coordinate Plane
8. Putting it All Together

Unit 1: Encontremos volúmenes

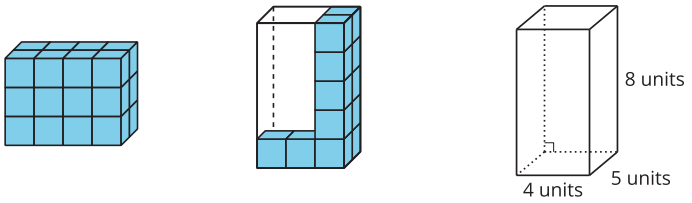
This unit introduces students to the concept of volume by building on their understanding of area and multiplication.

In grade 3, students learned that the area of a two-dimensional figure is the number of square units that cover it, without gaps or overlaps. Students first found areas by counting squares and began to intuit that area is additive. Later, they recognized the area of a rectangle as a product of its side lengths and found the areas of more-complex figures composed of rectangles.

Here, students learn that the volume of a solid figure is the number of unit cubes that fill it without gaps or overlaps. First, they measure volume by counting unit cubes and observe its additive nature. They also learn that different solid figures can have the same volume.

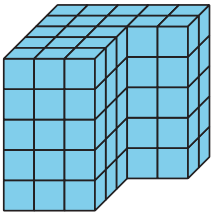


Next, students shift their focus to right rectangular prisms: building them using unit cubes, analyzing their structure, and finding their volumes. They write numerical expressions to represent their reasoning strategies and work with increasingly abstract representations of prisms.



Later, students generalize that the volume of a rectangular prism can be found by multiplying its side measurements (length $\times$ width $\times$ height), or by multiplying the area of the base by its height (area of the base $\times$ height). As they analyze, write, and evaluate different expressions that represent the volume of the same prism, students revisit familiar properties of operations from earlier grades.

Later in the unit, students apply these understandings to find the volume of a solid figure composed of two non-overlapping rectangular prisms and to solve real-world problems involving such figures. In doing so, they also progress from using cubes to using standard units to measure volume.



Section A: Cubos unitarios y volumen

- Lesson 1: ¿Qué es el volumen?
- Lesson 2: Midamos volúmenes
- Lesson 3: Dibujos del volumen de un prisma
- Lesson 4: Usemos capas para encontrar el volumen

Section B: Expresiones para encontrar volumen

- Lesson 5: Longitudes de los lados de prismas rectangulares
- Lesson 6: Expresiones de volumen
- Lesson 7: Unidades de medida cúbicas

Section C: Volumen de figuras sólidas

- Lesson 8: Figuras hechas de prismas
- Lesson 9: Midamos figuras hechas de prismas
- Lesson 10: Representemos el volumen con expresiones
- Lesson 11: Todo tipo de prismas
- Lesson 12: Toneladas y toneladas de basura

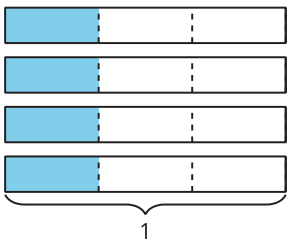
Unit 2: Fracciones como cocientes y multiplicación de fracciones

In this unit, students learn to interpret a fraction as a quotient and extend their understanding of multiplication of a whole number and a fraction.

In IM Grade 3, students made sense of multiplication and division of whole numbers in terms of equal-size groups. In IM Grade 4, they used multiplication to represent equal-size groups with a fractional amount in each group and to express comparison.

For instance, $4 \times \frac{1}{3}$ can represent "4 groups of $\frac{1}{3}$" or "4 times as much as $\frac{1}{3}$."

The amount in both situations can be represented by the shaded parts of a diagram like this:

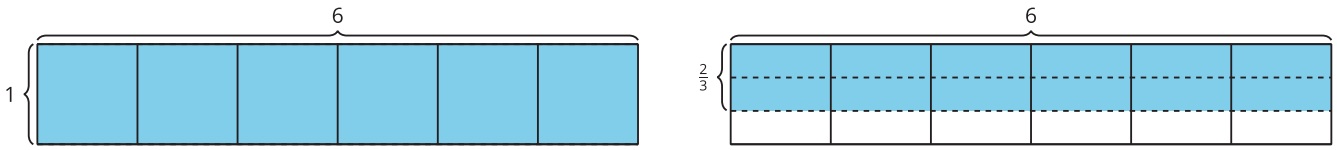


Students learn that a fraction like $\frac{4}{3}$ can also represent:

- A division situation, where 4 objects are being shared equally by 3 people, or $4 \div 3$.

- A fraction of a group, in this case, $\frac{1}{3}$ of a group of 4 objects, or $\frac{1}{3} \times 4$.

Students also interpret the product of a whole number and a fraction in terms of the side lengths of a rectangle. The expression 6×1 represents the area of a rectangle that is 6 units by 1 unit. In the same way, $6 \times \frac{2}{3}$ represents a rectangle that is 6 units by $\frac{2}{3}$ unit.



The commutative and associative properties become evident as students connect different expressions to the same diagram. The distributive property is used as students multiply a whole number and a fraction written as a mixed number, for instance: $2 \times 3\frac{2}{5} = (2 \times 3) + (2 \times \frac{2}{5})$.

Throughout this unit, it is assumed that the sharing is always equal sharing, whether explicitly stated or not. For example, in the situation above, 4 objects are being shared equally by 3 people.

Section A: Fracciones como cocientes

- Lesson 1: Compartamos sándwiches
- Lesson 2: Compartamos más sándwiches
- Lesson 3: Interpretemos ecuaciones
- Lesson 4: Situaciones de división
- Lesson 5: Relacionemos división y fracciones

Section B: Fracciones de números enteros

- Lesson 6: Relacionemos división y multiplicación
- Lesson 7: Dividamos para multiplicar fracciones unitarias
- Lesson 8: Dividamos para multiplicar fracciones no unitarias

Section C: Área y lados de longitud fraccionaria

- Lesson 9: Relacionemos el área con la multiplicación
- Lesson 10: Longitudes de lado fraccionarias y menores que 1
- Lesson 11: Lados de longitudes fraccionarias y mayores que 1
- Lesson 12: Descompongamos áreas
- Lesson 13: Área y propiedades de operaciones
- Lesson 14: Situaciones de área
- Lesson 15: Multipliquemos más fracciones
- Lesson 16: Estimemos productos
- Lesson 17: Imágenes de mosaicos

Unit 3: Multipliquemos y dividamos fracciones

In this unit, students find the product of two fractions, divide a whole number by a unit fraction, and divide a unit

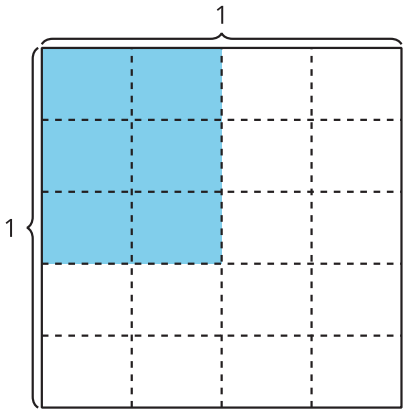
fraction by a whole number.

Previously, students made sense of multiplication of a whole number and a fraction in terms of the side lengths and area of a rectangle. In this unit, students make sense of multiplication of two fractions the same way. Students interpret area diagrams with two unit fractions for their side lengths, a unit fraction and a non-unit fraction, and then two non-unit fractions.

Through repeated reasoning, students notice regularity in the value of the product (MP8). They generalize that it can be found by multiplying the numerators and multiplying the denominators of the factors:

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

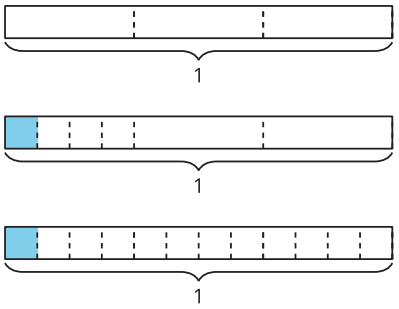
For example, $\frac{2}{4} \times \frac{3}{5}$ is $\frac{2 \times 3}{4 \times 5}$ because there are 4×5 equal parts in the whole square and 2×3 parts are shaded.



Next, students make sense of division situations and expressions that involve a whole number and a unit fraction. They recall that division can be understood in terms of finding the number of equal-size groups or finding the size of each group.

For instance, students interpret $\frac{1}{3} \div 4$ to mean finding the size of one part if $\frac{1}{3}$ is split into 4 equal parts, and $4 \div \frac{1}{3}$ to mean finding how many $\frac{1}{3}$s are in 4.

Students consider how changing the dividend or the divisor changes the value of the quotients and look for patterns (MP8). They use tape diagrams to represent and reason about division situations and expressions.



Later in the unit, students apply what they learned to solve problems. The relationship between multiplication and division is reinforced when they notice that both operations can be used to solve the same problem.

Section A: Multiplicación de fracciones

- Lesson 1: Un pedazo de una parte
- Lesson 2: Representemos la multiplicación de fracciones unitarias
- Lesson 3: Multipliquemos fracciones unitarias
- Lesson 4: Situaciones acerca de la multiplicación de fracciones
- Lesson 5: Multipliquemos una fracción unitaria por una fracción no unitaria
- Lesson 6: Multipliquemos fracciones
- Lesson 7: Generalicemos la multiplicación de fracciones
- Lesson 8: Observa y pregúntate: Trabajemos con números mixtos
- Lesson 9: Apliquemos la multiplicación de fracciones

Section B: División de fracciones

- Lesson 10: Conceptos de la división
- Lesson 11: Dividamos fracciones unitarias entre números enteros
- Lesson 12: Representemos la división de fracciones unitarias entre números enteros
- Lesson 13: Dividamos números enteros entre fracciones unitarias
- Lesson 14: Representemos la división de números enteros entre fracciones unitarias
- Lesson 15: Situaciones de división de fracciones
- Lesson 16: Razonemos sobre los cocientes

Section C: Resolvamos problemas con fracciones

- Lesson 17: Situaciones de multiplicación y de división de fracciones
- Lesson 18: Representemos situaciones con la multiplicación y la división
- Lesson 19: Juegos con fracciones
- Lesson 20: Recetas y fracciones

Unit 4: Concluyamos multiplicación y división con números de varios dígitos

In this unit, students multiply multi-digit whole numbers, using the standard algorithm, and begin working toward end-of-grade expectations for fluency. They also find whole-number quotients, with up to four-digit dividends and two-digit divisors.

In IM Grade 4, students used strategies based on place value and the properties of operations to multiply a whole number of up to four digits by a one-digit whole number, and to multiply a pair of two-digit numbers. They decomposed the factors by place value, and used diagrams and algorithms using partial products to record their reasoning.

Here, students build on those strategies to make sense of the standard algorithm for multiplication. They recognize that it also is based on place value but records the partial products in a condensed way.

Han and Elena used different algorithms to find the value of 3×318.

Han

$$\begin{array}{r} 318 \\ \times \quad 3 \\ \hline 24 \\ 300 \\ +\ 900 \\ \hline 954 \end{array}$$

Elena

$$\begin{array}{r} 2 \\ 318 \\ \times \quad 3 \\ \hline 954 \end{array}$$

Explain to your partner what Han and Elena did. What does the 2 represent in Elena's algorithm?

In grade 4, students also found whole-number quotients, using place-value strategies and the relationship between multiplication and division. They decomposed dividends in various ways and found partial quotients. The numbers they encountered then were limited to four-digit dividends and one-digit divisors. In this unit, they extend that work to include two-digit divisors.

As they build their facility with multi-digit multiplication and division, students solve problems about area and volume

and reinforce their understanding of these concepts.

Section A: Multiplicación de números de varios dígitos usando el algoritmo estándar

- Lesson 1: Estimemos y encontremos productos
- Lesson 2: Productos parciales en diagramas
- Lesson 3: Productos parciales en algoritmos
- Lesson 4: Algoritmo estándar: Números de un dígito y de varios dígitos, componiendo
- Lesson 5: Algoritmo estándar: Números de varios dígitos, sin componer
- Lesson 6: Algoritmo estándar: Números de varios dígitos, componiendo
- Lesson 7: Mejoremos nuestra fluidez al multiplicar
- Lesson 8: Los pájaros

Section B: División de números de varios dígitos usando cocientes parciales

- Lesson 9: Récord mundial de danza folclórica
- Lesson 10: Diferentes cocientes parciales
- Lesson 11: Un algoritmo de cocientes parciales
- Lesson 12: Dividamos usando cocientes parciales
- Lesson 13: Practiquemos un algoritmo de cocientes parciales
- Lesson 14: Encontremos las longitudes desconocidas de los lados
- Lesson 15: Récord mundial de sopa de fideos
- Lesson 16: Fracciones como cocientes parciales

Section C: Pongamos las cosas en práctica

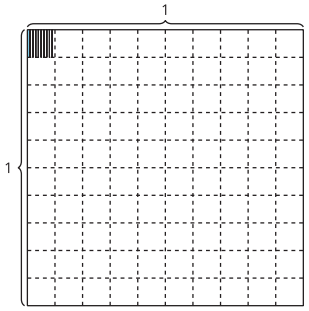
- Lesson 17: Mucha leche
- Lesson 18: Conversemos sobre la basura
- Lesson 19: Envíos de basura
- Lesson 20: Diario de desperdicio de comida

Unit 5: Patrones entre valores posicionales y operaciones con decimales

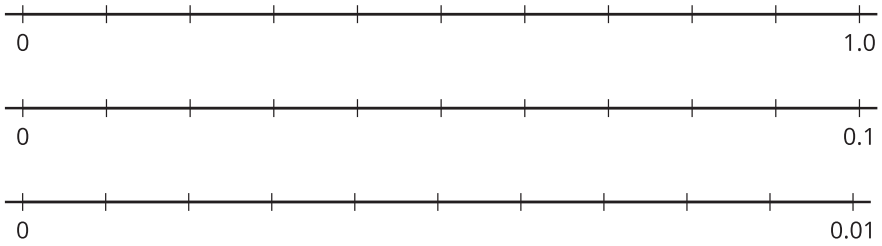
In this unit, students expand their knowledge of decimals to read, write, compare, and round decimals to the thousandths. They also extend their understanding of place value and numbers in base ten by performing operations on decimals to the hundredth.

In IM Grade 4, students wrote fractions with denominators of 10 and 100 as decimals. They recognized that the notations 0.1 and $\frac{1}{10}$ express the same amount and are both called "one tenth." Students used hundredths grids and number lines to represent and compare tenths and hundredths.

Students rely on diagrams and their understanding of fractions to make sense of decimals to the thousandths. They see that "one thousandth" refers to the size of one part if a hundredth is partitioned into 10 equal parts, and that its decimal form is 0.001. Diagrams help students visualize the magnitude of each decimal place and compare decimals.



Locate 0.001 on each number line.



Students then apply their understanding of decimals and of whole-number operations to add, subtract, multiply, and divide decimal numbers to the hundredths, using strategies based on place value and the properties of operations.

Students see that the reasoning strategies and algorithms they used to operate on whole numbers are also applicable to decimals. For example, addition and subtraction can be done by attending to the place value of the digits in the numbers, and multiplication and division can still be understood in terms of equal-size groups.

In IM Grade 6, students will build on the work to reach the expectation to fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

Section A: Números hasta la milésima

- Lesson 1: ¿Qué es una milésima?
- Lesson 2: Milésimas en diagramas y en palabras
- Lesson 3: Milésimas en forma desarrollada
- Lesson 4: Exploremos relaciones entre valores posicionales
- Lesson 5: Comparemos números decimales
- Lesson 6: Comparemos números decimales en la recta numérica
- Lesson 7: Redondeemos doblones
- Lesson 8: Redondeemos decimales
- Lesson 9: Ordenemos números decimales
- Lesson 10: Resolvamos problemas con números decimales

Section B: Sumemos y restemos decimales

- Lesson 11: Demos sentido a la suma de números decimales
- Lesson 12: Estimemos y sumemos
- Lesson 13: Analicemos errores en sumas
- Lesson 14: Demos sentido a la resta de números decimales
- Lesson 15: Estimemos y restemos
- Lesson 16: Suma y resta

Section C: Multipliquemos decimales

- Lesson 17: Multipliquemos decimales y números enteros
- Lesson 18: Usemos hechos de números enteros
- Lesson 19: Usemos propiedades para multiplicar decimales

- Lesson 20: Productos cuyos resultados son centésimas
- Lesson 21: Multipliquemos más decimales

Section D: Dividamos decimales

- Lesson 22: Dividamos números enteros entre 0.1 y entre 0.01
- Lesson 23: Dividamos números enteros entre decimales
- Lesson 24: Dividamos decimales entre números enteros
- Lesson 25: Dividamos decimales entre decimales
- Lesson 26: Feria del libro

Unit 6: Más operaciones con decimales y fracciones

In this unit, students deepen their understanding of place-value relationships of numbers in base ten, unit conversion, operations on fractions with unlike denominators, and multiplicative comparison. The work here builds on several important ideas from grade 4.

In grade 4, students learned the value of each digit in a whole number is 10 times the value of the same digit in a place to its right. Here, they extend that insight to include decimals to the thousandths. Students recognize that the value of each digit in a place (including decimal places) is $\frac{1}{10}$ the value of the same digit in the place to its left.

This idea is highlighted as students perform measurement conversions in metric units.

Previously, students learned to convert from a larger unit to a smaller unit. Here, they learn to convert from a smaller unit to a larger unit. They observe how the digits shift when multiplied or divided by a power of 10 and learn to use exponential notation for powers of 10 to represent large numbers.

L	mL
5	
6.3	
0.95	
10^2	
	800,000
	10^6
	65

Next, students turn their attention to fractions. In earlier grades, students made sense of equivalent fractions, added and subtracted fractions with the same denominator, and added tenths and hundredths. In this unit, they add and subtract fractions with different denominators. They see that the key is to find a common denominator and analyze different techniques for doing so.

Students then solve problems that involve measurement data (in halves, fourths, and eighths) that are displayed on line plots.

In the final section, students reason about the size of a product of fractions and the sizes of the factors. This work builds on the multiplicative comparison work in grade 4, in which students compared a whole number as "____ times as many (or as much) as" another whole number. Here, students reason about products of a whole number and a fraction, without finding the value of each product. They use diagrams and expressions to support their reasoning.

Write >, <, or = in each blank to make true statements.

$\frac{4}{5} \times 851 ____ 851$ $\quad$ $\frac{1}{4} ____ \frac{5}{5} \times \frac{1}{4}$ $\quad$ $\frac{99}{8} \times \frac{23}{22} ____ \frac{99}{8}$ $\quad$ $\frac{100}{7} \times \frac{9}{13} ____ \frac{9}{13}$

Section A: Conversiones de medida y potencias de 10

- Lesson 1: Patrones en los valores posicionales
- Lesson 2: Potencias de 10
- Lesson 3: Conversión de unidades métricas y multiplicación por potencias de 10
- Lesson 4: Conversión de unidades métricas y división entre potencias de 10
- Lesson 5: Problemas de conversión de varios pasos: Longitudes en unidades métricas
- Lesson 6: Problemas de conversión de varios pasos: Volúmenes líquidos en unidades métricas
- Lesson 7: Problemas de conversión de varios pasos: Longitudes en unidades tradicionales

Section B: Sumemos y restemos fracciones que tienen denominadores diferentes

- Lesson 8: Sumemos y restemos fracciones
- Lesson 9: Usemos expresiones que tienen el mismo valor
- Lesson 10: Todo tipo de denominadores
- Lesson 11: Distintas maneras de restar
- Lesson 12: Resolvamos problemas
- Lesson 13: Conectemos todo: Sumemos y restemos fracciones
- Lesson 14: Representemos fracciones en un diagrama de puntos
- Lesson 15: Resolvamos problemas usando diagramas de puntos

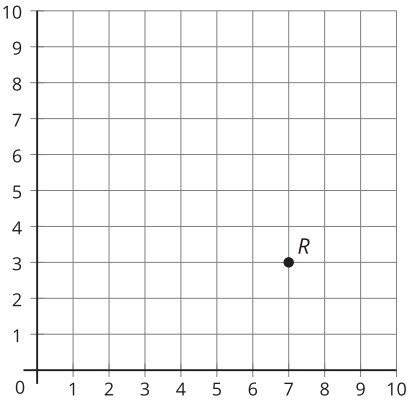
Section C: El tamaño de un producto

- Lesson 16: Comparemos productos
- Lesson 17: Interpretemos diagramas
- Lesson 18: Comparemos sin multiplicar
- Lesson 19: Comparemos con 1
- Lesson 20: ¿Siempre va a funcionar?
- Lesson 21: Investigación sobre el fin de semana

Unit 7: Figuras en la cuadrícula de coordenadas

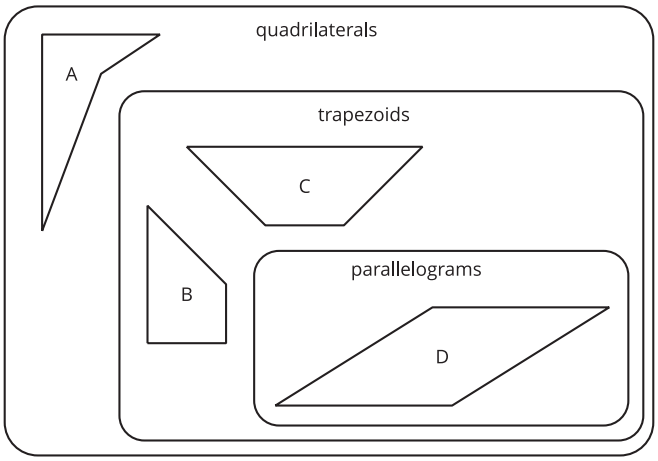
In this unit, students learn about the coordinate grid, deepen their knowledge of two-dimensional shapes, and use the coordinate grid to study relationships of pairs of numbers in various situations.

Students learn about grids that are numbered in two directions. They see that the structure of a coordinate grid allows us to precisely communicate the location of points and shapes.



Students also continue to study two-dimensional shapes and their attributes. In IMG Grade 3, they classified triangles and quadrilaterals by the presence of right angles and sides of equal length. In IM Grade 4, they learned about angles

and parallel and perpendicular lines, which allowed students to further distinguish shapes. In this unit, students use these insights to make sense of the hierarchy of shapes.



Later in the unit, students analyze and generate numerical patterns based on pairs of rules and graph pairs of numbers on the coordinate grid. They also interpret points on the coordinate grid in terms of situations, plot points to better understand the relationship between two sets of numbers, and use the coordinate grid to solve problems.

Section A: La cuadrícula de coordenadas

- Lesson 1: Exploremos la cuadrícula de coordenadas
- Lesson 2: Puntos en la cuadrícula de coordenadas
- Lesson 3: Ubiquemos más puntos

Section B: La jerarquía de las figuras

- Lesson 4: Clasifiquemos cuadriláteros
- Lesson 5: Trapecios
- Lesson 6: La jerarquía de los cuadriláteros
- Lesson 7: Rectángulos y cuadrados
- Lesson 8: Clasifiquemos triángulos

Section C: Patrones numéricos

- Lesson 9: Generemos patrones
- Lesson 10: Interpretemos relaciones
- Lesson 11: Patrones y pares ordenados
- Lesson 12: Representemos problemas en la cuadrícula de coordenadas
- Lesson 13: El perímetro y el área de los rectángulos
- Lesson 14: Copias de figuras

Unit 8: Conectemos todo

In this unit, students revisit major work and fluency goals of the grade, applying their learning from the year.

In Section A, students deepen their understanding of the standard algorithm for multiplication and practice using it to

find the value of products. They also revisit algorithms that use partial quotients to divide whole numbers. In Section B, students solve real-world problems about volume and have opportunities to model with mathematics.

The base of the Great Pyramid of Giza is a square.
Each side of the base is 230 meters long.
The pyramid is now 137 meters tall.

If the pyramid was shaped like a rectangular prism,
what would be the volume of the prism?



Section C focuses on operations with decimals and fractions. In the final section, students review major work of the grade as they create activities in the format of the warm-up routines they have encountered throughout the year (*Notice and Wonder, Estimation Exploration, Number Talk, True or False?* and *Which Three Go Together?*).

The sections in this unit are standalone sections, not required to be completed in order. Within a section, lessons can also be completed selectively and without completing prior lessons. The goal is to offer ample opportunities for students to integrate the knowledge they have gained and to practice skills related to the expected fluencies of the grade.

Section A: Multipliquemos y dividamos números enteros

- Lesson 1: Encontremos el mayor producto
- Lesson 2: Más multiplicación
- Lesson 3: Los factores son un factor para escoger nuestra estrategia
- Lesson 4: Volvamos a la división
- Lesson 5: Más división

Section B: Apliquemos conceptos de volumen

- Lesson 6: Retomemos el volumen
- Lesson 7: Estimemos el volumen del remolque más grande del mundo
- Lesson 8: Llenemos el remolque más grande del mundo
- Lesson 9: Resolvamos problemas sobre volumen: Agua

Section C: Operaciones con fracciones y decimales

- Lesson 10: La suma se asoma
- Lesson 11: ¿Cuál es la diferencia?
- Lesson 12: Día de juegos con decimales
- Lesson 13: Día de juegos con multiplicaciones de fracciones

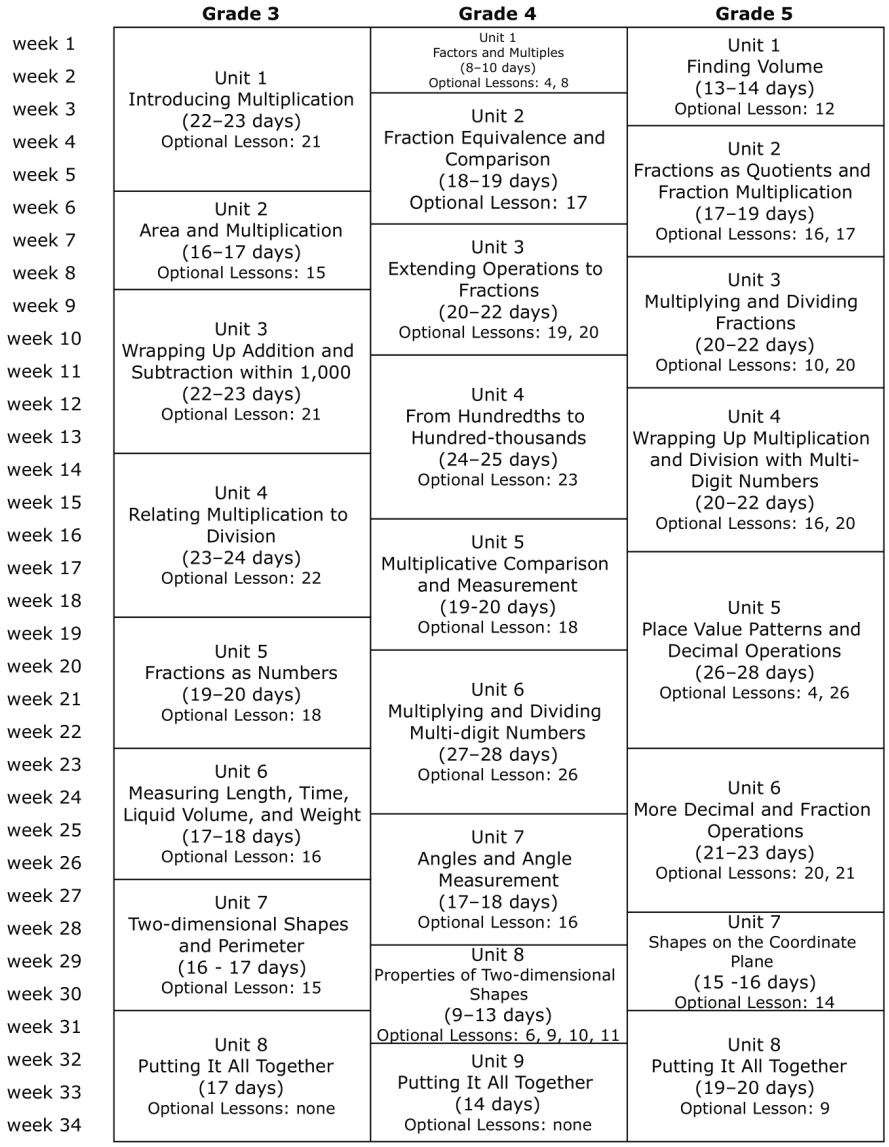
Section D: Creación y diseño

- Lesson 14: Observa y pregúntate
- Lesson 15: Exploración de estimación
- Lesson 16: Conversación numérica
- Lesson 17: ¿Verdadero o falso?
- Lesson 18: ¿Cuáles tres van juntos?

Pacing Guide

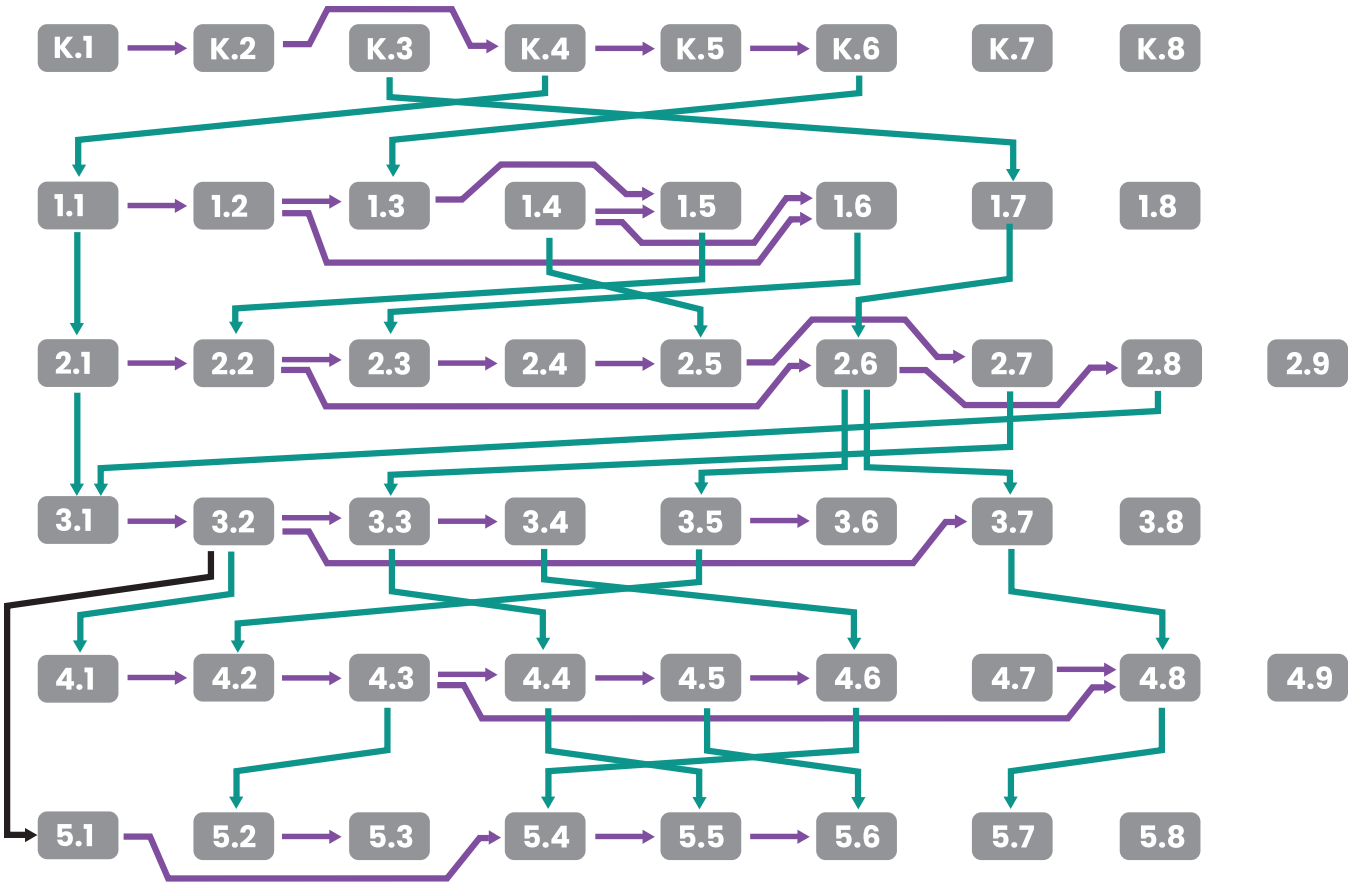
The number of days includes two assessment days per unit. The upper bound of the range includes optional lessons.

<table>
<tr><th></th><th>Kindergarten</th><th>Grade 1</th><th>Grade 2</th></tr>
<tr><td>week 1
week 2
week 3
week 4</td><td>Unit 1
Math in Our World
(18–19 days)
Optional Lesson: 17</td><td>Unit 1
Adding, Subtracting, and Working with Data
(16–17 days)
Optional Lesson: 15</td><td>Unit 1
Adding, Subtracting, and Working with Data
(16–20 days)
Optional Lessons: 6, 12, 17, 18</td></tr>
<tr><td>week 5
week 6
week 7
week 8
week 9</td><td>Unit 2
Numbers 1–10
(23–26 days)
Optional Lessons:7, 8, 24</td><td>Unit 2
Addition and Subtraction Story Problems
(24–25 days)
Optional Lesson: 23</td><td>Unit 2
Adding and Subtracting within 100
(15–19 days)
Optional Lessons: 4, 10, 16, 17</td></tr>
<tr><td>week 10
week 11
week 12
week 13</td><td>Unit 3
Flat Shapes All Around Us
(16–17 days)
Optional Lesson: 15</td><td rowspan="2">Unit 3
Adding and Subtracting within 20
(29–30 days)
Optional Lesson: 28</td><td>Unit 3
Measuring Length
(16–20 days)
Optional Lessons: 7, 13, 17, 18</td></tr>
<tr><td>week 14
week 15
week 16
week 17</td><td>Unit 4
Understanding Addition and Subtraction
(18–20 days)
Optional Lessons: 13, 18</td><td>Unit 4
Addition and Subtraction on the Number Line
(14–17 days)
Optional Lessons: 6, 14, 15</td></tr>
<tr><td>week 18
week 19
week 20
week 21</td><td>Unit 5
Composing and Decomposing Numbers to 10
(15–17 days)
Optional Lessons: 4, 15</td><td rowspan="2">Unit 4
Numbers to 99
(23–25 days)
Optional Lessons: 12, 23</td><td>Unit 5
Numbers to 1,000
(13–16 days)
Optional Lessons: 7, 13, 14</td></tr>
<tr><td>week 22
week 23
week 24</td><td>Unit 6
Numbers 0-20
(13–15 days)
Optional Lessons: 2, 13</td><td rowspan="2">Unit 6
Geometry, Time, and Money
(19–24 days)
Optional Lessons: 5, 10, 14, 21, 22</td></tr>
<tr><td>week 25
week 26
week 27
week 28</td><td>Unit 7
Solid Shapes All Around Us
(17-18 days)
Optional Lesson: 16</td><td>Unit 5
Adding within 100
(15–16 days)
Optional Lesson: 14</td></tr>
<tr><td>week 29
week 30
week 31
week 32
week 33
week 34</td><td>Unit 8
Putting It All Together
(17–23 days)
Optional Lessons: 2, 4, 5, 17, 18, 19</td><td>Unit 6
Length Measurements within 120 Units
(18–19 days)
Optional Lesson: 17</td><td>Unit 7
Adding and Subtracting within 1,000
(16–21 days)
Optional Lessons: 5, 11, 17, 18, 19</td></tr>
<tr><td></td><td></td><td>Unit 7
Geometry and Time
(19-20 days)
Optional Lesson: 18</td><td>Unit 8
Equal Groups
(12–16 days)
Optional Lessons: 5, 6, 13, 14</td></tr>
<tr><td></td><td></td><td>Unit 8
Putting It All Together
(12 days)
Optional Lessons: none</td><td>Unit 9
Putting It All Together
(15 days)
Optional Lessons: none</td></tr>
</table>

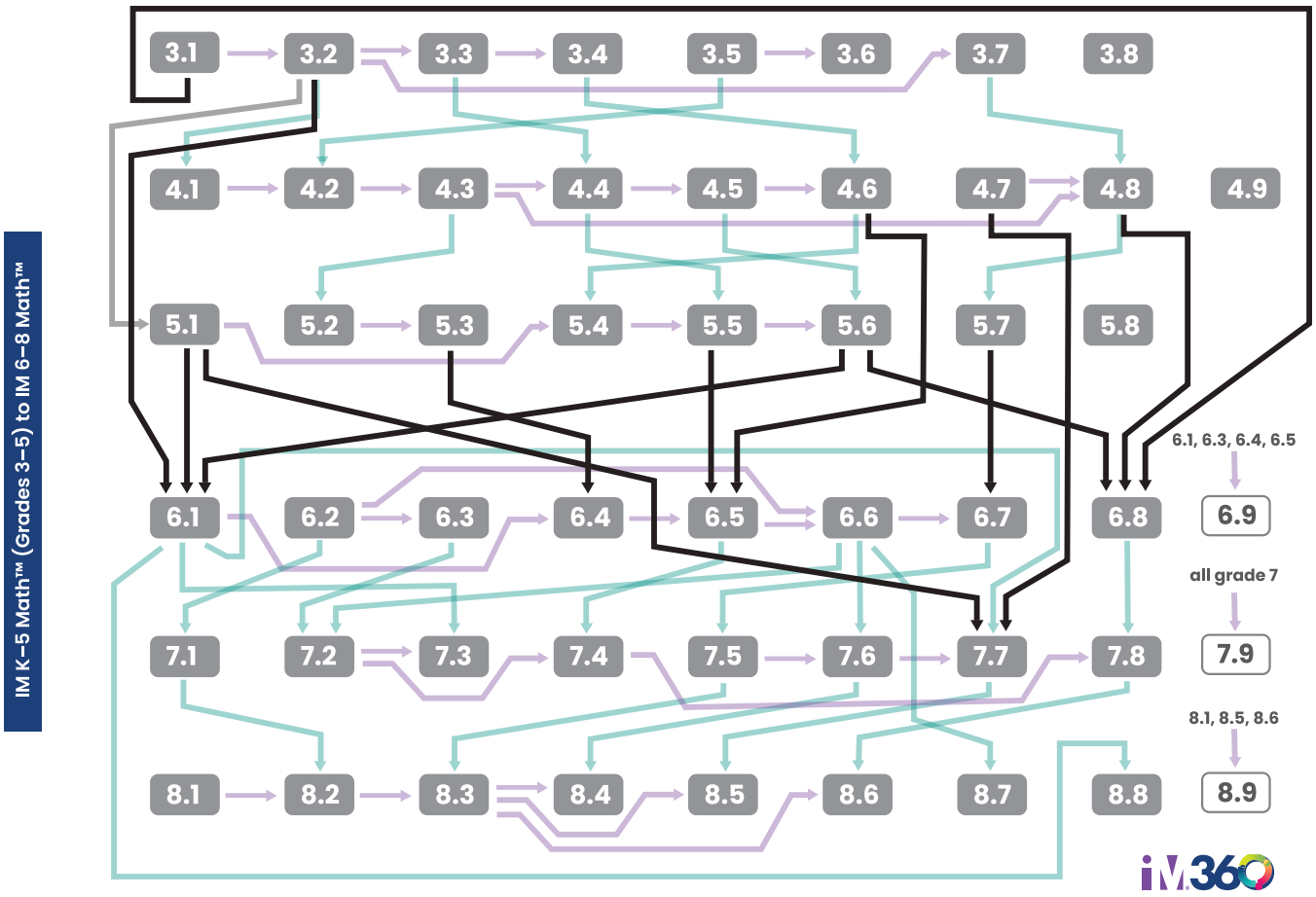


Dependency Chart

In the unit dependency chart, an arrow indicates that a particular unit is designed for students who already know the material in a previous unit. Reversing the order of the units would have a negative effect on mathematical or pedagogical coherence.

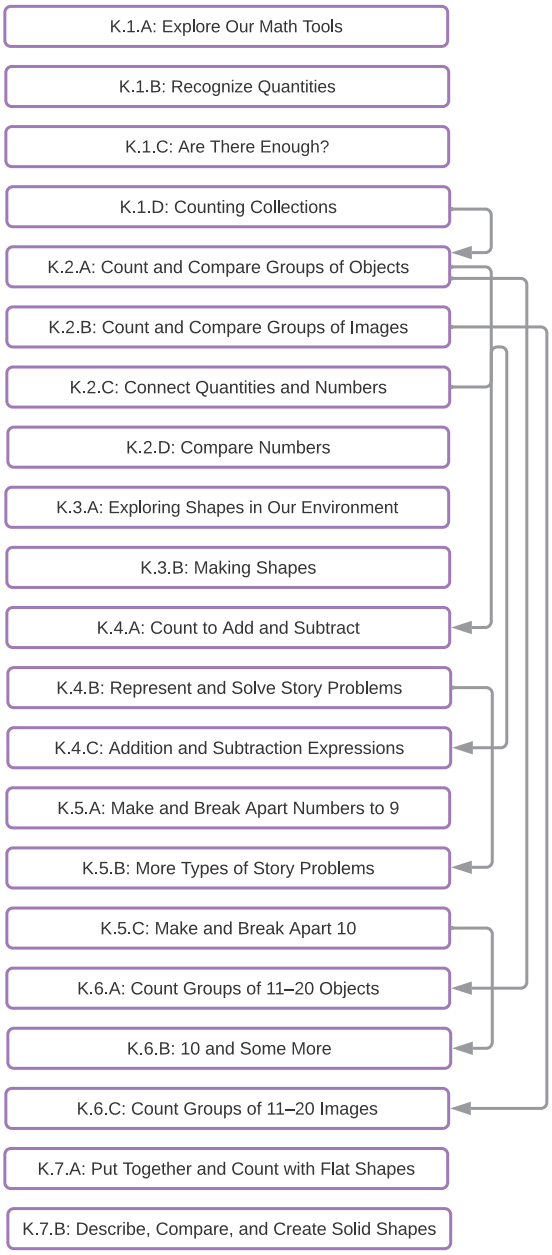


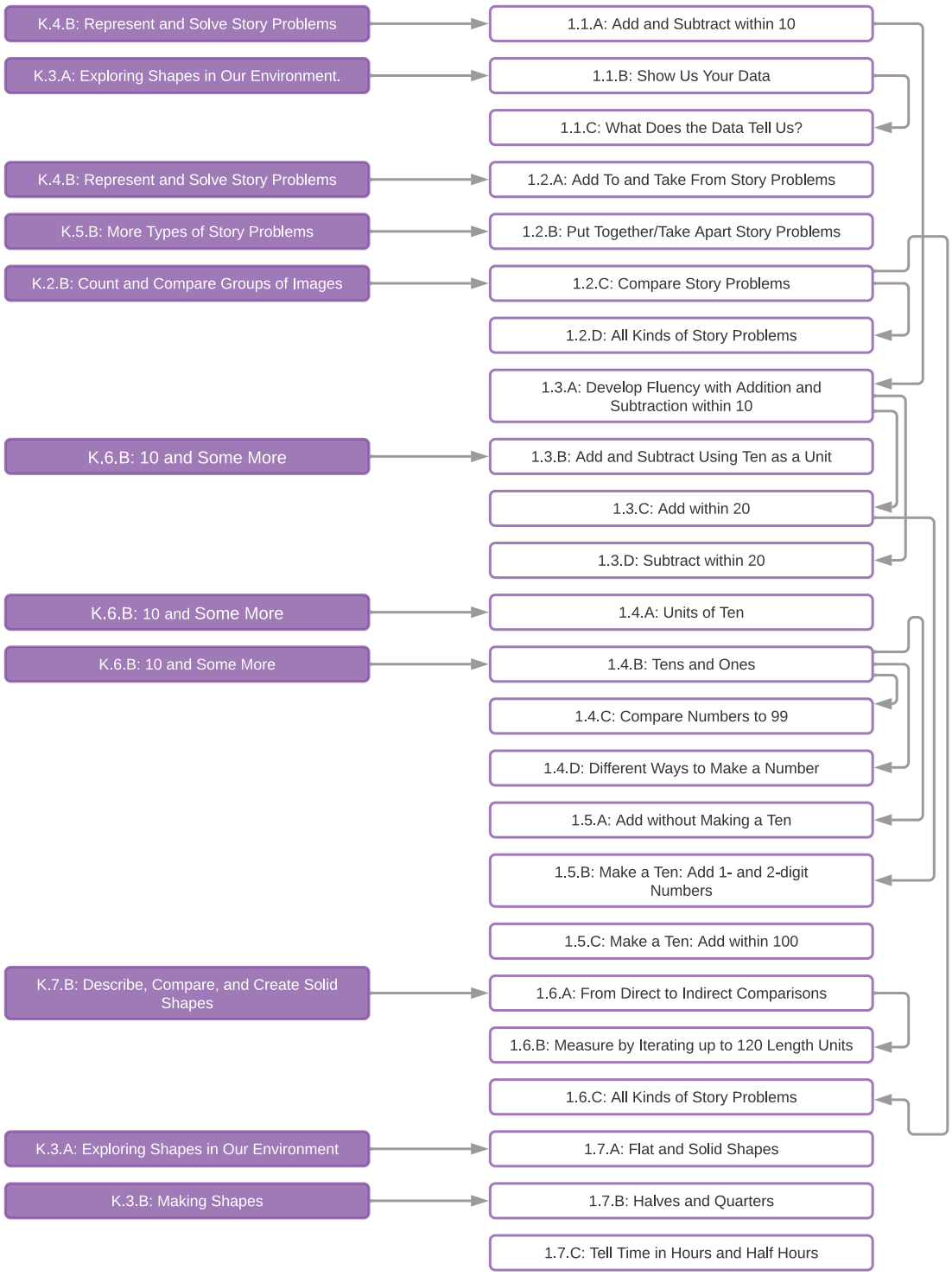
The following chart shows unit dependencies across the curriculum for IM Grades 3–8.

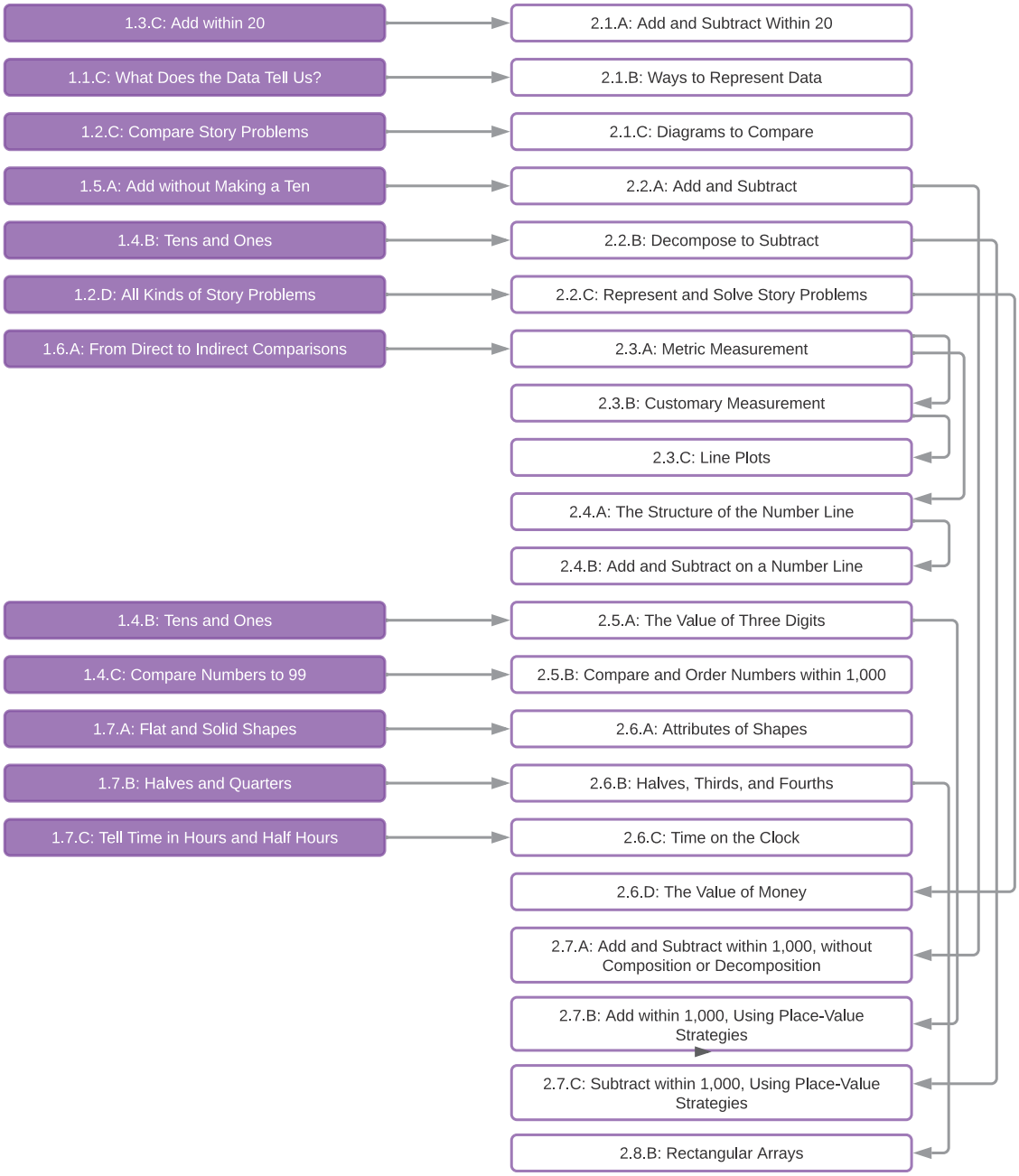


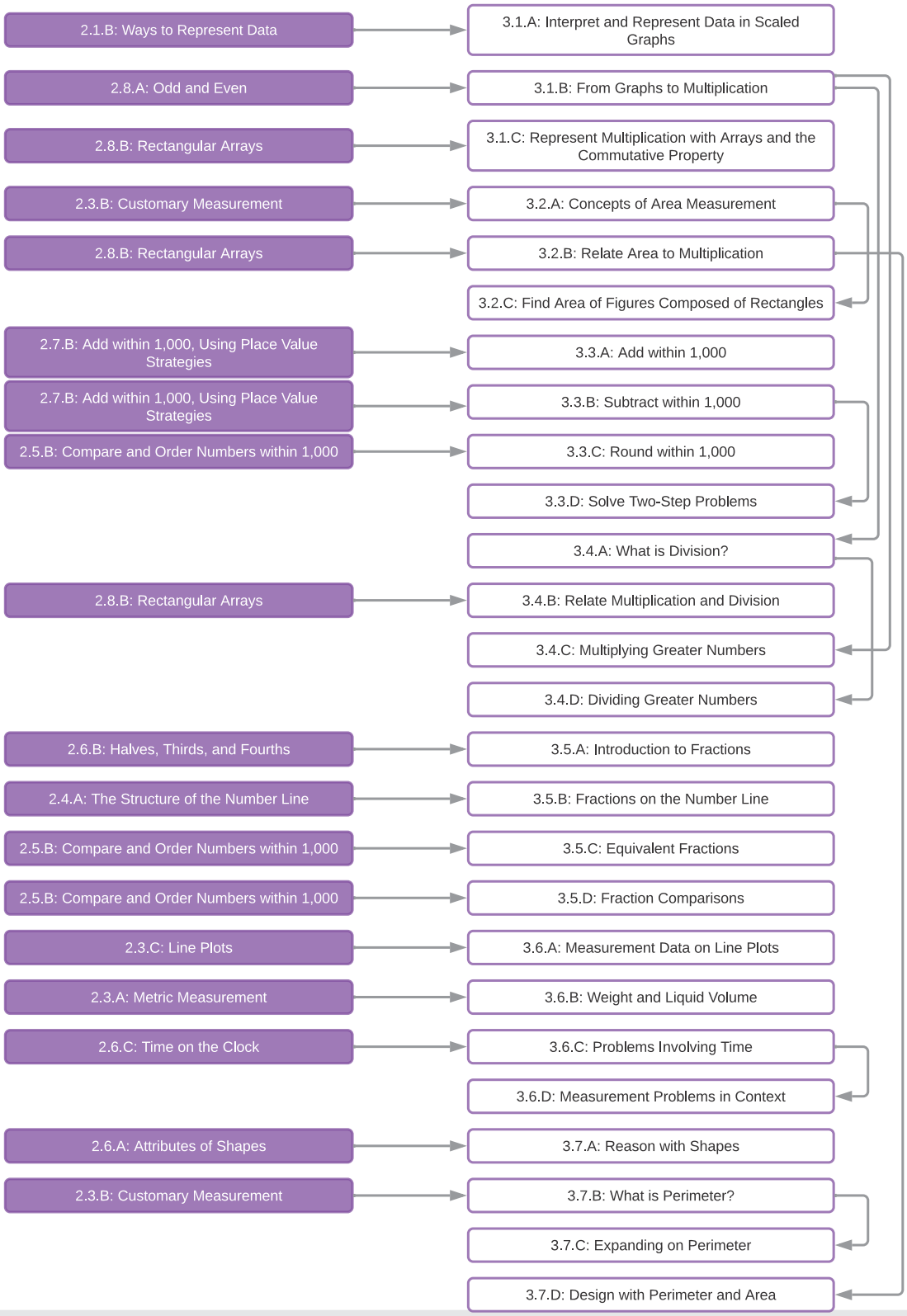
Section Dependency Diagrams

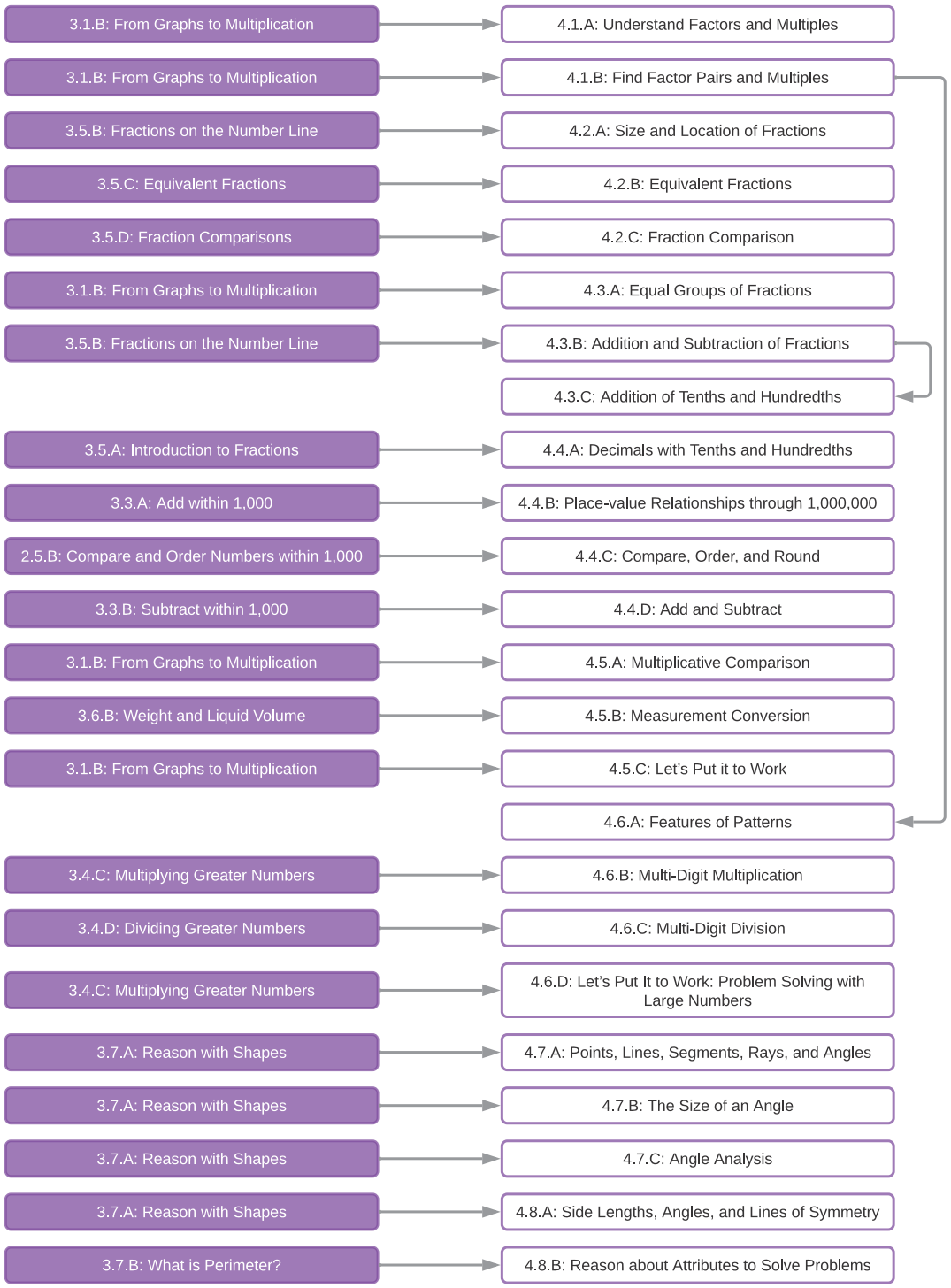
In the section dependency charts, an arrow indicates the prior section that contains content most directly designed to support or build toward the content in the current section.

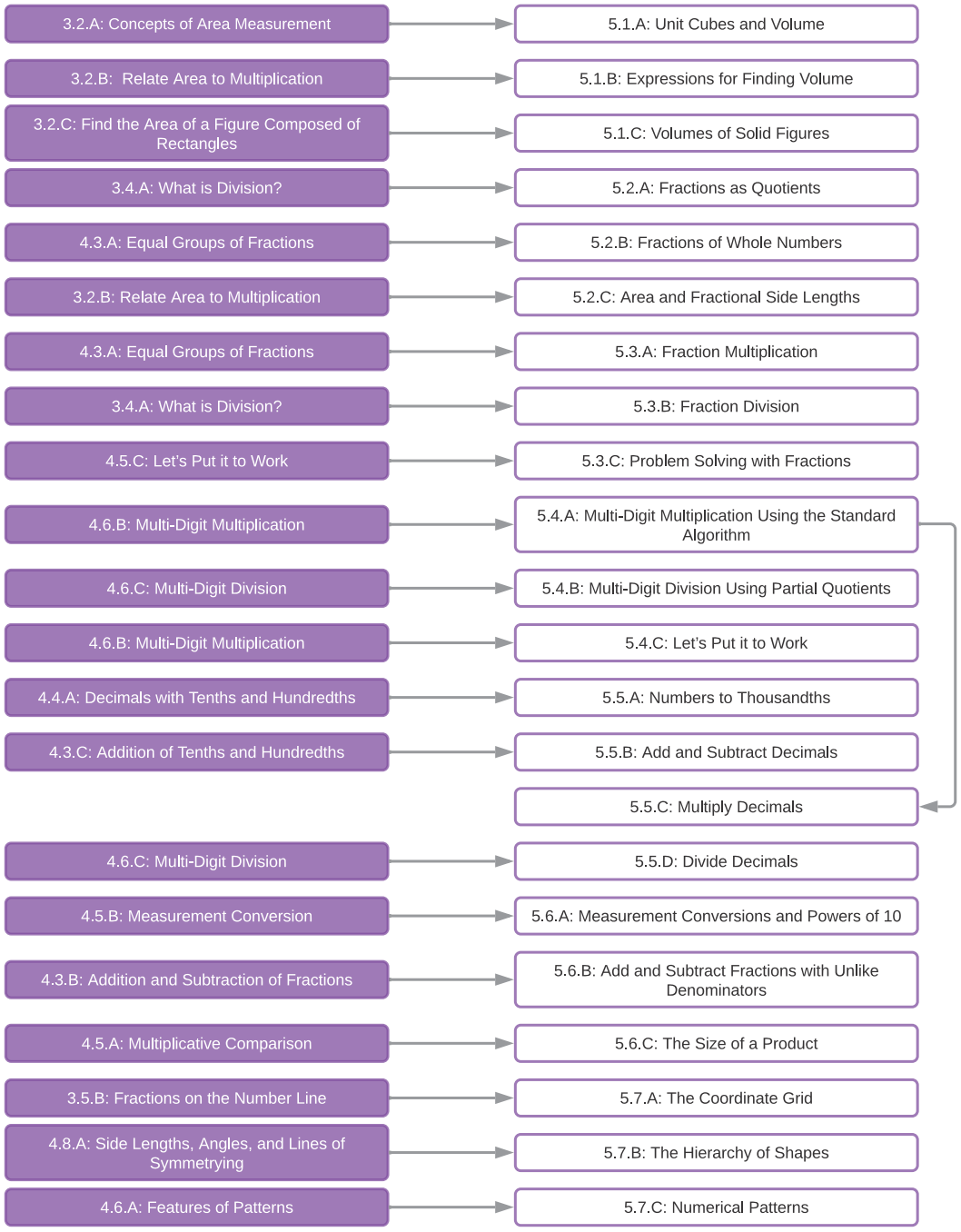

K.1.A: Explore Our Math Tools
K.1.B: Recognize Quantities
K.1.C: Are There Enough?
K.1.D: Counting Collections
K.2.A: Count and Compare Groups of Objects
K.2.B: Count and Compare Groups of Images
K.2.C: Connect Quantities and Numbers
K.2.D: Compare Numbers
K.3.A: Exploring Shapes in Our Environment
K.3.B: Making Shapes
K.4.A: Count to Add and Subtract
K.4.B: Represent and Solve Story Problems
K.4.C: Addition and Subtraction Expressions
K.5.A: Make and Break Apart Numbers to 9
K.5.B: More Types of Story Problems
K.5.C: Make and Break Apart 10
K.6.A: Count Groups of 11–20 Objects
K.6.B: 10 and Some More
K.6.C: Count Groups of 11–20 Images
K.7.A: Put Together and Count with Flat Shapes
K.7.B: Describe, Compare, and Create Solid Shapes


K.4.B: Represent and Solve Story Problems
1.1.A: Add and Subtract within 10
K.3.A: Exploring Shapes in Our Environment.
1.1.B: Show Us Your Data
1.1.C: What Does the Data Tell Us?
K.4.B: Represent and Solve Story Problems
1.2.A: Add To and Take From Story Problems
K.5.B: More Types of Story Problems
1.2.B: Put Together/Take Apart Story Problems
K.2.B: Count and Compare Groups of Images
1.2.C: Compare Story Problems
1.2.D: All Kinds of Story Problems
1.3.A: Develop Fluency with Addition and Subtraction within 10
K.6.B: 10 and Some More
1.3.B: Add and Subtract Using Ten as a Unit
1.3.C: Add within 20
1.3.D: Subtract within 20
K.6.B: 10 and Some More
1.4.A: Units of Ten
K.6.B: 10 and Some More
1.4.B: Tens and Ones
1.4.C: Compare Numbers to 99
1.4.D: Different Ways to Make a Number
1.5.A: Add without Making a Ten
1.5.B: Make a Ten: Add 1- and 2-digit Numbers
1.5.C: Make a Ten: Add within 100
K.7.B: Describe, Compare, and Create Solid Shapes
1.6.A: From Direct to Indirect Comparisons
1.6.B: Measure by Iterating up to 120 Length Units
1.6.C: All Kinds of Story Problems
K.3.A: Exploring Shapes in Our Environment
1.7.A: Flat and Solid Shapes
K.3.B: Making Shapes
1.7.B: Halves and Quarters
1.7.C: Tell Time in Hours and Half Hours


1.3.C: Add within 20
2.1.A: Add and Subtract Within 20
1.1.C: What Does the Data Tell Us?
2.1.B: Ways to Represent Data
1.2.C: Compare Story Problems
2.1.C: Diagrams to Compare
1.5.A: Add without Making a Ten
2.2.A: Add and Subtract
1.4.B: Tens and Ones
2.2.B: Decompose to Subtract
1.2.D: All Kinds of Story Problems
2.2.C: Represent and Solve Story Problems
1.6.A: From Direct to Indirect Comparisons
2.3.A: Metric Measurement
2.3.B: Customary Measurement
2.3.C: Line Plots
2.4.A: The Structure of the Number Line
2.4.B: Add and Subtract on a Number Line
1.4.B: Tens and Ones
2.5.A: The Value of Three Digits
1.4.C: Compare Numbers to 99
2.5.B: Compare and Order Numbers within 1,000
1.7.A: Flat and Solid Shapes
2.6.A: Attributes of Shapes
1.7.B: Halves and Quarters
2.6.B: Halves, Thirds, and Fourths
1.7.C: Tell Time in Hours and Half Hours
2.6.C: Time on the Clock
2.6.D: The Value of Money
2.7.A: Add and Subtract within 1,000, without Composition or Decomposition
2.7.B: Add within 1,000, Using Place-Value Strategies
2.7.C: Subtract within 1,000, Using Place-Value Strategies
2.8.B: Rectangular Arrays


2.1.B: Ways to Represent Data
3.1.A: Interpret and Represent Data in Scaled Graphs
2.8.A: Odd and Even
3.1.B: From Graphs to Multiplication
2.8.B: Rectangular Arrays
3.1.C: Represent Multiplication with Arrays and the Commutative Property
2.3.B: Customary Measurement
3.2.A: Concepts of Area Measurement
2.8.B: Rectangular Arrays
3.2.B: Relate Area to Multiplication
3.2.C: Find Area of Figures Composed of Rectangles
2.7.B: Add within 1,000, Using Place Value Strategies
3.3.A: Add within 1,000
2.7.B: Add within 1,000, Using Place Value Strategies
3.3.B: Subtract within 1,000
2.5.B: Compare and Order Numbers within 1,000
3.3.C: Round within 1,000
3.3.D: Solve Two-Step Problems
3.4.A: What is Division?
2.8.B: Rectangular Arrays
3.4.B: Relate Multiplication and Division
3.4.C: Multiplying Greater Numbers
3.4.D: Dividing Greater Numbers
2.6.B: Halves, Thirds, and Fourths
3.5.A: Introduction to Fractions
2.4.A: The Structure of the Number Line
3.5.B: Fractions on the Number Line
2.5.B: Compare and Order Numbers within 1,000
3.5.C: Equivalent Fractions
2.5.B: Compare and Order Numbers within 1,000
3.5.D: Fraction Comparisons
2.3.C: Line Plots
3.6.A: Measurement Data on Line Plots
2.3.A: Metric Measurement
3.6.B: Weight and Liquid Volume
2.6.C: Time on the Clock
3.6.C: Problems Involving Time
3.6.D: Measurement Problems in Context
2.6.A: Attributes of Shapes
3.7.A: Reason with Shapes
2.3.B: Customary Measurement
3.7.B: What is Perimeter?
3.7.C: Expanding on Perimeter
3.7.D: Design with Perimeter and Area


3.1.B: From Graphs to Multiplication
4.1.A: Understand Factors and Multiples
3.1.B: From Graphs to Multiplication
4.1.B: Find Factor Pairs and Multiples
3.5.B: Fractions on the Number Line
4.2.A: Size and Location of Fractions
3.5.C: Equivalent Fractions
4.2.B: Equivalent Fractions
3.5.D: Fraction Comparisons
4.2.C: Fraction Comparison
3.1.B: From Graphs to Multiplication
4.3.A: Equal Groups of Fractions
3.5.B: Fractions on the Number Line
4.3.B: Addition and Subtraction of Fractions
4.3.C: Addition of Tenths and Hundredths
3.5.A: Introduction to Fractions
4.4.A: Decimals with Tenths and Hundredths
3.3.A: Add within 1,000
4.4.B: Place-value Relationships through 1,000,000
2.5.B: Compare and Order Numbers within 1,000
4.4.C: Compare, Order, and Round
3.3.B: Subtract within 1,000
4.4.D: Add and Subtract
3.1.B: From Graphs to Multiplication
4.5.A: Multiplicative Comparison
3.6.B: Weight and Liquid Volume
4.5.B: Measurement Conversion
3.1.B: From Graphs to Multiplication
4.5.C: Let's Put it to Work
4.6.A: Features of Patterns
3.4.C: Multiplying Greater Numbers
4.6.B: Multi-Digit Multiplication
3.4.D: Dividing Greater Numbers
4.6.C: Multi-Digit Division
3.4.C: Multiplying Greater Numbers
4.6.D: Let's Put It to Work: Problem Solving with Large Numbers
3.7.A: Reason with Shapes
4.7.A: Points, Lines, Segments, Rays, and Angles
3.7.A: Reason with Shapes
4.7.B: The Size of an Angle
3.7.A: Reason with Shapes
4.7.C: Angle Analysis
3.7.A: Reason with Shapes
4.8.A: Side Lengths, Angles, and Lines of Symmetry
3.7.B: What is Perimeter?
4.8.B: Reason about Attributes to Solve Problems


3.2.A: Concepts of Area Measurement
5.1.A: Unit Cubes and Volume
3.2.B: Relate Area to Multiplication
5.1.B: Expressions for Finding Volume
3.2.C: Find the Area of a Figure Composed of Rectangles
5.1.C: Volumes of Solid Figures
3.4.A: What is Division?
5.2.A: Fractions as Quotients
4.3.A: Equal Groups of Fractions
5.2.B: Fractions of Whole Numbers
3.2.B: Relate Area to Multiplication
5.2.C: Area and Fractional Side Lengths
4.3.A: Equal Groups of Fractions
5.3.A: Fraction Multiplication
3.4.A: What is Division?
5.3.B: Fraction Division
4.5.C: Let's Put it to Work
5.3.C: Problem Solving with Fractions
4.6.B: Multi-Digit Multiplication
5.4.A: Multi-Digit Multiplication Using the Standard Algorithm
4.6.C: Multi-Digit Division
5.4.B: Multi-Digit Division Using Partial Quotients
4.6.B: Multi-Digit Multiplication
5.4.C: Let's Put it to Work
4.4.A: Decimals with Tenths and Hundredths
5.5.A: Numbers to Thousandths
4.3.C: Addition of Tenths and Hundredths
5.5.B: Add and Subtract Decimals
5.5.C: Multiply Decimals
4.6.C: Multi-Digit Division
5.5.D: Divide Decimals
4.5.B: Measurement Conversion
5.6.A: Measurement Conversions and Powers of 10
4.3.B: Addition and Subtraction of Fractions
5.6.B: Add and Subtract Fractions with Unlike Denominators
4.5.A: Multiplicative Comparison
5.6.C: The Size of a Product
3.5.B: Fractions on the Number Line
5.7.A: The Coordinate Grid
4.8.A: Side Lengths, Angles, and Lines of Symmetrying
5.7.B: The Hierarchy of Shapes
4.6.A: Features of Patterns
5.7.C: Numerical Patterns