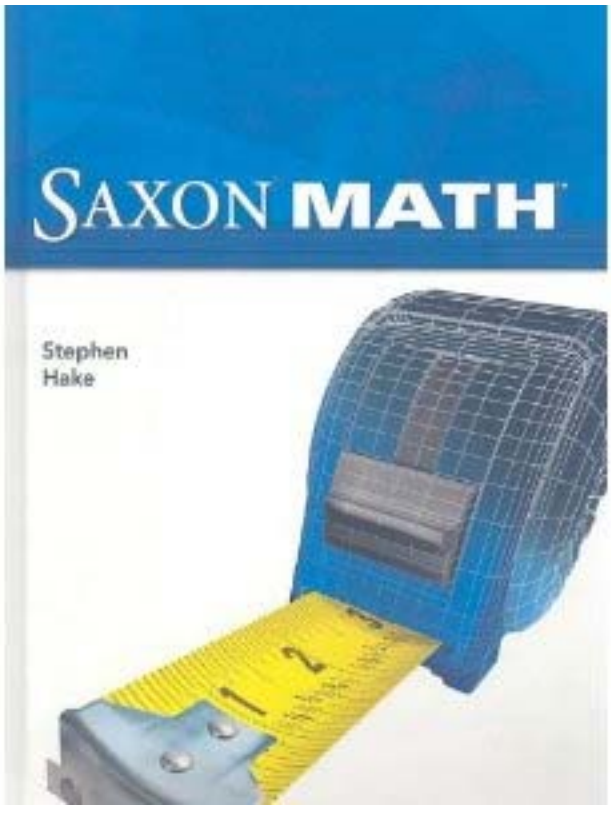
COMMON CORE
STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

Common Core Standards for Saxon Math



Standards for Mathematical Practice

CCSS.Math.Practice.MP1 *Make sense of problems and persevere in solving them.*

CCSS.Math.Practice.MP2 *Reason abstractly and quantitatively.*

CCSS.Math.Practice.MP3 *Construct viable arguments and critique the reasoning of others.*

CCSS.Math.Practice.MP4 *Model with mathematics.*

CCSS.Math.Practice.MP5 *Use appropriate tools strategically.*

CCSS.Math.Practice.MP6 *Attend to precision.*

CCSS.Math.Practice.MP7 *Look for and make use of structure.*

CCSS.Math.Practice.MP8 *Look for and express regularity in repeated reasoning.*

Common Core Standards and Saxon Math Lessons Associated With Said Standards:

Grade 5 » Number & Operations in Base Ten

CCSS.MATH.CONTENT.5.NBT.A.1

Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

Lesson: 3, 7, 52, 64, 106

CCSS.MATH.CONTENT.5.NBT.A.2

Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

Lesson: 29, 64, 68, 78, 111, 118

CCSS.MATH.CONTENT.5.NBT.A.3

Read, write, and compare decimals to thousandths.

CCSS.MATH.CONTENT.5.NBT.A.3.A

Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

Lesson: 5, 64, 66, 67, 68, 69, 106

CCSS.MATH.CONTENT.5.NBT.A.3.B

Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Lesson: 69, 70, 71, 100, 106

CCSS.MATH.CONTENT.5.NBT.A.4

Use place value understanding to round decimals to any place.

Lesson: 62, 64, 104, 106

CCSS.MATH.CONTENT.5.NBT.B.5

Fluently multiply multi-digit whole numbers using the standard algorithm.

Lesson: 17, 29, 51, 55, 56

CCSS.MATH.CONTENT.5.NBT.B.6

Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Lesson: 54, 56, 92, 94

CCSS.MATH.CONTENT.5.NBT.B.7

Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Lesson: 13, 17, 26, 29, 51, 54, 56, 73, 99, 102, 109, 110, 111, 117, 118, 119

Grade 5 » Operations & Algebraic Thinking

CCSS.MATH.CONTENT.5.OA.A.1
Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
Lesson: 24, 48, 49, 51, 52, 78, Inv. 4

CCSS.MATH.CONTENT.5.OA.A.2
Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*
Lesson: 13, 24, 49, 51, Inv. 8

CCSS.MATH.CONTENT.5.OA.B.3
Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*
Lesson: 1, Inv. 6

Grade 5 » Number & Operations—Fractions

CCSS.MATH.CONTENT.5.NF.A.1

Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*

Lesson: 116

CCSS.MATH.CONTENT.5.NF.A.2

Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*

Lesson: 23, 39, 41, 43, 59, 60, 63, 75, 91, 116

CCSS.MATH.CONTENT.5.NF.B.3

Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

Lesson: 20, 40, 43, 58, 91, 95

CCSS.MATH.CONTENT.5.NF.B.4

Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

CCSS.MATH.CONTENT.5.NF.B.4.A

Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*

Lesson: 46, 76, 86

CCSS.MATH.CONTENT.5.NF.B.4.B

Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

Lesson: 76

CCSS.MATH.CONTENT.5.NF.B.5

Interpret multiplication as scaling (resizing), by:

CCSS.MATH.CONTENT.5.NF.B.5.A

Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

Lesson: 86

CCSS.MATH.CONTENT.5.NF.B.5.B

Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

Lesson: 86

CCSS.MATH.CONTENT.5.NF.B.6

Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Lesson: 76, 86, 120

CCSS.MATH.CONTENT.5.NF.B.7

Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1]

CCSS.MATH.CONTENT.5.NF.B.7.A

Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*

Lesson: 87, 95

CCSS.MATH.CONTENT.5.NF.B.7.B

Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*

Lesson: 87, 96

CCSS.MATH.CONTENT.5.NF.B.7.C

Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

Lesson 87

Grade 5 » Measurement & Data

CCSS.MATH.CONTENT.5.MD.A.1
Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
Lesson: 44, 46, 47, 65, 66, 74, 77, 85

CCSS.MATH.CONTENT.5.MD.B.2
Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*.
Lesson: 74, Inv. 5

CCSS.MATH.CONTENT.5.MD.C.3
Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

CCSS.MATH.CONTENT.5.MD.C.3.A
A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
Lesson: 103

CCSS.MATH.CONTENT.5.MD.C.3.B
A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.
Lesson: 103

CCSS.MATH.CONTENT.5.MD.C.4
Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
Lesson: 103

CCSS.MATH.CONTENT.5.MD.C.5
Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

CCSS.MATH.CONTENT.5.MD.C.5.A

Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

Lesson: 103, 104

CCSS.MATH.CONTENT.5.MD.C.5.B

Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.

Lesson: 103, 104, 114

CCSS.MATH.CONTENT.5.MD.C.5.C

Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Lesson: 103, 104, 114

Grade 5 » Geometry

CCSS.MATH.CONTENT.5.G.A.1

Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g. *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).

Lesson: Inv. 8

CCSS.MATH.CONTENT.5.G.A.2

Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Lesson: Inv. 6, Inv. 8

CCSS.MATH.CONTENT.5.G.B.3

Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

Lesson: 32, 36, 45

CCSS.MATH.CONTENT.5.G.B.4

Classify two-dimensional figures in a hierarchy based on properties.

Lesson: 32, 36, 45

Unit Layout:

Unit 1: Number & Operations in Base Ten (Weeks 1-7)

***Standards Taught*:**

5.NBT.A.1,
5.NBT.A.2,
5.NBT.A.3,
5.NBT.A.3.A,
5.NBT.A.3.B,
5.NBT.A.4,
5.NBT.B.5,
5.NBT.B.6,
5.NBT.B.7

***Applied Saxon Lessons*:**
3, 5, 7, 13, 17, 26, 29, 52, 51, 54, 55, 56, 62, 64, 66, 67, 68, 69, 70, 71, 73, 78, 92, 94, 99, 100, 102, 104, 106, 109, 110, 111, 117, 118, 119

***Goals*:**

- Students will understand how Base Ten is applied to all mathematical operations.
- Students will be able to explain how Base Ten is used in mathematical operations and reasoning.

Big Idea:

- Base Ten operations are widely used in all mathematical process in everyday life. Base Ten is used all around us. Computers, calculators, grocery stores, gas stations, banks, and many other avenues use Base Ten reasoning.

Unit 2: Operations & Algebraic Thinking (Weeks 8-11)

Standards Taught:

5.OA.A.1
5.OA.A.2
5.OA.B.3

Applied Saxon Lessons:
1, 13, 24, 48, 49, 51, 52, 78, Inv. 4, Inv. 6, Inv. 8

***Goals*:**

- Students will understand how algebraic thinking affects mathematical operations.
- Students will be able to explain how algebraic operations work and why they are important to follow.

Big Idea:

- There is an order to the world around us. There are also patterns all around us. Mathematics is built on principles of order and patterns.

Unit 3: Number & Operations—Fractions (Weeks 12-22)

Standards Taught:

5.NF.A.1
5.NF.A.2
5.NF.B.3
5.NF.B.4
5.NF.B.4.A
5.NF.B.4.B
5.NF.B.5
5.NF.B.5.A
5.NF.B.5.B
5.NF.B.6
5.NF.B.7
5.NF.B.7.A
5.NF.B.7.B
5.NF.B.7.C

Applied Saxon Lessons:

20, 23, 39, 40, 41, 43, 46, 58, 59, 60, 63, 75, 76, 86, 87, 91, 95, 96, 116, 120

***Goals*:**

- Students will understand how fractions work, how they are used in real world situations, and how to do mathematical operations using fractions.
- Students will be able to explain what fractions are and how they work in real world situations.

***Big Idea*:**

- Fractions are a part of life. There are many avenues that involve the use and understanding of fractions. Baking, sewing, carpentry, construction, woodworking, financial systems, and many other vocations use fractions.

Unit 4: Measurement & Data (Weeks 22-27)

Standards Taught:

5.MD.A.1
5.MD.B.2
5.MD.C.3
5.MD.C.3.A
5.MD.C.3.B
5.MD.C.4
5.MD.C.5
5.MD.C.5.A
5.MD.C.5.B
5.MD.C.5.C

Applied Saxon Lessons:
44, 46, 47, 65, 66, 74, 77, 85, 103, 104, 114, Inv. 5

***Goals*:**

- Students will understand the differences between the different types of measurement (cm, mm, m, in, ft, yd.).
- Students will be able to use different forms of measurements in real world situations.
- Students will be able to find the volume of multiple objects.
- Students will be able to explain how finding volume relates to other mathematical operations.

Big Idea:

- Understanding measurement is a necessity in the real world. Everything uses a certain form of measurement. The world uses a different system of measurement than the United States. The ability to understand measurement will give students the ability to become multi faceted in world they live in.

Unit 5: Geometry (Weeks 28-35)

Standards Taught:

5.G.B.4
5.G.B.3
5.G.A.2
5.G.A.1

Applied Saxon Lessons:

32, 36, 45, Inv. 6, Inv. 8

***Goals*:**

- Students will be able to classify and explain shapes based on the shapes properties.
- Students will use real world situations to find, label, and graph ordered pairs in a coordinate system.

Big Idea:

- Geometric shapes and coordinate systems are used in a variety of vocations. Examples might include: engineering, architecture, construction, stock markets, financial systems, etc.

Unit Description:

(There are 10 extra weeks for review, further study, extra support, or however teachers want to use them.)

Unit 1, Week 1

Standard Taught:

- **5.NBT.A.1**
  Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- **5.NBT.A.3.A**
  Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).

Lessons Applied:

3, 5, 7, 52, 64, 66, 67, 68, 69, 106

Goal:

- Students will understand that a numbers place value is 10 times as much as the number to its right, and 1/10 as much as the number to its left.
- Students will be able to read and write given numbers in numeric and word form up through billions and ten thousandths.

Unit 1, Week 2

Standard Taught:

- **5.NBT.A.2**
  Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

Lessons Applied:

29, 64, 68, 78, 111, 118

Goal:

- Students will be able to explain how place value changes using powers of 10.
- Students will be able to explain patterns in the placement of the decimal point when the decimal is multiplied or divided by 10.
- Students will be able to use whole-number exponents to represent powers of 10.

Unit 1, Week 3

Standard Taught:

- **5.NBT.A.3**
  Read, write, and compare decimals to thousandths.
- **5.NBT.A.3.B**
  Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Lesson Applied:

69, 70, 71, 100, 106

Goal:
- Students will be able to read, write, and compare decimals to thousandths.
- Students will be able to compare decimal numbers to thousandths using the symbols >, =, <.

Unit 1, Week 4

Standards Taught:
- **5.NBT.A.4**
  Use place value understanding to round decimals to any place.

Lessons Applied:
62, 64, 104, 106

Goal:
- Students will be able to round decimal numbers to any place value using their understanding of place value.

Unit 1, Week 5

Standards Taught:
- **5.NBT.B.5**
  Fluently multiply multi-digit whole numbers using the standard algorithm.
- **5.NBT.B.6**
  Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Lessons Applied:
17, 29, 51, 54, 55, 56, 92, 94

Goal:
- Students will be able to multiply multi-digit numbers using the standards algorithm.
- Students will be able to solve whole number division problems with up to four-digit dividends and two-digit divisors.
- Students will be able to show and explain their thinking using multiple models of arithmetic such as equations, arrays, and/or area models.

Unit 1, Week 6

Standards Taught:
- **5.NBT.B.7**
  Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Lessons Applied:
13, 17, 26, 29, 51, 54, 56, 73, 99, 102, 109, 110, 111, 117, 118, 119

Goals:
- Students will be able to add, subtract, multiply, and divide decimal numbers to hundredths.

- Students will be able to use concrete models or drawings to solve problems and equations.
- Students will be able to explain their reasoning and strategies they used to solve problems and equations.

Unit 2, Week 1

Standards Taught:

- **5.OA.A.1**
  Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

Lessons Applied:

24, 48, 49, 51, 52, 78, Inv. 4

Goals:

- Students will be able to properly evaluate mathematical expressions using parentheses, brackets, or braces.

Unit 2, Week 2

Standards Taught:

- **5.OA.A.2**
  Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Lessons Applied:

13, 24, 49, 51, Inv. 8

Goals:

- Students will be able to write and interpret numerical expression without having to calculate the sum or product.

Unit 2, Week 3

Standards Taught:

- **5.OA.B.3**
  Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so*.

Lessons Applied:

1, Inv. 6 & Other Resources

Goals:

- Students will be able to identify and generate patterns of corresponding terms.

- Students will be able to form ordered pairs from two patterns and graph the ordered pairs on a coordinate plane.

Unit 3, Week 1 & 2

Standards Taught:

- **5.NF.A.1**
  Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*
- **5.NF.A.2**
  Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2*.

Lessons Applied:

23, 39, 41, 43, 59, 60, 63, 75, 91, 116

Goals:

- Students will be able add and subtract fractions by finding equivalent fractions, common denominators, and using an algorithm.
- Students will solve word problems that involve the addition and subtraction of fractions.
- Students will explain and show their understanding through fractional models or equations.

Unit 3, Week 3

Standards Taught:

- **5.NF.B.3**
  Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

Lessons Applied:

20, 40, 43, 58, 91, 95

Goals:

- Students will understand that a fraction is another way of representing division.
- Students will be able to solve real world division word problems using whole numbers that lead them to answers in the form of fractions or mixed numbers.
- Students will be able to show their thinking through visual models or equations and explain why their answer makes sense.

Unit 3, Week 4 & 5

Standards Taught:

- **5.NF.B.4**
  Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- **5.NF.B.4.A**
  Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*
- **5.NF.B.5.A**
- Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- **5.NF.B.5.B**
  Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

Lessons Applied:

46, 76, 86

Goals:

- Students will understand that a product of a fraction and a whole number is a fraction of that whole number.
- Students will be able to create a story context for a multiplication problem using whole numbers and fractions.
- Students will be able to explain how multiplication with fractions work, and what happens when whole numbers are multiplied by fractions less than one and greater than one.

Unit 3 Week 6

Standards Taught:

- **5.NF.B.6**
  Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

Lessons Applied:

76, 86, 120

Goals:

- Students will be able to solve real world problems involving multiplication of fractions and whole numbers.
- Students will be able to explain their thinking using visual models or equations.

Unit 3, Week 7 & 8

Standards Taught:

- **5.NF.B.7**
  Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1]
- **5.NF.B.7.A**
  Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3*.
- **5.NF.B.7.B**
  Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4*.
- **5.NF.B.7.C**
  Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

Lessons Applied:

87, 95, 96

Goals:

- Students will be able to divide fractions by other fractions or whole numbers.
- Students will be able to create a story context for a division problem using whole numbers and fractions.
- Students will be able to explain how division of fractions work, and what happens when whole numbers are divided by fractions less than one and greater than one.

Unit 4, Week 1

Standards Taught:

- **5.MD.A.1**
  Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Lessons Applied:

44, 46, 47, 65, 66, 74, 77, 85

Goals:

- Students will be able to convert among different-sized measurement units within a given measurement system.
- Students will be able to solve multi-step, real world problems involving the conversion of measurement units.

Unit 4, Week 2

Standards Taught:

- **5.MD.B.2**
  Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally*.

Lessons Applied:

74, Inv. 5 & Other Resources

Goals:

- Students will be able to create a line plot and display the data in fractions of a unit.
- Students will be able to find the mean of given data points.

Unit 4, Week 3

Standards Taught:

- **5.NF.B.4.B**
  Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

Lessons Applied:

76 & Other Resources

Goals:

- Students will be able to find the area of a given object with fractional sides.
- Students will identify the area of an object as unit squares.

Unit 4, Week 4 & 5

Standards Taught:

- **5.MD.C.3**
  Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- **5.MD.C.3.A**
  A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
- **5.MD.C.3.B**
  A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- **5.MD.C.4**
  Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

Lessons Applied:

103 & Other Resources

Goals:

- Students will understand that volume is an attribute of a solid figure.
- Students will understand that volume is measured in "cubic units."
- Students will be able to measure the volume of an object by counting unit cubes using a variety of measurements.

Unit 4, Week 6 & 7

Standards Taught:

- **5.MD.C.5**
  Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- **5.MD.C.5.A**
  Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- **5.MD.C.5.B**
  Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
- **5.MD.C.5.C**
  Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Lessons Applied:

103, 104, 114 & Other Resources

Goals:

- Students will be able to calculate the volume of given objects using the formula V=L x W x H.
- Students will recognize the associative property when finding the volume of a given object.
- Students will use real world situations to find the volume of given objects.
- Students will be able to calculate the volume of two given objects and find the total volume.

Unit 5, Week 1

Standards Taught:

- **5.G.A.1**
  Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g. x-axis and x-coordinate, y-axis and y-coordinate).
- **5.G.A.2**
  Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Lessons Applied:

Inv. 6, Inv. 8 & Other Resources

Goals:

- Students will be able to identify the x & y-axis and the origin on a coordinate plane.
- Students will use a pair of perpendicular number lines to define a coordinate system.
- Students will be able to construct ordered pairs and place them appropriately on a coordinate plane.
- Students will use real world problems to graph points and interpret values of points in a coordinate system.

Unit5, Week 2

Standards Taught:

- **5.G.B.3**
  Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
- **5.G.B.4**
  Classify two-dimensional figures in a hierarchy based on properties.

Lessons Applied:

32, 36, 45 & Other Resources

Goals:

Students will be able to classify shapes based on the properties of those shapes.
Students will be able to define or label a shape given the properties of that shape.

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