MATH COURSEWORK

Intro to Counting Objects; Read & Write Numbers to 100	Kindergarten	Count to 100 by ones and by tens.
Intro to Counting Objects; Read & Write Numbers to 100	Kindergarten	Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
Read & Write Numbers to 100; Write Numbers up to 20	Kindergarten	Read and write numbers using base ten numerals from 0 to 20. Represent a number of objects with a written numeral, in or out of sequence (0 represents a count of no objects).
Intro to Counting Objects	Kindergarten	When counting objects, say the numbers in the standard order. Pair each quantity of objects with one and only one number, and each number with the correct quantity of objects.
Intro to Counting Objects	Kindergarten	Understand that the last number said represents the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
Intro to Counting Objects	Kindergarten	Understand that each successive number refers to a quantity that is one greater than the previous number.
Intro to Counting Objects	Kindergarten	Use counting to answer questions about “how many.” For example, 20 or fewer objects arranged in a line, a rectangular array, or circle; 10 or fewer objects in a scattered configuration. Using a number from 1–20, count out that many objects.
Comparing Quantities up to 10	Kindergarten	Use matching or counting strategies to identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group. Include groups with up to ten objects.
Comparing Quantities up to 10	Kindergarten	Compare two numbers between 1 and 10 presented as written numerals using “greater than,” “less than,” or “equal to.
Intro to Addition	Kindergarten	Represent addition and subtraction with objects, fingers, mental images, simple drawings, or sounds. For example, use clapping, act out situations, and use verbal explanations, expressions, or equations.

MATH COURSEWORK

Intro to Addition; Intro to Subtraction	Kindergarten	Solve addition and subtraction word problems within 10. Use objects or drawings to represent the problem.
Composing & Decomposing Numbers (11-19)	Kindergarten	Decompose numbers less than or equal to 10 into pairs in more than one way by using objects or drawings. Record each decomposition by a drawing or equation. For example, 5 = 2 + 3 and 5 = 4 + 1.
Composing & Decomposing Numbers (1-10)	Kindergarten	Make sums of 10 using any number from 1 to 9. For example, 2 + 8 = 10. Use objects or drawings to represent and record the answer.
Intro to Addition	Kindergarten	Fluently add and subtract using numbers within 5.
Composing & Decomposing Numbers (11-19)	Kindergarten	Compose and decompose numbers from 11–19 into ten ones and some further ones. Use objects or drawings and record each composition or decomposition by a drawing or equation. For example, 18 = 10 + 8. Understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
Intro to Measurements: Weight & Length	Kindergarten	Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
Classify Objects by Attribute (Color, Size & Shape); Intro to Measurements: Weight & Length	Kindergarten	Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the length of two pencils and describe one as shorter or longer.
Classify Objects by Attribute (Color, Size & Shape)	Kindergarten	Classify objects into given categories; count the numbers of objects in each category and sort the categories by count. Limit the category counts to less than or equal to 10.
Intro to 2D Shapes; Intro to 3D Shapes	Kindergarten	Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
Intro to 2D Shapes; Intro to 3D Shapes	Kindergarten	Correctly name shapes regardless of their orientations or overall sizes.

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Intro to 3D Shapes	Kindergarten	Identify shapes as two-dimensional (flat") or three-dimensional ("solid")."
Intro to 2D Shapes; Intro to 3D Shapes	Kindergarten	Analyze, compare, and sort two- and three-dimensional shapes and objects, in different sizes and orientations, using informal language to describe their similarities, differences, and other attributes (for example, color, size, shape, number of sides).
Intro to 3D Shapes	Kindergarten	Model and create shapes from components such as sticks and clay balls.
Create New Shapes From Existing Ones	Kindergarten	Compose simple shapes to form larger shapes. For example, “Can you join these two triangles with full sides touching to make a rectangle?”
Add & Subtract within 20	Grade 1	Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions. For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.
Add More Than 2 Numbers	Grade 1	Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20. For example, use objects, drawings, and equations with a symbol for the unknown number to represent the problem.
Strategies to Add & Subtract within 20 (Make a 10 & Doubles Facts)	Grade 1	Apply properties of operations as strategies to add and subtract. For example: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 =12. (Associative property of addition.) First grade students need not use formal terms for these properties.
Strategies to Add & Subtract within 20 (Make a 10 & Doubles Facts)	Grade 1	Understand subtraction as an unknown-addend problem. For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.
Strategies to Add & Subtract within 20 (Make a 10 & Doubles Facts)	Grade 1	Relate counting to addition and subtraction. For example, by counting on 2 to add 2.
Add & Subtract within 20	Grade 1	Use strategies such as counting on; making ten (for example, 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (for example, 13 - 4 = 13 – 3 – 1 = 10 –

		1= 9); using the relationship between addition and subtraction (for example, knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (for example, adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
Strategies to Add & Subtract within 20 (Make a 10 & Doubles Facts)	Grade 1	By the end of Grade 1, demonstrate fluency for addition and subtraction within 10.
Intro to Equality (Find a Missing Number)	Grade 1	Understand the meaning of the equal sign, and determine whether equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.
Intro to Equality (Find a Missing Number)	Grade 1	Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = ? – 3, 6 + 6 = ?
Read & Write Numbers to 100	Grade 1	Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
Place Value: Ones & Tens	Grade 1	10 can be thought of as a bundle of ten ones, called a ten.""
Composing & Decomposing Numbers (11-19)	Grade 1	The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
Place Value: Ones & Tens	Grade 1	The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
Comparing 2-Digit Numbers	Grade 1	Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
Add & Subtract Within 100	Grade 1	Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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. Understand that in adding two-digit numbers, one adds tens to tens and ones to ones, and that it is sometimes necessary to compose a ten.
Mental Math within 100	Grade 1	Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
Mental Math within 100	Grade 1	Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), 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.
Intro to Measurements: Weight & Length	Grade 1	Order three objects by length; compare the lengths of two objects indirectly by using a third object.
Measure & Add Length (Intro to the Ruler)	Grade 1	Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
Tell Time (Nearest Half Hour)	Grade 1	Tell and write time in hours and half-hours using analog and digital clocks.
Intro to Data: Pictographs & Bar Graphs	Grade 1	Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.
Money: Combinations of Bills & Coins	Grade 1	Identify the values of pennies, nickels, dimes and quarters, and know their comparative values. (For example, a dime is of greater value than a nickel.) Use appropriate notation to designate a coin’s value. (For example, 5¢.)
Identify & Draw Shapes By Attributes	Grade 1	Distinguish between defining attributes (for example, triangles are closed and three-sided) versus non-defining attributes (for example, color, orientation, overall size); build and draw shapes that possess defining attributes.

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Create New Shapes From Existing Ones	Grade 1	Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) to create a composite shape, and compose new shapes from the composite shape.
Create New Shapes From Existing Ones	Grade 1	Compose three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape. First grade students do not need to learn formal names such as "right rectangular prism."
Partition Shapes Into Equal Shares	Grade 1	Partition circles and rectangles into two and four equal shares; describe the shares using the words halves, fourths, and quarters; and use the phrases half of, fourth of, and quarter of. Describe the whole as two or four of the shares. Understand that, for these examples, decomposing into more equal shares creates smaller shares.
Add & Subtract Within 100; Solve 2-Step Problems (All 4 Operations)	Grade 2	Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing with unknowns in all positions, for example, by using drawings and equations with a symbol for the unknown number to represent the problem.
Mental Math within 100	Grade 2	Add and subtract within 20 using mental strategies such as counting on; making ten (for example, 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (for example, 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (for example, knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (for example, adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
Mental Math within 100	Grade 2	By the end of Grade 2, know from memory all sums of two one-digit numbers.
Even & Odd Numbers	Grade 2	Determine whether a group of objects (up to 20) has an odd or even number of members, (for example, by pairing objects or counting them by twos). Write an equation to express an even number as a sum of two equal addends.

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Intro to Counting in Groups (Arrays)	Grade 2	Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.
Place Value: Ones, Tens & Hundreds	Grade 2	100 can be thought of as a bundle of ten tens called a hundred.""
Place Value: Ones, Tens & Hundreds	Grade 2	The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
Skip Counting (2s, 5s, 10s & 100s)	Grade 2	Count within 1,000; skip-count by fives, tens, and hundreds.
Numbers in Expanded & Word Form (3-Digit Numbers)	Grade 2	Read and write numbers to 1,000 using base-ten numerals, number names, and expanded form.
Comparing 3-Digit Numbers	Grade 2	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
Add & Subtract Within 100; Add More Than 2 Numbers; Mental Math within 100; Place Value: Ones, Tens & Hundreds	Grade 2	Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
Add & Subtract Within 100; Add More Than 2 Numbers; Mental Math within 100; Place Value: Ones, Tens & Hundreds	Grade 2	Add up to four two-digit numbers using strategies based on place value and properties of operations.
Addition & Subtraction Within 1,000	Grade 2	Add and subtract within 1,000 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, and ones and ones, and that it is sometimes necessary to compose or decompose tens or hundreds.
Place Value: Ones, Tens & Hundreds	Grade 2	Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.

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Add & Subtract Within 100; Place Value: Ones, Tens & Hundreds	Grade 2	Explain why addition and subtraction strategies work, using place value and the properties of operations. Explanations may be supported by drawings or objects.
Intro to Data: Line Plots; Measure & Add Length (Intro to the Ruler)	Grade 2	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
Measure & Add Length (Intro to the Ruler)	Grade 2	Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
Rounding (Nearest 10 and 100)	Grade 2	Estimate lengths using units of inches, feet, centimeters, and meters
Measure & Add Length (Intro to the Ruler)	Grade 2	Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit. For example, after measuring a pencil and a crayon, a student uses the measurements to determine that the pencil is two inches longer than the crayon.
Add & Subtract Within 100	Grade 2	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units. For example, use drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
Intro to the Number Line	Grade 2	Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2… Represent whole number sums and differences within 100 on a number line diagram.
Tell Time (Nearest Minute)	Grade 2	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
Money: Combinations of Bills & Coins	Grade 2	Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. For example, if you have 2 dimes and 3 pennies, how many cents do you have?
Intro to Data: Line Plots	Grade 2	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.

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Intro to Data: Pictographs & Bar Graphs	Grade 2	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and comparison problems using information presented in a bar graph.
Identify & Draw Shapes By Attributes	Grade 2	Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Sizes are compared directly or visually, not compared by measuring. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
Partition Shapes Into Equal Shares	Grade 2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of squares.
Partition Shapes Into Equal Shares	Grade 2	Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words halves, thirds, half of, a third of, etc.; and describe the whole as two halves, three thirds, or four fourths. Recognize that equal shares of identical wholes need not have the same shape.
Not currently covered.	Grade 3	Interpret the products of whole numbers, such as interpreting 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7.
Not currently covered.	Grade 3	By the end of Grade 3, know from memory all products of two one-digit numbers.
Not currently covered.	Grade 3	Assess the reasonableness of answers using mental computation and estimation strategies, including rounding.
Not currently covered.	Grade 3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (for example, 9 x 80 and 5 x 60) using strategies based on place value and properties of operations.
Not currently covered.	Grade 3	Understand a fraction a/b as the quantity formed by a parts of size 1/b. For example: 1/4 + 1/4 + 1/4 = 3/4.
Intro to Division	Grade 3	Interpret whole-number quotients of whole numbers. For example, interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into eight

		shares (partitive), or as a number of shares when 56 objects are partitioned into equal shares of eight objects each (quotative).
Intro to Division; Intro to Multiplication	Grade 3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities. For example, use drawings and equations with a symbol for the unknown number to represent the problem.
Intro to Division	Grade 3	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number—product, factor, quotient, dividend, or divisor—that makes the equation true in each of the equations 8 x ? = 48, 5 = ? ÷ 3, and 6 x 6 = ?
Intro to Division; Multiplication Properties (Commutative, Associative & Distributive)	Grade 3	Apply properties of operations as strategies to multiply and divide. For example: If 6 x 4 = 24 is known, then 4 x 6 = 24 is also known (commutative property of multiplication). 3 x 5 x 2 can be found by 3 x 5 = 15, then 15 x 2 = 30, or by 5 x 2 = 10, then 3 x 10 = 30 (associative property of multiplication). Knowing that 8 x 5 = 40 and 8 x 2 = 16, one can find 8 x 7 as 8 x (5 + 2) = (8 x 5) + (8 x 2) = 40 + 16 = 56 (distributive property). (Third grade students may, but need not, use formal terms for these properties.)
Intro to Division	Grade 3	Understand division as an unknown-factor problem. Understand the relationship between multiplication and division (multiplication and division are inverse operations). For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.
Intro to Division; Multiplication Comparisons	Grade 3	Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division or properties of operations. (For example, knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8.)
Intro to Division; Intro to Multiplication; Solve 2-Step Problems (All 4 Operations)	Grade 3	Solve two-step word problems using the four operations. Know how to perform operations in the conventional order when there are no parentheses to specify a particular order (Order of Operations). (Limit to problems posed with whole numbers and having whole number answers.)
Solve 2-Step Problems (All 4 Operations)	Grade 3	Represent two-step problems using equations with a letter standing for the unknown quantity. Create accurate equations to match word problems.

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Identify Number Patterns (In Arithmetic and the Multiplication Table)	Grade 3	Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that four times a number is always even, and explain why four times a number can be decomposed into two equal addends.
Rounding (Nearest 10 and 100)	Grade 3	Use place value understanding to round whole numbers to the nearest 10 or 100.
Addition & Subtraction Within 1,000	Grade 3	Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
Intro to Fractions Using the Number Line	Grade 3	Understand a fraction 1/b as the quantity formed by one part when a whole is partitioned into b equal parts.
Intro to Fractions Using the Number Line	Grade 3	Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line.
Intro to Fractions Using the Number Line	Grade 3	Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.
Equivalent Fractions	Grade 3	Understand two fractions as equivalent if they are the same size, or the same point on a number line.
Equivalent Fractions	Grade 3	Recognize and generate simple equivalent fractions, such as 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent by using a visual fraction model, for example.
Intro to Fractions Using the Number Line	Grade 3	Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. For example, express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.
Compare Non-Equivalent Fractions	Grade 3	Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer

		to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, for example, by using a visual fraction model.
Measure Elapsed Time; Tell Time (Nearest Minute)	Grade 3	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, for example, by representing the problem on a number line diagram.
Measure Mass & Volume (Metric System)	Grade 3	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), milliliters (ml), and liters (l). (Excludes compound units such as cubic centimeters [cc or cm3] and finding the geometric volume of a container.) Add, subtract, multiply, or divide to solve one-step word problems involving masses of objects or volumes of liquids that are given in the same units, for example, by using drawings (such as a beaker with a measurement scale) to represent the problem. (Excludes multiplicative comparison problems.)
Scaled Picture Graphs & Bar Graphs	Grade 3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent five pets.
Line Plots with Fractional Measurements	Grade 3	Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot where the horizontal scale is marked off in appropriate units-whole numbers, halves, or quarters.
Intro to Finding Area	Grade 3	A square with side length one unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.
Intro to Finding Area	Grade 3	A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.
Intro to Finding Area	Grade 3	Measure area by counting unit squares (square centimeters, square meters, square inches, square feet, and improvised units).

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Intro to Finding Area	Grade 3	Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.
Intro to Finding Area	Grade 3	Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real-world and mathematical problems, and represent whole number products as rectangular areas in mathematical reasoning.
Multiplication Properties (Commutative, Associative & Distributive)	Grade 3	Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a x b and a x c. Use area models to represent the distributive property in mathematical reasoning.
Intro to Finding Area	Grade 3	Recognize area as additive. Find areas of rectilinear figures by decomposing them into non- overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real-world problems.
Introduction to Perimeter	Grade 3	Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
Intro to Quadrilaterals and their Attributes	Grade 3	Understand that shapes in different categories (for example, rhombuses, rectangles, and others) may share attributes (for example, having four sides), and that the shared attributes can define a larger category (for example, quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
Partition Shapes Into Equal Shares	Grade 3	Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into four parts with equal area, and describe the area of each part as 1/4 of the area of the shape.
Not currently covered.	Grade 4	Assess the reasonableness of answers using mental computation and estimation strategies, including rounding.

Not currently covered.	Grade 4	Understand that when an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts.
Multiplication Comparisons	Grade 4	Interpret a multiplication equation as a comparison (for example, interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.
Multiplication Comparisons	Grade 4	Multiply or divide to solve word problems involving multiplicative comparison, for example, by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
Solve 2-Step Problems (All 4 Operations)	Grade 4	Represent these problems using equations with a letter standing for the unknown quantity.
Find Factor Pairs Within 100	Grade 4	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.
Generate Number Patterns (Sequences That Follow a Given Rule)	Grade 4	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.
Numbers in Expanded & Word Form (1,000 & Beyond)	Grade 4	Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.
Numbers in Expanded & Word Form (1,000 & Beyond)	Grade 4	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

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Rounding (Nearest 1,000 & Beyond)	Grade 4	Use place value understanding to round multi-digit whole numbers to any place.
Add & Subtract Using The Standard Algorithm	Grade 4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.
Multiplying Up To 4 Digits (Area Model)	Grade 4	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
Intro to Remainders in a Division Problem	Grade 4	Find whole-number quotients and remainders with up to four-digit dividends and one-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.
Equivalent Fractions	Grade 4	Explain why a fraction a/b is equivalent to a fraction (n x a)/(n x b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves4 are the same size. Use this principle to recognize and generate equivalent fractions.
Compare Non-Equivalent Fractions	Grade 4	Compare two fractions with different numerators and different denominators, for example, by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, for example, by using a visual fraction model.
Add & Subtract Fractions (Like Denominators)	Grade 4	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
Add & Subtract Fractions (Like Denominators)	Grade 4	Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, for example, by using a visual fraction model. For example, 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8; 2 1/8 = 8/8 + 8/8 + 1/8.

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Add & Subtract Fractions (Like Denominators)	Grade 4	Add and subtract mixed numbers with like denominators, for example, by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. For example, 3 1/4 + 2 1/4 = 13/4 + 9/4 = 22/4; 3 1/4 + 2 1/4 = (3+ 2) + (1/4 + 1/4) = 5 + 2/4 = 5 2/4, which is equivalent to 22/4.
Add & Subtract Fractions (Like Denominators)	Grade 4	Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, for example, by using visual fraction models and equations to represent the problem.
Multiplying Fractions by Whole Numbers	Grade 4	Understand a fraction a/b as a multiple of 1/b. For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).
Multiplying Fractions by Whole Numbers	Grade 4	Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5), recognizing this product as 6/5. (In general, n x (a/b) = (n x a)/b).
Multiplying Fractions by Whole Numbers	Grade 4	Solve word problems involving multiplication of a fraction by a whole number (for example, by using visual fraction models and equations to represent the problem). For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be five people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?
Introduction to Decimals (Tenths & Hundredths)	Grade 4	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.
Introduction to Decimals (Tenths & Hundredths)	Grade 4	Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100, describe a length as 0.62 meters; locate 0.62 on a number line diagram.
Introduction to Decimals (Tenths & Hundredths)	Grade 4	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the

		results of comparisons with the symbols >, =, or <, and justify the conclusions, for example, by using a visual model.
Convert Units of Measurement	Grade 4	Know relative sizes of measurement units within each system of units (standard and metric), including kilometers, meters, and centimeters; liters and milliliters; kilograms and grams; pounds and ounces; hours, minutes, and seconds. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. For example, know that one foot is 12 times as long as one inch. Express the length of a four-foot snake as 48 inches. Know that one meter is 100 times as long as one centimeter. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36)…
Convert Units of Measurement	Grade 4	Include problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit.
Convert Units of Measurement	Grade 4	Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
Intro to Finding Area; Introduction to Perimeter	Grade 4	Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.
Line Plots with Fractional Measurements	Grade 4	Make a line plot to display a data set of measurements in fractions of a unit (halves, quarters, and eighths). Solve problems involving addition and subtraction with like denominators of fractions by using information presented in line plots. For example, use a line plot to find and interpret the difference in length between the longest and shortest pencils in a classroom.
Intro to Angles	Grade 4	Understand that an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure other angles.

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Intro to Angles	Grade 4	Understand that an angle that turns through n one-degree angles is said to have an angle measure of n degrees.
Intro to Angles	Grade 4	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
Intro to Angles	Grade 4	Solve addition and subtraction problems to find unknown angles on a diagram in real-world and mathematical problems, for example by using an equation with a symbol for the unknown angle measure.
Intro to Angles; Lines, Line Segments, & Rays	Grade 4	Draw points, lines, line segments, rays, angles (right, acute, and obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
Intro to Quadrilaterals and their Attributes	Grade 4	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
Lines of Symmetry	Grade 4	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.
Not currently covered.	Grade 5	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.
Introduction to Order of Operations	Grade 5	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
Introduction to Order of Operations	Grade 5	Write simple expressions that record calculations with numbers. For example, use 2 x (8+7) to express the calculation "add 8 and 7, then multiply by 2."

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Introduction to Order of Operations	Grade 5	Interpret numerical expressions without evaluating them. For example, use conceptual understanding of multiplication to interpret 3 x (18939 + 921) as being three times as large as 18932 + 921 without calculating the indicated sum or product.
Generate Number Patterns (Sequences That Follow a Given Rule)	Grade 5	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.
Numbers in Expanded & Word Form (1,000 & Beyond)	Grade 5	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.
Powers of 10	Grade 5	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.
Decimals to the Thousandths	Grade 5	Read and write decimals to thousandths using base-ten numerals, number names, and expanded form. For example, 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000).
Decimals to the Thousandths	Grade 5	Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
Decimals to the Thousandths	Grade 5	Use place value understanding to round decimals to any place.
Multiplication Using The Standard Algorithm	Grade 5	Fluently multiply multi-digit whole numbers using the standard algorithm.
Intro to Remainders in a Division Problem	Grade 5	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.
Solve Problems with Decimals (Using Models)	Grade 5	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. In this standard, dividing decimals is limited to a whole number dividend with a decimal divisor or a decimal dividend with a whole number divisor. Compare the value of the quotient on the basis of the values of the dividend and divisor.
Add & Subtract Fractions (Unlike Denominators)	Grade 5	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.)
Add & Subtract Fractions (Unlike Denominators)	Grade 5	Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by, for example, 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 2/5 + 1/2 = 3/7 as an incorrect result, by observing that 3/7 < 1/2.
Interpreting Fractions as Division	Grade 5	Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve real-world problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, through the use of visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing three by four, noting that 3/4 multiplied by four equals three, and that when three wholes are shared equally among four people each person has a share of size 3/4. If nine 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?
Multiplying Fractions by Fractions	Grade 5	Interpret the product (a/b) x q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a x q ÷ b using a visual fraction model. For example, use a fraction model to show (2/3) x 4 = 8/3, and create a story

		context for this equation. Do the same with (2/3) x (4/5) = 8/15. (In general, (a/b) x (c/d) = ac/bd.)
Multiplying Fractions by Fractions	Grade 5	Compare 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. For example, the products of expressions such as 5 x 3 or ½ x 3 can be interpreted in terms of a quantity, three, and a scaling factor, five or ½. Thus in addition to knowing that 5 x 3 = 15, they can also say that 5 x 3 is five times as big as three, without evaluating the product. Likewise they see ½ x 3 as half the size of three.
Multiplying Fractions by Fractions	Grade 5	Explain why multiplying a given number by a fraction greater than one results in a product greater than the given number (recognizing multiplication by whole numbers greater than one as a familiar case); explain why multiplying a given number by a fraction less than one results in a product smaller than the given number; and relate the principle of fraction equivalence. For example, 6/10 = 2x3)/(2x5). In general, a/b = (n x a)/(n x b) has the effect of multiplying a/b by one.
Multiplying Fractions by Fractions	Grade 5	Solve real-world problems involving multiplication of fractions and mixed numbers, for example, by using visual fraction models or equations to represent the problem.
Division with Unit Fractions & Whole Numbers	Grade 5	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) x 4 = 1/3.
Division with Unit Fractions & Whole Numbers	Grade 5	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 x (1/5) = 4.
Division with Unit Fractions & Whole Numbers	Grade 5	Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, for example, by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if three people share 1/2 lb. of chocolate equally? How many 1/3-cup servings are in two cups of raisins?

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Convert Units of Measurement	Grade 5	Convert among different-sized standard measurement units within a given measurement system (for example, convert 5 cm to 0.05 m); use these conversions in solving multi-step, real-world problems.
Line Plots with Fractional Measurements	Grade 5	Make a line plot to display a data set of measurements in fractions of a unit (halves, quarters, eighths). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given graduated cylinders with different measures of liquid in each, find the amount of liquid each cylinder would contain if the total amount in all the cylinders were redistributed equally.
Calculate Volume (l x w x h)	Grade 5	A cube with side length one unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
Calculate Volume (l x w x h)	Grade 5	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.
Calculate Volume (l x w x h)	Grade 5	Measure volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units.
Calculate Volume (l x w x h)	Grade 5	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, for example, to represent the associative property of multiplication.
Calculate Volume (l x w x h)	Grade 5	Apply the formulas V = l x w x h and V = b x 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.
Calculate Volume (l x w x h)	Grade 5	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.

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Understanding the Basic Coordinate Plane	Grade 5	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 zero on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates.
Understanding the Basic Coordinate Plane	Grade 5	Using quadrant one on the coordinate plane, understand that the first number in a coordinate pair indicates how far to travel from the origin in the direction of the horizontal axis, and the second number indicates how far to travel in the direction of the vertical axis, with the convention that the names of the two axes and the coordinates correspond (x-axis and x-coordinate, y-axis and y-coordinate).
Understanding the Basic Coordinate Plane	Grade 5	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.
Classify Shapes in a Hierarchy (Quadrilaterals & Triangles)	Grade 5	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 all squares are rectangles, so all squares have four right angles.
Classify Shapes in a Hierarchy (Quadrilaterals & Triangles)	Grade 5	Classify two-dimensional figures in a hierarchy based on properties.
Not currently covered.	Grade 6	Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.
Not currently covered.	Grade 6	Fluently divide multi-digit decimals using the standard algorithm, limited to a whole number dividend with a decimal divisor or a decimal dividend with a whole number divisor.
Not currently covered.	Grade 6	Find the volume of a right rectangular prism with appropriate unit fraction edge lengths by packing it with cubes of the appropriate unit fraction edge lengths (for example, 3½ x 2 x 6), and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = lwh and V = bh to find volumes of right

		rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. (Note: Model the packing using drawings and diagrams.)
Intro to Ratios	Grade 6	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. The following are examples of ratio language: “The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every two wings there was one beak.” “For every vote candidate A received, candidate C received nearly three votes.”
Unit Rates	Grade 6	Understand the concept of a unit rate a/b associated with a ratio a:b with b ? 0, and use rate language in the context of a ratio relationship. The following are examples of rate language: "This recipe has a ratio of four cups of flour to two cups of sugar, so the rate is two cups of flour for each cup of sugar.� ��We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger.� (In sixth grade, unit rates are limited to non-complex fractions.)
Intro to Ratios	Grade 6	Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
Unit Rates	Grade 6	Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took four hours to mow eight lawns, how many lawns could be mowed in 32 hours? What is the hourly rate at which lawns were being mowed?
Percents	Grade 6	Find a percent of a quantity as a rate per 100. Solve problems involving finding the whole, given a part and the percent. (For example, 30% of a quantity means 30/100 times the quantity.)
Dividing Fractions by Fractions	Grade 6	Compute quotients of fractions by fractions, for example, by applying strategies such as visual fraction models, equations, and the relationship between multiplication and division, to represent problems.
Dividing Fractions by Fractions	Grade 6	Solve real-world problems involving division of fractions by fractions. For example, how much chocolate will each person get if three people share 1/2 pound of chocolate

		equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mile and area 1/2 square mile?
Dividing Fractions by Fractions	Grade 6	Explain the meaning of quotients in fraction division problems. For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.)
Long Division (Standard Algorithm for Division)	Grade 6	Fluently divide multi-digit numbers using the standard algorithm.
Standard Algorithm with Decimals (All 4 Operations)	Grade 6	Solve division problems in which both the dividend and the divisor are multi-digit decimals; develop the standard algorithm by using models, the meaning of division, and place value understanding.
Greatest Common Factor & Least Common Multiple	Grade 6	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor. For example, express 36 + 8 as 4(9 + 2).
Intro to Negative Numbers	Grade 6	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (for example, temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of zero in each situation.
Intro to Negative Numbers	Grade 6	Recognize opposite signs of numbers as indicating locations on opposite sides of zero on the number line; recognize that the opposite of the opposite of a number is the number itself. For example, -(-3) = 3, and zero is its own opposite.
Use All 4 Quadrants of the Coordinate Plane	Grade 6	Understand that the signs of numbers in ordered pairs indicate their location in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

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Use All 4 Quadrants of the Coordinate Plane	Grade 6	Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
Intro to Negative Numbers	Grade 6	Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right.
Intro to Negative Numbers	Grade 6	Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3° C > –7° C to express the fact that –3° C is warmer than –7° C.
Intro to Negative Numbers	Grade 6	Understand the absolute value of a rational number as its distance from zero on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world context. For example, for an account balance of –30 dollars, write |–30|= 30 to describe the size of the debt in dollars.
Intro to Negative Numbers	Grade 6	Distinguish comparisons of absolute value from statements about order. For example: Recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.
Use All 4 Quadrants of the Coordinate Plane	Grade 6	Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same x-coordinate or the same y-coordinate.
Whole Number Exponents	Grade 6	Write and evaluate numerical expressions involving whole-number exponents.
Intro to Algebraic Expressions	Grade 6	Write expressions that record operations with numbers and with letters representing numbers. For example, express the calculation "Subtract y from 5" as 5 – y and express "Jane had $105.00 in her bank account. One year later, she had x dollars more. Write an expression that shows her new balance" as $105.00 + x.
Intro to Algebraic Expressions	Grade 6	Identify parts of an expression using mathematical terms (for example, sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a

		single entity and a sum of two terms. For example, describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.
Intro to Algebraic Expressions	Grade 6	Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, applying the Order of Operations when there are no parentheses to specify a particular order. For example, use the formulas V = s^3 and A = 6s^2 to find the volume and surface area of a cube with sides of length s = 1/2.
Intro to Algebraic Expressions	Grade 6	Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression 3(2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6(4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.
Intro to Algebraic Expressions	Grade 6	Identify when two expressions are equivalent. For example, the expressions y + y + y and 3y are equivalent because they name the same number, regardless of which number y represents.
Find Solutions to Algebraic Inequalities	Grade 6	Understand solving an equation or inequality as a process of answering the question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
Intro to Algebraic Expressions; Proportional Relationships; Solve Algebraic Equations (1-step)	Grade 6	Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
Solve Algebraic Equations (1-step)	Grade 6	Solve real-world and mathematical problems by writing and solving equations of the form x + a = b and ax = b for cases in which a, b and x are all non-negative rational numbers.
Find Solutions to Algebraic Inequalities	Grade 6	Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x <

		c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.
Proportional Relationships	Grade 6	Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.
Area of Polygons (Using Decomposition)	Grade 6	Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing and decomposing into rectangles, triangles and/or other shapes; apply these techniques in the context of solving real-world and mathematical problems.
Area of Polygons (Using Decomposition)	Grade 6	Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same x coordinate or the same y coordinate. Apply these techniques in the context of solving real-world and mathematical problems.
Surface Area Using Nets (Prisms & Pyramids)	Grade 6	Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.
Histograms & Box Plots; Mean, Median & Mode	Grade 6	Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students ages
Histograms & Box Plots; Mean, Median & Mode	Grade 6	Understand that a set of data collected to answer a statistical question has a distribution that can be described by its center, spread/range and overall shape.

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Histograms & Box Plots; Mean, Median & Mode	Grade 6	Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
Histograms & Box Plots	Grade 6	Display numerical data in plots on a number line, including dot plots, histograms and box plots. Choose the most appropriate graph/plot for the data collected.
Histograms & Box Plots; Mean, Median & Mode	Grade 6	Reporting the number of observations.
Histograms & Box Plots; Mean, Median & Mode	Grade 6	Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
Histograms & Box Plots; Mean, Median & Mode	Grade 6	Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations (for example, outliers) from the overall pattern with reference to the context in which the data were gathered.
Histograms & Box Plots; Mean, Median & Mode	Grade 6	Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
Not currently covered.	Grade 7	Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.
Not currently covered.	Grade 7	Design and use a simulation to generate frequencies for compound events. For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?
Unit Rates	Grade 7	Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. For example, if a person walks ½ mile in each ¼ hour, compute the unit rate as the complex fraction ½/¼ miles per hour, equivalently 2 miles per hour.

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Proportional Relationships	Grade 7	Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.
Proportional Relationships	Grade 7	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
Proportional Relationships	Grade 7	Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.
Proportional Relationships; Unit Rates	Grade 7	Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.
Percent Change	Grade 7	Use proportional relationships to solve multi-step ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.
Add & Subtract with Negative Numbers	Grade 7	Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.
Add & Subtract with Negative Numbers	Grade 7	Understand p + q as the number located a distance |q| from p in the positive or negative direction, depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.
Add & Subtract with Negative Numbers	Grade 7	Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (–q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.
Add & Subtract with Negative Numbers	Grade 7	Apply properties of operations as strategies to add and subtract rational numbers.
Multiply & Divide with Negative Numbers	Grade 7	Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the

		distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
Multiply & Divide with Negative Numbers	Grade 7	Understand that integers can be divided, provided the divisor is not zero, and that every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then –(p/q) = (–p)/q = p/(–q). Interpret quotients of rational numbers by describing real-world contexts.
Multiply & Divide with Negative Numbers	Grade 7	Apply properties of operations as strategies to multiply and divide rational numbers.
Irrational Numbers; Long Division (Standard Algorithm for Division)	Grade 7	Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.
Add & Subtract with Negative Numbers; Multiply & Divide with Negative Numbers	Grade 7	Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.
Intro to Algebraic Expressions	Grade 7	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
Intro to Algebraic Expressions	Grade 7	Understand that rewriting an expression in different forms in a problem context can shed light on the problem, and how the quantities in it are related. For example, a + 0.05a = 1.05a means that “increase by 5%” is the same as “multiply by 1.05.”
Percent Change	Grade 7	Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form, convert between forms as appropriate, and assess the reasonableness of answers using mental computation and estimation strategies. For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.

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Solve Algebraic Equations (2-step)	Grade 7	Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?
Find Solutions to Algebraic Inequalities	Grade 7	Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.
Scale Drawings (Using Scale Factor)	Grade 7	Solve problems involving scale drawings of geometric figures, such as computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
How Many Triangles Can You Make? (Given Conditions)	Grade 7	Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.
Area & Circumference of Circles	Grade 7	Know the formulas for the area and circumference of a circle, and solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
Angle Relationships in Triangles and Transversals	Grade 7	Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write, and use them to solve simple equations for an unknown angle in a figure.
Area of Polygons (Using Decomposition); Area of Triangles & Quadrilaterals (Using Formulas); Surface Area (Using Formulas)	Grade 7	Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.
Statistics: Random Samples & Comparing Data Sets	Grade 7	Understand that statistics can be used to gain information about a population by examining a sample of the population, and that generalizations about a population from

		a sample are valid only if the sample is representative of that population. Understand that random sampling is more likely to produce representative samples and support valid inferences.
Statistics: Random Samples & Comparing Data Sets	Grade 7	Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.
Statistics: Random Samples & Comparing Data Sets	Grade 7	Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, estimating the difference between the centers by expressing it as a multiple of a measure of variability. For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, approximately twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.
Statistics: Random Samples & Comparing Data Sets	Grade 7	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. For example, decide whether the words in a chapter of a seventh grade science book are generally longer than the words in a chapter of a fourth grade science book.
Probability: Single Events	Grade 7	Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around ½ indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
Probability: Single Events	Grade 7	Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. For example, when rolling a number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times.

Probability: Single Events	Grade 7	Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.
Probability: Single Events	Grade 7	Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?
Probability: Compound Events	Grade 7	Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
Probability: Compound Events	Grade 7	Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.
Not currently covered.	Grade 8	Understand how to perform operations and simplify radicals with emphasis on square roots.
Not currently covered.	Grade 8	Solve single-variable absolute value equations.
Not currently covered.	Grade 8	Solve real-world and mathematical problems leading to two linear equations in two variables graphically. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.
Not currently covered.	Grade 8	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table.
Irrational Numbers	Grade 8	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers, show that the decimal

		expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number.
Irrational Numbers	Grade 8	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.
Integer Exponents	Grade 8	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 3^2 × 3^-5 = 3^–3 = 1/3^3 = 1/27.
Square Roots & Cube Roots	Grade 8	Use square root and cube root symbols to represent solutions to equations of the form x^2 = p and x^3 = p, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational.
Scientific Notation	Grade 8	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3 × 10^8 and the population of the world as 7 × 10^9, and determine that the world population is more than 20 times larger.
Scientific Notation	Grade 8	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
Graphing Linear Equations: Slope & y-intercept (y= mx + b)	Grade 8	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.

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Graphing Linear Equations: Slope & y-intercept (y= mx + b)	Grade 8	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.
Determine The Number of Solutions for Linear Equations	Grade 8	Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).
Determine The Number of Solutions for Linear Equations	Grade 8	Solve single-variable linear equations and inequalities with rational number coefficients, including equations and inequalities whose solutions require expanding expressions using the distributive property and collecting like terms.
Solve Systems of Equations	Grade 8	Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously.
Solve Systems of Equations	Grade 8	Solve systems of two linear equations in two variables graphically, approximating when solutions are not integers and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.
Intro to Functions	Grade 8	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. (Function notation is not required in grade 8.)
Intro to Functions	Grade 8	Compare properties of two functions, each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.
Graphing Linear Equations: Slope & y-intercept (y= mx + b)	Grade 8	Interpret the equation y = mx + b as defining a linear function whose graph is a straight line; give examples of functions that are not linear. For example, the function A = s^2,

		giving the area of a square as a function of its side length, is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line.
Graphing Linear Equations: Slope & y-intercept (y= mx + b)	Grade 8	Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
Intro to Functions	Grade 8	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
Transformations: Reflections & Translations; Transformations: Rotations & Dilations	Grade 8	Lines are taken to lines, and line segments to line segments of the same length.
Transformations: Reflections & Translations; Transformations: Rotations & Dilations	Grade 8	Angles are taken to angles of the same measure.
Transformations: Reflections & Translations; Transformations: Rotations & Dilations	Grade 8	Parallel lines are taken to parallel lines.
Transformations: Reflections & Translations; Transformations: Rotations & Dilations	Grade 8	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.
Transformations: Reflections & Translations; Transformations: Rotations & Dilations	Grade 8	Observe that orientation of the plane is preserved in rotations and translations, but not with reflections. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

Transformations: Reflections & Translations; Transformations: Rotations & Dilations	Grade 8	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.
Angle Relationships in Triangles and Transversals	Grade 8	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.
Pythagorean Theorem	Grade 8	Explore and explain proofs of the Pythagorean Theorem and its converse.
Pythagorean Theorem	Grade 8	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
Pythagorean Theorem	Grade 8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
Volume of Cylinders, Cones & Spheres	Grade 8	Know the formulas for the volumes of cones, cylinders, and spheres, and use them to solve real-world and mathematical problems.
Scatter Plots (Displaying Bivariate Data)	Grade 8	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
Scatter Plots (Displaying Bivariate Data)	Grade 8	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.
Scatter Plots (Displaying Bivariate Data)	Grade 8	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional

		hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. (Calculating equations for a linear model is not expected in grade 8.)