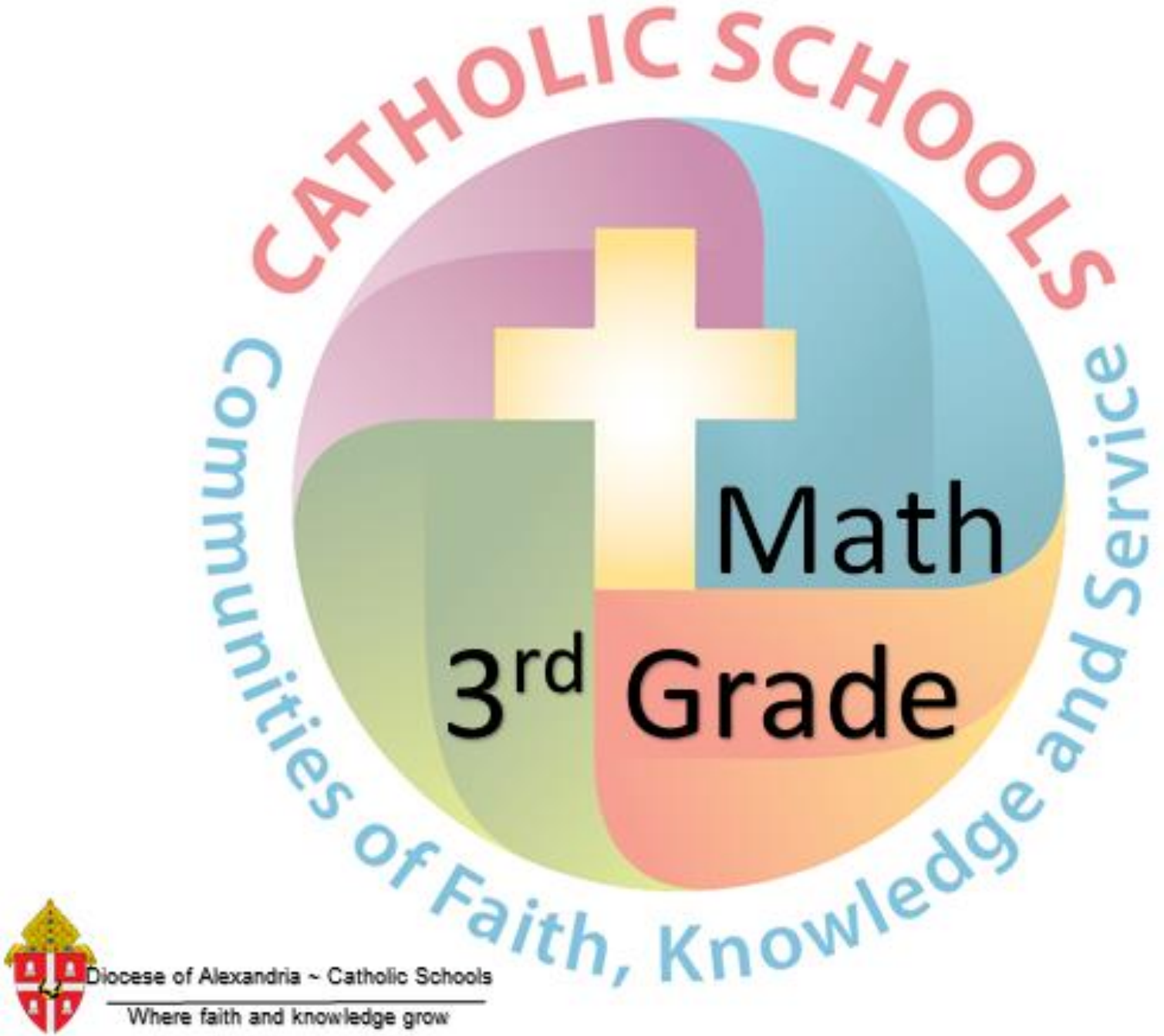

Diocese of Alexandria ~ Catholic Schools

Where faith and knowledge grow

DIOCESE OF ALEXANDRIA

As the Diocese of Alexandria seeks to provide a comprehensive learning environment, we are charged to "Teach More" by showing how all learning flows from and relates to our Creator. In this way, we will give our teaching a deeper meaning and purpose than simply the content itself. With this as our goal, the Catholic Schools Office has intertwined our selected curricular standards with the Catholic Standards developed by the Cardinal Newman Society. Through the merging of these two curricula, English Language Arts, Mathematics, Science, and Social Studies, teachers will be provided a roadmap to guide student's understanding and recognition of the relationship between learning and the connection to our God.

Thomas E. Roque, Sr.
Superintendent of Catholic Schools

DIOCESE OF ALEXANDRIA

Through comprehensive review of curricula from high performing districts throughout the United States in combination with parochial schools and Newman Cardinal Standards, the Curriculum Team for the Diocese of Alexandria has generated curricula for English Language Arts, Mathematics, Science, and Social Studies. The development of this framework is designed to guide the instructional path of teachers as they focus on the formation of their students in the areas of faith, academic excellence, responsible citizenry, and effective communication and collaboration. This process is a continuous improvement process with no defined beginning or end.

Barbara Forest, M.A..
Courtney Gistorb, M.Ed.

Denese Carter, M.Ed.
Tracy Bock, Ed.S.

Frameworks

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HOW TO USE

The frameworks are guides to instruction. The frameworks assist teachers in planning and pacing instruction. Specific dates or weeks that may be included in this document are for reference. Each school and teacher must consider the make-up of their students, focusing on the needs and strengths of each child when pacing and planning instruction.

The cycles for the year help pace instruction and ensure students have consistent coverage of the content. The duration (the suggested amount of time to spend on each cycle) does not accommodate for the scheduling of special events, inclement weather or school events. Teachers, with principal guidance, should adjust pacing as needed to accommodate for these events.

RESEARCH-BASED HIGH-YIELD PRACTICES FOR INSTRUCTION

These strategies have proven effective in affecting student learning and achievement gains. As you plan daily instruction, consider how and where to integrate these strategies into the instructional sequence. Effect size is in parentheses. Please refer to the works of John Hattie for a complete description of instructional effect size.

- Classroom Discussion/Discourse (.82)
- Teacher Clarity/making the learning visible with expectations for learning (.75)
- Reciprocal Teaching (.74)
- Feedback (.73)
- Metacognitive Strategies (.69)

Student focusAreas

Essential Questions
• *How does mathematics help us understand God's creation?* • *How does the use of math help us to understand the importance of clarity, reality and goodness?* • *How do we solve addition and subtraction sentences to solve real world problems with and without concrete objects?* • *What are the ethical, moral, and legal implications of Internet use?* • *How does the study of mathematics enable us to understand, communicate, and live Gospel values?*

Catholic School – Math Standards (CS.GS)	
CS.M.K6.GS.1	Demonstrate the mental habits of precise, determined, careful and accurate questioning, inquiry, and reasoning.
CS.M.K6.GS.2	Develop lines of inquiry (as developmentally appropriate) to understand why things are true and why they are false.
CS.M.K6.GS.3	Recognize the power of the human mind as both a gift from God and a reflection of Him in whose image and likeness we were made.
CS.M.K6.GS.4	Survey the truths about mathematical objects that are interesting in their own right and independent of human opinions.

3rd Grade - Mathematics

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Content & Practice Standards	Suggested Standards from Mathematical Practice	Critical Knowledge & Skills
3.OA.A.1. Interpret products of whole numbers, e.g., interpret 5 x 7 as the total number of objects in 5 groups of 7 objects each. For example, describe and/or represent a context in which a total number of objects can be expressed as 5 x 7.	MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics.	Concept(s): • Multiplication is a means to determine the total number of objects when there are a specific number of groups with the same number of objects in each group. • Multiplication gives the same result as repeated addition. • Product of two whole numbers is the total number of objects in a number of equal groups. Students are able to: • interpret products of whole numbers as a total number of objects. • use repeated addition to find the total number of objects arranged in an array and in equal groups and compare to the result of multiplication. • describe a context in which a total number of objects is represented by a product. • interpret the product in the context of a real-world problem. Learning Goal 1: Interpret products of whole numbers as repeated addition and as the total number of objects (up to 100) in equal groups or arrays.

3rd Grade - Mathematics

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Content & Practice Standards	Suggested Standards from Mathematical Practice	Critical Knowledge & Skills
3.OA.A.2. Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe and/or represent a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.	MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics.	Concept(s): • Division is a means to finding equal groups of objects. • Division gives the same result as repeated subtraction. • Quotient of two whole numbers is the number of objects in each share when objects are grouped equally into shares. • Quotient of two whole numbers is the number of shares when objects are grouped into equal shares of objects. Students are able to: • interpret division of whole numbers as a number of equal shares or the number of groups when objects are divided equally. • use repeated subtraction to find the number of shares or the number of groups and compare to the result of division. • describe a context in which the number of shares or number of groups is represented with division. • interpret the quotient in the context of a real-world problem. Learning Goal 2: Interpret the quotient as a set of objects (up to 100) partitioned equally into a number of shares and as the number of equal shares.

3rd Grade - Mathematics

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Content & Practice Standards	Suggested Standards from Mathematical Practice	Critical Knowledge & Skills
3.OA.A.3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics.	Concept(s): No new concept(s) introduced Students are able to: • multiply to solve word problems involving equal groups and arrays. • divide to solve word problems involving equal groups and arrays. • represent a word problem with a drawing showing equal groups, arrays, equal shares, and/or total objects. • represent a word problem with an equation. Learning Goal 3: Use multiplication and division within 100 to solve word problems by modeling equal groups or arrays and by writing equations to represent equal groups or arrays
3.OA.A.4. Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$ $5 = ? \div 3$ $6 \times 6 = ?$	MP 2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure.	Concept(s): • Equal sign indicates that the value of the numerical expressions on each side are the same. • Unknown in an equation (4 x __ = 20 and 20 = ? x 4) represents a number. • Unknown can be in different positions. • Letters can represent numbers in equations. Students are able to: • determine which operation is needed to find the unknown. • multiply or divide, within 100, to find the unknown whole number in a multiplication or division equation. Learning Goal 4: Determine the unknown in a division or multiplication equation relating 3 whole numbers (within 100).

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Content & Practice Standards	Suggested Standards from Mathematical Practice	Critical Knowledge & Skills
3.OA.B.6. Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.	MP.3 Construct viable arguments and critique the reasoning of others. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): • Division can be represented as a multiplication problem having an unknown factor. • Relationships between factors, products, quotients, divisors and dividends. Students are able to: • write division number sentences as unknown factor problems. • solve division of whole numbers by finding the unknown factor. Learning Goal 5: Solve division of whole numbers by representing the problem as an unknown factor problem.
3.MD.C.5. Recognize area as an attribute of plane figures and understand concepts of area measurement. 3.MD.C.5a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. 3.MD.C.5b. 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.	MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.	Concept(s): • Area is the amount of space inside the boundary of a (closed) figure. • Square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area. • Plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units area can be found by covering a figure with unit squares. • Area of a figure can be determined using unit squares of other dimensions.

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Content & Practice Standards	Suggested Standards from Mathematical Practice	Critical Knowledge & Skills
3.MD.C.6. Measure areas by counting unit squares (square cm, square m, square in, square ft, and non-standard units).		Students are able to: • count unit squares in order to measure the area of a figure. • use unit squares of centimeters, meters, inches, feet, and other units to measure area. Learning Goal 6: Measure areas by counting unit squares (cm^2, m^2, in^2, ft^2, and improvised units).
3.MD.C.7. Relate area to the operations of multiplication and addition. 3.MD.C.7a. 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. 3.MD.C.7b. 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.	MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): • Area of a rectangle is found by multiplying the side lengths. • Area of a rectangle may be found by tiling. Students are able to: • tile a rectangle with unit squares. • multiply side lengths of a rectangle to find its area and compare the result to that found by tiling the rectangle with unit squares. • solve real world and mathematical problems involving measurement. • represent a rectangular area as the product of whole-numbers. Learning Goal 7: Tile a rectangle to find its area and explain the relationship between tiling and multiplying side lengths to find the area of rectangles; solve real world problems by multiplying side lengths to find areas of rectangles.

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Content & Practice Standards	Suggested Standards from Mathematical Practice	Critical Knowledge & Skills
3.NBT.A.1. Round whole numbers to the nearest 10 or 100.	MP 2 Reason abstractly and quantitatively.	Concept(s): • Rounding leads to an approximation or estimate. Students are able to: • use number lines and a hundreds chart to explain rounding numbers to the nearest 10 and 100. • round a whole number to the nearest 10. • round a whole number to the nearest 100. Learning Goal 8: Round whole numbers to the nearest 10 or 100.
3.NBT.A.3. Multiply one-digit whole numbers by multiples of 10 in the range 10 to 90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.	MP 2 Reason abstractly and quantitatively.	Concept(s): • Multiples of 10 can be represented as a specific number of groups of ten. Students are able to: • multiply to determine the total number of groups of ten. • multiply one-digit whole numbers by multiples of 10. Learning Goal 9: Multiply one-digit whole numbers by multiples of 10 (10-90).

District/School Formative Assessment Plan	District/School Summative Assessment Plan
Formative assessment informs instruction and is ongoing throughout a unit to determine how students are progressing against the standards.	*Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*

3rd Grade – Mathematics

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.OA.A.3. Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics.	Concept(s): No new concept(s) introduced Students are able to: • multiply to solve word problems involving arrays and measurement quantities (area). • divide to solve word problems involving arrays and measurement quantities (area). • represent a word problem with a drawing or array. • represent a word problem with an equation. Learning Goal 1: Use multiplication and division within 100 to solve word problems involving measurement quantities (area) using drawings.
3.OA.B.5. Apply properties of operations as strategies to multiply and divide. *Examples: If $6 \times 4 = 24$ is known, then $4 \times 6 = 24$ is also known. (Commutative property of multiplication.) $3 \times 5 \times 2$ can be found by $3 \times 5 = 15$, then $15 \times 2 = 30$, or by $5 \times 2 = 10$, then $3 \times 10 = 30$. (Associative property of multiplication.) Knowing that $8 \times 5 = 40$ and $8 \times 2 = 16$, one can find 8×7 as $8 \times (5 + 2) = (8 \times 5) + (8 \times 2) = 40 + 16$*	MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): • Properties are rules about relationships between numbers. • Changing the order of factors does not change the result of multiplication. • Changing the order of numbers does change the result of division. • Area of a rectangle with whole-number side lengths a and $b + c$ is the sum of; $a \times b$ and $a \times c$. • Area models can be used to represent the distributive property. Students are able to: • multiply whole numbers using the commutative property as a strategy. • multiply whole numbers using the associative property as a strategy. • use tiling to show that the area of a rectangle with

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
= 56. *(Distributive property.)* ■ 3.MD.C.7. Relate area to the operations of multiplication and addition. 3.MD.C.7c. 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 $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.		whole-number side lengths a and $b + c$ is the sum of $a \times b$ and $a \times c$. • multiply whole numbers using the distributive property as a strategy. Learning Goal 2: Multiply one-digit whole numbers by applying the properties of operations (commutative, associative, and distributive properties). Learning Goal 3: Use tiling and an area model to represent the distributive property.
■ 3.MD.C.7. Relate area to the operations of multiplication and addition. 3.MD.C.7d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of	MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): • Areas of rectilinear figures can be determined by decomposing them into non-overlapping rectangles and adding the areas of the parts. Students are able to: • decompose rectilinear figures into non-overlapping rectangles. • find areas of non-overlapping rectangles and add to find the area of the rectilinear figure. • solve real world problems involving area of rectilinear figures.

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
the non-overlapping parts, applying this technique to solve real world problems.		Learning Goal 4: Solve real-world problems involving finding areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts.
3.OA.C.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	MP 2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): No new concept(s) introduced Students are able to: • multiply and divide within 40 with accuracy and efficiency. Learning Goal 5: Fluently multiply and divide within 40 using strategies such as the relationship between multiplication and division.
3.OA.D.8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the	Concept(s): • Letters or symbols in an equation represent an unknown quantity. Students are able to: • represent the solution to two-step word problems with equations. • use a symbol to represent an unknown in an equation.

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
the reasonableness of answers using mental computation and estimation strategies including rounding.	reasoning of others. MP 4. Model with mathematics MP.5 Use appropriate tools strategically. MP.6 Attend to precision.	• use rounding as an estimation strategy. • explain, using an estimation strategy, whether an answer is reasonable. Learning Goal 6: Write equations when solving two-step word problems, using a symbol for an unknown; find the value of an unknown in an equation involving any of the four operations and use estimation strategies to assess the reasonableness of answers.
3.OA.D.9. Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*	MP.3 Construct viable arguments and critique the reasoning of others. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): • Addition and multiplication tables reveal arithmetic patterns. • Patterns may be related to whether a number is even or odd. • Patterns exist in rows, columns and diagonals of addition tables and multiplication tables. • Decomposing numbers into equal addends may reveal patterns. Students are able to: • explain arithmetic patterns using properties of operations. Learning Goal 7: Recognize arithmetic patterns, including patterns in addition or multiplication tables, and explain the patterns using properties of operations.

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	MP 2 Reason abstractly and quantitatively.	Concept(s): No new concept(s) introduced Students are able to: • add and subtract two 2-digit whole numbers within 100 with accuracy and efficiency. Learning Goal 8: Fluently add and subtract (with regrouping) two 2-digit whole numbers within 100.
3.NF.A.1. Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. 3.G.A.2. 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 4 parts having equal area and describe the area of each part as 1/4 of the area of the shape.*	MP 2 Reason abstractly and quantitatively. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): • Wholes, when partitioned into equal parts, contain parts representing a unit fraction and each part is the same size. • Each part has the same name and represents a unit fraction (one-half, one-third, one-fourth, one-sixth, one-eighth). • The denominator is the total number of parts in the whole. • The numerator is the number of parts in a given fraction. • Fraction $1/b$ is the quantity formed by 1 part when a whole is partitioned into b equal parts. • Fraction a/b as the quantity formed by a parts of size $1/b$ (e.g. 10/2 is 10 parts and each part is of size ½). Students are able to: • partition rectangles, and other shapes, into halves, thirds, fourths, sixths and eighths. • identify the fractional name of each part. • model and explain that a fraction a/b is the quantity formed by a parts of size $1/b$ (For example, 10/2 is 10 parts and each part is of size ½).

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
		Learning Goal 9: Partition shapes into parts with equal areas and express the area of each part as a unit fraction; interpret the unit fraction 1/b as the quantity formed by 1 of b equal parts of a whole and the fraction a/b as the quantity formed by a parts of size 1/b.

District/School Formative Assessment Plan	District/School Summative Assessment Plan
Formative assessment informs instruction and is ongoing throughout a unit to determine how students are progressing against the standards.	*Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.NF.A.2. Understand a fraction as a number on the number line; represent fractions on a number line diagram. 3.NF.A.2a. 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. 3.NF.A.2b. 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. [Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.]	MP.5 Use appropriate tools strategically.	Concept(s): • Fraction is a number and has its place on the number line. • When placing unit fractions on a number line, the space between 0 and 1 is the whole and must be partitioned into equal parts. • Each part of a whole has the same size (one-half, one-third, one-fourth, one-sixth or one-eighth). • Parts of the whole that begin at 0 and ends at 1/b on the number line is the location of fraction 1/b (one-half, one-third, one-fourth, one-sixth, or one-eighth). Students are able to: • partition a number line into parts of equal sizes between 0 and 1 (halves, thirds, fourths sixths and eighths). • plot unit fractions on the number line. • identify multiple parts (of length 1/b) on the number line. • plot a fraction on the number line by marking off multiple parts of size 1/b. • plot fractions equivalent to whole numbers including 0 and up to 5. Learning Goal 1: Draw a number line depicting the position of 1/b (with b = 2, 3, 4, 6, or 8); represent the unit fraction ¼ on the number line by partitioning the number line between 0 and 1 into 4 equal lengths and name the point at the end of the first length as the position of the unit fraction ¼; apply the same method for placing points 1/2, 1/3, 1/6, and 1/8 on the number line. Learning Goal 2: Draw a number line depicting the position of fraction a/b (with b = 2, 4, 3, 6, or 8, and including whole numbers up to 5).

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.NF.A.3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size 3.NF.A.3a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. 3.NF.A.3b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model. 3.NF.A.3c. Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. *Examples: Express 3*	MP 2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.	Concept(s): • Comparing fractions, each referencing the same *whole*. • Fractions are equivalent if they are the same size. • Fractions are equivalent if they are at the same point on a number line. Students are able to: • find equivalent fractions (limited to fractions with denominators 2, 3, 4, 6, and 8). • explain why two fractions are equivalent; use a visual fraction model to support explanation. • write whole numbers as fractions. • identify fractions that are equivalent to whole numbers. • compare two fractions having the same numerator by reasoning about their size. • compare two fractions having the same denominator by reasoning about their size. • explain why comparing fractions that do not have the same whole is not valid (reason about their size and support reasoning with a model). • use <, =, and > symbols to write comparisons of fractions and justify conclusions with a visual fraction model. Learning Goal 3: Generate simple equivalent fractions, explain why they are equivalent, and support the explanation with visual fraction models; locate them on the number line. Learning Goal 4: Express whole numbers as fractions, identify fractions equivalent to whole numbers and locate them on the number line.

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
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. 3.NF.A.3d. 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, e.g., by using a visual fraction model. [Grade 3 expectations in this domain are limited to fractions with denominators 2, 3, 4, 6, and 8.]		Learning Goal 5: Compare two fractions having the same numerator; compare two fractions having the same denominator; reason about their size and use the symbols >, =, or < to record the comparison.

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.MD.A.1. 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. (e.g., by representing the problem on a number line diagram)	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): • Analog clocks represent hours as numbers and minutes are represented as tick marks. Students are able to: • tell time to the nearest minute using digital and analog clocks. • write time to the nearest minute using analog clocks. • choose appropriate strategies to solve real world problems involving time. • use the number line as a visual model to determine intervals of time as *jumps* on a number line. • measure time intervals. Learning Goal 6: Tell and write time to the nearest minute and solve word problems with addition and subtraction involving time intervals in minutes.
3.MD.A.2. Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units.	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision.	Concept(s): • Mass may be measured in grams and kilograms. • Mass is measured by weighing. • Volume may be measured in liters. • Volume may be measured with instruments such as beakers. Students are able to: • measure and read a scale to estimate volume. • measure and read a scale to estimate mass. • add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes. Learning Goal 7: Solve one step word problems by estimating and measuring volume and mass using appropriate tools and standard units of grams, kilograms, and liters.

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.G.A.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals.	MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): • Shapes in different categories share attributes. • Quadrilaterals are closed figures with four sides. • Rhombuses, rectangles, etc, and other quadrilaterals share attributes. Students are able to: • classify and sort shapes by attributes. • explain why rhombuses, rectangles, and squares are examples of quadrilaterals. • draw examples of quadrilaterals. Learning Goal 9: Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.
3.MD.D.8. 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.	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically.	Concept(s): • Perimeter of a figure is equivalent to the sum of the length of all of the sides. • Rectangles that have same perimeter can have different areas. • Rectangles that have same area can have different perimeters. Students are able to: • determine the perimeter of various plane shapes and irregular shapes given the side lengths. • determine the unknown side length give the perimeter and other sides. • show rectangles having the same perimeter and different areas.

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
		• show rectangles having different perimeters and the same area. Learning Goal 10: 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.
3.OA.C.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	MP 2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): No new concept(s) introduced Students are able to: • multiply and divide <u>within 100</u> with accuracy and efficiency. Learning Goal 8: Fluently multiply and divide <u>within 100</u> using strategies such as the relationship between multiplication and division.

District/School Formative Assessment Plan	District/School Summative Assessment Plan
Formative assessment informs instruction and is ongoing throughout a unit to determine how students are progressing against the standards.	*Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*

3rd Grade - Mathematics

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Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
☐ 3.MD.B.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 5 pets.*	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.4 Model with mathematics.	Concept(s): • Graphs organize information and contain labels. • Pictures and bars can represent numbers in graphs. • Different graphs may display different scales. Students are able to: • draw scaled picture graphs. • draw scaled bar graphs. • analyze, interpret and create bar graphs and pictographs in real world situations. • solve "how many more" and "how many less" problems using scaled bar graphs. Learning Goal 1: Draw scaled picture and scaled bar graphs to represent data with several categories. Solve one and two-step word problems using scaled bar graphs.
☐ 3.MD.B.4. 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.	MP 2 Reason abstractly and quantitatively. MP.5 Use appropriate tools strategically.	Concept(s): • Show measurements on a line plot displays the information in an organized way Students are able to: • measure length using rulers marked with inch, quarter inch and half inch • generate measurement data by measuring length and create a line plot of the data • accurately measure several small objects using a standard ruler and display findings on a line plot • display data on line plots with horizontal scales in whole numbers, halves, and quarters Learning Goal 2: Depict data measured in fourths and halves of an inch with a line plot with scales marked with appropriate units

3rd Grade - Mathematics

THE DIOCESE of ALEXANDRIA

Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.OA.C.7. Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	MP 2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.	Concept(s): No new concept(s) introduced Students are able to: • multiply and divide within 100 with accuracy and efficiency. Learning Goal 3: Fluently multiply and divide within 100 using strategies such as the relationship between multiplication and division.
3.OA.D.8. Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	MP.1 Make sense of problems and persevere in solving them. MP 2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP 4. Model with mathematics MP.5 Use appropriate tools strategically. MP.6 Attend to precision.	Concept(s): • A letter or variable in an equation represents an unknown quantity. Students are able to: • represent two-step word problems with equation(s) containing unknowns. • perform operations in the conventional order (no parentheses). • use rounding as an estimation strategy. • explain, using an estimation strategy, whether an answer is reasonable. Learning Goal 4: Write equation(s) containing an unknown and find the value of an unknown in an equation that is a representation of a two-step word problem (with any four operations); use estimation strategies to assess the reasonableness of answers.

3rd Grade - Mathematics

THE DIOCESE of ALEXANDRIA

Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills
3.NBT.A.2. Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	MP 2 Reason abstractly and quantitatively.	Concept(s): No new concept(s) introduced Students are able to: • add and subtract within 1000 with accuracy and efficiency. Learning Goal 5: Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
3.MD.C.7. Relate area to the operations of multiplication and addition. 3.MD.C.7d. 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.	MP.3 Construct viable arguments and critique the reasoning of others. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.	Concept(s): • Areas of rectilinear figures can be determined decomposing the them into non-overlapping rectangles and adding the areas of the parts. Students are able to: • decompose rectilinear figures into non-overlapping rectangles. • find areas of non-overlapping rectangles and add to find the area of the rectilinear figure. • solve real world problems involving area of rectilinear figures. Learning Goal 6: Solve real world problems involving finding areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts.

District/School Formative Assessment Plan	District/School Summative Assessment Plan
Formative assessment informs instruction and is ongoing throughout a unit to determine how students are progressing against the standards.	*Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.*

Operations and Algebraic Thinking (DOA.3.OA)

STANDARDS		ACT Reporting Category *ACT Knowledge and Skills*
Represent and solve problems involving addition and subtraction		
DOA.3.OA.A.1	Interpret products of whole numbers, e.g., interpret 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.	**Operations and Algebraic Thinking** **Justification and Explanation** **Modeling** Operations & Number relationships Whole Number Problem Solving
DOA.3.OA.A.2	Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as* 56 ÷ 8.	
DOA.3.OA.A.3	Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem	
DOA.3.OA.A.4	Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = □ ÷ 3, 6 × 6 = ?*	
Understand properties of multiplication and the relationship between multiplication and division		
DOA.3.OA.B.5	Apply properties of operations as strategies to multiply and divide.[1] *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 ×5 ×2 can be found by 3 ×5 = 15, then 15 ×2 =30, or by 5 ×2 = 10, then 3 ×10 = 30. (Associative property of multiplication.) Knowing that 8 ×5 = 40 and 8 ×2= 16, one can find 8 ×7 as 8 × (5 + 2) = (8 ×5) + (8 ×2) = 40 + 16 = 56. (Distributive property.)*	**Operations and Algebraic Thinking** **Justification and Explanation** **Modeling** Operations & Number relationships Whole Number Problem Solving
DOA.3.OA.B.6	Understand *division* as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8.*	
Multiply and divide within 100		
DOA.3.OA.C.7	Fluently *multiply* and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.	**Operations and Algebraic Thinking** **Justification and Explanation** **Modeling** Operations & Number relationships Whole Number Problem Solving

[1] Students need not use formal terms for these properties.

Operations and Algebraic Thinking (DOA.3.OA)		
STANDARDS		**ACT Reporting Category** ***ACT Knowledge and Skills***
Solve problems involving the four operations and identify and explain patterns in arithmetic		
DOA.3.OA.D.8	Solve two-step *word* problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.[2]	**Operations and Algebraic Thinking** **Justification and Explanation** **Modeling** Operations & Number relationships Whole Number Problem Solving
DOA.3.OA.D.9	Identify arithmetic *patterns* (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*	
Number and Operations in Base Ten (DOA.3.NBT)		
Use place value understanding and properties of operations to perform multi-digit arithmetic[3]		
DOA.3.NBT.A.1	Use place value understanding to round whole numbers to the nearest 10 or 100.	**Number and Operations in Base Ten** **Justification and Explanation** **Modeling** Whole Number Concepts Whole Number Operations
DOA.3.NBT.A.2	Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.	
DOA.3.NBT.A.3	Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80, 5×60) using strategies based on place value and properties of operations.	

[2] This standard is limited to problems posed with whole numbers and having whole-number answers; students should know how to perform operations in the conventional order when there are no parenthesis to specify a particular order (Order of Operatons).

[3] A range of algorithms may be used.

Number and Operations – Fractions (DOA.3.NF)

STANDARDS		ACT Reporting Category *ACT Knowledge and Skills*
Develop understanding of fractions as numbers		
DOA.3.NF.A.1	Understand a fraction 1/*b*, with denominators 2, 3, 4, 6, and 8, as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by *a* parts of size 1/*b*.	**Number and Operations Fractions** **Justification and Explanation** **Modeling** Fraction Concepts Fraction Problem Solving
DOA.3.NF.A.2	Understand a fraction with denominators 2, 3, 4, 6, and 8 as a number on a number line diagram.	
DOA.3.NF.A.2a	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.	
DOA.3.NF.A.2b	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.	
DOA.3.NF.A.3	Explain equivalence of fractions with denominators 2, 3, 4, 6, and 8 in special cases, and compare fractions by reasoning about their size.	
DOA.3.NF.A.3a	Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	
DOA.3.NF.A.3b	Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model.	
DOA.3.NF.A.3c	Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. *Examples: 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.*	
DOA.3.NF.A.3d	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, e.g., by using a visual fraction model.	

Measurement and Data (DOA.3.MD)		
STANDARDS		**ACT Reporting Category** ***ACT Knowledge and Skills***
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects		
DOA.3.MD.A.1	Understand time to the nearest minute.	**Measurement and Data** **Justification and Explanation** **Modeling** Unit Conversions Time and Money
DOA.3.MD.A.1a	Tell and write time to the nearest minute and measure time intervals in minutes, within 60 minutes, on an analog and digital clock.	
DOA.3.MD.A.1b	Calculate elapsed time greater than 60 minutes to the nearest quarter and half hour on a number line diagram.	
DOA.3.MD.A.1c	Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	
DOA.3.MD.A.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).[4] Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.[5]	
Represent and interpret data		
DOA.3.MD.B.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 5 pets.*	**Measurement and Data** **Justification and Explanation** **Modeling** Descriptive Statistics
DOA.3.MD.B.4	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.	

[4] Excludes compound units such as cm^3 and finding the geometric volume of a container.

[5] Excludes multiplicative comparison problems (problems involving notions of "times as much".

Measurement and Data (DOA.3.MD)		
Geometric measurement: understand concepts of area and relate area to multiplication and to addition		
DOA.3.MD.C.5	Recognize area as an attribute of plane figures and understand concepts of area measurement.	**Measurement and Data** **Geometry** **Justification and Explanation** **Modeling** Measurement of Figures
DOA.3.MD.C.5a	A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.	
DOA.3.MD.C.5b	A plane figure that can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.	
DOA.3.MD.C.6	Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	
DOA.3.MD.C.7	Relate area to the operations of multiplication and addition.	
DOA.3.MD.C.7a	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.	
DOA.3.MD.C.7b	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.	
DOA.3.MD.C.7c	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 $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.	
Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures		
DOA.3.MD.D.8	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.	**Measurement and Data** **Geometry** **Justification and Explanation** **Modeling** Measurement of Figures
Work with money		
DOA.3.MD.E.9	Solve word problems involving pennies, nickels, dimes, quarters, and bills greater than one dollar, using the dollar and cent symbols appropriately.	**Measurement and Data** **Justification and Explanation** **Modeling** Time and Money

Geometry (DOA.3.G)		
STANDARDS		**ACT Reporting Category** ***ACT Knowledge and Skills***
Reason with shapes and their attributes		
DOA.3.G.A.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.	**Geometry** **Justification and Explanation** **Modeling** Figures and Their Properties
DOA.3.G.A.2	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 4 parts with equal area, and describe the area of each part as $1/4$ of the area of the shape.*	