Grade: 4 Unit: 5	Measurement and Data	8 Weeks
Progression		
3rd Grade	Students solved problems involving measurement and estimations of intervals of time, liquid volumes, and masses of objects. Students worked with geometric measurement by understanding concepts of area and related area to multiplication and addition. Students represented and interpreted data. Students recognized perimeter as an attribute of plane figures and distinguished between linear and area measures.	
4th Grade	**Students will solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Students will represent and interpret data. Students will work with geometric measurement to understand concepts of angles and measure angles.**	
5th Grade	Students will use geometric measurement to understand concepts of volume and relate volume to multiplication and addition. Students will convert like measurement units within a given measurement system. Students will represent and interpret data.	

STUDENT LEARNING GOALS

Mathematics Standards *(Appendices A & B)*

4.MD.A.1: Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. 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 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...*

4.MD.A.2: Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

4.MD.A.3: 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*.

4.MD.B.4: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection*.

4.MD.C.5: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

- Math.4.MD.C.5.a-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 angles.
- Math.4.MD.C.5.b-An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

Math.4.MD.C.6: Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
Math.4.MD.C.7: Recognize angle measure as additive. 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. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Interdisciplinary Standards	
Technology Integration *(Appendix C)*	**21st Century Skills** *(Appendix D)*
IS1. Information Strategies IS2. Information Use	TCS1. Use of Information TCS5. Problem Solving

Key Vocabulary	
Review of key terms: **Convert** **Line plot**	**New terms:** **Angle** **Degree** **Right angle** **Acute angle** **Obtuse angle** **Protractor** **Vertex** **Ray** **Decompose**

Enduring Understandings

- I can convert measurements from a larger unit to a smaller unit within the same system.
- I can solve word problems involving intervals of time and money.
- I can solve word problems involving length, liquid volume, and mass.
- I can use formulas for perimeter and area to solve problems.
- I can solve problems involving fraction addition and subtraction that is based on data presented in a line plot.
- I can recognize an angle as a geometric shape and its' relationship to a circle.
- I can use a protractor to measure and draw angles.
- I can break apart an angle into smaller parts and can put together smaller angles to form one larger angle.
- I can use addition and subtraction to find unknown angles.

Essential Questions

- How can I express measurements in a larger unit in terms of a smaller unit?
- How can I use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money?
- How can I apply the area and perimeter formulas for rectangles? How can I solve problems involving addition and subtraction of fractions by using information presented in line plots?
- How does an angle relate to a circle?
- How can I measure and draw angles to an exact measurement? How can I solve addition and subtraction problems to find unknown angles on a diagram?

Assessment Plan

Summative Assessment(s)/Performance Based Assessments including 21st Century Learning	**Formative and Diagnostic Assessment(s)**
RCC Interim Assessment, Student p. 288-289 RCC Performance Task, Student p. 290	STAR Math Assessment (Fall) RCC Embedded Tasks and Assessments

Learning Plan Components

Text	**Ready Common Core Mathematics Instruction 4**, 2014, Curriculum Associates, ISBN: 978-0-7609-8637-0
Print	**Ready Common Core Mathematics Teacher Resource Book 4**, 2014, Curriculum Associates, ISBN: 978-0-7609-8644-8

Electronic	www.teacher-toolbox.com www.stratfordmath.wikispaces.com www.xtramath.org North Carolina Dept. of Instruction; http://maccss.ncdpi.wikispaces.net/Fourth+Grade Common Core Worksheets; http: //www.commoncoresheets.com/ Illustrative Math; http://www.illustrativemathematics.org/ Teaching Channel website; http://learnzillion.com https://www.georgiastandards.org/Common-Core/Common%20Core%20Frameworks/CCGPS_Math_4_Unit7Framework.pdf

Week 1	Students will: • Identify the units of measurement within a system including (km, m, cm; ft. in.; kg, g; lb., oz.; l, ml; hr., min, sec.) • Convert measurements from a larger unit to a smaller unit within the same system. • Create a conversion table showing equivalent measurements within the same system.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 23: Convert Measurements Teacher pages: 229-238 Student pages: 208-217	(From RCC Teacher Book and supplemental) Hands-On (p.231,238) Differentiated pages: 238 SFTE p.192A, 596A-599, 658A-661 Prerequisite teaching: SFTE p. 652A-653 SFTE p. 654A-655 SFTE p. 656A-657 GA Scaffolding Task: Worth the Weight GA Constructing Task: A Pound of What? GA Constructing Task: Exploring an Ounce	SF 4-2 (R P E PS) SF 10-11 (R P E PS) SF 11-12 (R P E PS) Prerequisite pages: SF 10-10 (R P E PS) SF 11-9 (R P E) SF 11-10 (R P E PS) SF 11-11 (R P E PS) CC Estimating Capacity (Review) CC Estimating Metric Length (Review) CC Converting American Lengths CC Converting Tables CC Converting Metric Capacity CC Converting Metric Distances	Video (5:59) https://learnzillion.com/lessons/2316-compare-and-convert-customary-units-of-length Video (5:49) https://learnzillion.com/lessons/2317-compare-and-convert-customary-units-of-weight Video (5:33) https://learnzillion.com/lessons/2571-compare-and-convert-metric-units-of-length Video (5:47) https://learnzillion.com/lessons/2631-compare-and-convert-metric-units-of-weight Video (6:25) https://learnzillion.com/lessons/2498-compare-and-convert-metric-units-of-volume
Week 2	Students will: • Determine which operation to use when solving word problems involving time and money. • Use the correct operation to solve word problems involving time and money.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 24: Time and Money Teacher pages: 239-248 Student pages: 218-227	(From RCC Teacher Book and supplemental) Hands-On (p. 241,244,248) Differentiated pages: 248	CC Finding Ending Time (Review) CC Determining Change Story Problems CC Determining Change CC Buying with Change	Teacher Toolbox (1 Tutorial, Elapsed Time to Minute) Video (6:16) https://learnzillion.com/lessons/2563-convert-time-units-to-solve-time-problems

Week 3	Students will: • Determine which operation to use when solving word problems involving length, liquid volume, and mass. • Use the correct operations to solve word problems involving length, liquid volume, and mass.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 25: Length, Liquid Volume, and Mass Teacher pages: 249-260 Student pages: 228-239	(From RCC Teacher Book and supplemental) Hands-On (p.251,254,260) Visual Model: 252 Differentiated pages: 260 GA Constructing Task: Too Heavy? Too Light? GA Constructing Task: More Punch, Please! GA Constructing Task: Water Balloon Fun	See Lesson 23 SF worksheets.	Teacher Toolbox (1 Tutorial, Solve Word Problems Involving Measurement) Video (6:49) https://learnzillion.com/lessons/2542-convert-measurements-to-solve-distance-problems Video (6:59) https://learnzillion.com/lessons/2548-convert-measurements-to-solve-volume-problems Video (6:26) https://learnzillion.com/lessons/2551-convert-measurements-to-solve-weight-problems Video (7:01) https://learnzillion.com/lessons/3212-solve-real-life-problems-using-operations-and-measurement-conversions

Week 4	Students will: • Use the formula for perimeter to solve problems. • Use the formula for area to solve problems.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 26: Perimeter and Area Teacher pages: 261-270 Student pages: 240-249	From RCC Teacher Book and supplemental) Hands-On (p. 263,265,266,270) Differentiated pages: 270 SFTE p.464A-467 SFTE p. 468A-471 SFTE p. 474A-475 N.C. Building a Pen for Your Dog GA Constructing Task: Perimeter and Area	SF 8-10 (R P E PS) SF 8-11 (R P E PS) SF 8-12 (R P E PS) CC Finding Perimeter and Area CC Finding Perimeter and Area (Story Problems) CC Finding Side Length (Given Area) CC Rectangles-Same Perimeter & Different Area CC Finding Side Length (Given Perimeter)	Teacher Toolbox (1 Tutorial, Understanding Area and Surface Area) Video (5:17) https://learnzillion.com/lessons/2374-use-area-models-to-find-the-area-of-rectangles Video (5:53) https://learnzillion.com/lessons/2535-find-the-area-of-a-rectangle-using-the-standard-formula Video (4:35) https://learnzillion.com/lessons/2942-find-the-perimeter-of-a-rectangle-using-an-area-model Video (5:13) https://learnzillion.com/lessons/3047-find-perimeter-using-the-standard-formula Video (6:39) https://learnzillion.com/lessons/3048-find-missing-side-lengths-using-the-formula-for-perimeter

Week 5	Students will: • Make a line plot that displays data in fractional units. • Solve addition problems by using a line plot. • Solve subtraction problems by using a line plot.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 27: Line Plots Teacher pages: 271-282 Student pages: 250-261	(From RCC Teacher Book and supplemental) Hands-On (p.273, 277, 279, 282) Visual Model: 274,278 Differentiated pages: 282 GA What's the Story?	Prerequisite/Reteach (introduction of line plots) SF 4-7 p. 206A (Mixed Numbers and Improper Fractions) SF 9-10 p. 530B – Labeling Above and Below CC Interpreting Line Plots (Review)	Teacher Toolbox (1 Tutorial, Interpreting Line Plots) Video (5:01) https://learnzillion.com/lessons/3187-create-a-line-plot-with-fractions-of-a-unit-with-like-denominators Video (7:08) https://learnzillion.com/lessons/3187-create-a-line-plot-with-fractions-of-a-unit-with-like-denominators Video (3:49) https://learnzillion.com/lessons/3476-interpret-data-on-a-line-plot-by-making-observations Video (3:51) https://learnzillion.com/lessons/3494-solve-word-problems-by-creating-and-interpreting-line-plots

Week 6	Students will: • Recognize an angle as a geometric shape. • Identify acute, right, and obtuse angles. • Recognize the relationship between an angle and a circle.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 28: Understand Angles Teacher pages: 283-290 Student pages: 262-267	(From RCC Teacher Book and supplemental) Hands on Activity: (p. 287) Differentiated pages: 290 SFTE p. 440A-443 GA Scaffolding Task: Which Wedge is Right? GA Scaffolding Task: Angle Tangle	CC Finding Angles by Degrees CC Finding Angles within Shapes CC Determining Angles Visually	*Video (3:21) https://learnzillion.com/lessons/2633-measure-full-and-half-rotations *Video (4:45) https://learnzillion.com/lessons/2635-measure-quarter-and-three-quarter-rotations *Video (6:03) https://learnzillion.com/lessons/2586-understand-and-measure-one-degree-angles *Video (5:43) https://learnzillion.com/lessons/2766-estimate-the-measure-of-an-angle-using-benchmark-and-one-degree-angles

Week 7	Students will: • Measure an angle correctly. • Draw an angle of a specific degree.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 29: Measure and Draw Angles Teacher pages: 291-300 Student pages: 268-277	(From RCC Teacher Book and supplemental) Hands-On (p. 293,296,300) Differentiated pages: 300 SFTE p. 440A-443 p. 443 see Enrichment GA Constructing Task: Guess My Angle!	CC Finding Angles CC Creating Angles CC Determining Angles with Protractors (1) CC Determining Angles with Protractors (2)	Teacher Toolbox (1 Tutorial, Using a Protractor) *Video (3:33) https://learnzillion.com/lessons/2907-introduction-to-protractors *Video (5:10) https://learnzillion.com/lessons/3010-measure-angles-to-the-nearest-10-by-reading-a-protractor *Video (5:23) https://learnzillion.com/lessons/2973-measure-angles-to-the-nearest-degree-with-protractors *Video (5:20) https://learnzillion.com/lessons/2913-sketch-angles-that-are-multiples-of-10-degrees-using-a-protractor *Video (6:56) https://learnzillion.com/lessons/3101-sketch-angles-that-are-not-multiples-of-10-degrees-using-a-protractor *Video (4:33) https://learnzillion.com/lessons/2616-solve-real-world-problems-involving-angle-measurement

Week 8	Students will: • Explain how one angle can be broken down into several smaller angles. • Explain how several smaller angles can be put together to form one large angle. • Solve addition and subtraction problems to find unknown angles.		
Lessons	**Tasks / Activities**	**Worksheets**	**Technology**
RCC Lesson 30: Add and Subtract with Angles Teacher pages: 301-312 Student pages: 278-287	(From RCC Teacher Book and supplemental) Hands-On (p.304,307,310) Visual Model: 306 Differentiated pages: 310 GA Constructing Task: Summing It Up	CC Finding Missing Angle	Teacher Toolbox (1 Tutorial, Angle Measurements) *Video (3:42) https://learnzillion.com/lessons/3270-compose-and-decompose-angles *Video (4:25) https://learnzillion.com/lessons/3254-find-unknown-angles-using-angle-properties *Video (4:33) https://learnzillion.com/lessons/3402-find-unknown-angles-using-diagrams *Video (5:54) https://learnzillion.com/lessons/3403-write-an-equation-to-solve-for-a-missing-angle-measure
Week 9	Students will: • Demonstrate mastery of unit objectives.		
Summative Assessment		**Performance Task**	
RCC Unit 5 Interim Assessment -Student p. 288-289 -Scoring Guide (p. 311)		RCC Unit 4 Performance Task -Student p. 290 -Rubric (p. 313)	