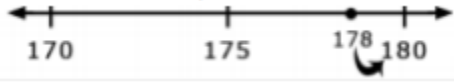


Unit 3 Title: Fluently Add and Subtract within 1,000, Data, Time and Perimeter		Estimated Time Frame: 38 days
<i>Essential Standards: 3.NBT.1, 3.NBT.2, 3.MD.1, Supporting Standards: 3.OA.9, 3.MD.3, 3.MD.8ab</i>		
Big Idea(s) CRA explanations for 3rd grade Unit 2		
<ul style="list-style-type: none"> In real life, we use computation every day. We need to be able to determine when it is appropriate to use mental math, paper and pencil or a calculator and use methods that make sense to ourselves and to others. We use operations of addition and subtraction throughout the day and should be able to use multiple strategies to determine if our thinking is reasonable. We must be able to apply addition in the context of perimeter and addition and subtraction when analyzing data displays. 		
Number Operations in Base Ten Progressions document Data progressions document		
Essential Question(s)	Common Preconceptions/Misconceptions:	
<ul style="list-style-type: none"> How can the perimeter be measured and found? What are procedures for adding and subtracting whole numbers with conceptual understanding? How can sums and differences be estimated and found mentally? What are ways to solve two step problems? How can data be represented, interpreted and analyzed? 	<p>-When using a ruler, students may struggle with starting at zero instead of the edge of the ruler. Students may also use the incorrect unit if the ruler has both inches and centimeters marked.</p> <p>-Many students believe addition means join together and subtraction means take away. One thing to be mindful of when working with subtraction sentences is to say "minus" or "subtract" when referring to the minus sign and not reading it as "take away." Also be sure to stay away from the idea of key words when providing story problems for students. Reinforce the idea of understanding what the problem is asking by</p>	

	<p>having students restate what is happening in the problem in their own words, then act it out with appropriate manipulatives.</p> <p>The Problem with Key Words</p> <ul style="list-style-type: none">-Misconceptions about addition and subtraction are built when students are only exposed to specific types of problem structures. Frequent exposure to all types of problems is necessary. (See problem types chart)-Students often think the size of a picture in a pictograph relates to the quantity. They will frequently assume all symbols =1 in pictographs based on their experiences in the primary grades. Likewise, students may assume that all intervals on a bar graph are equal to 1.-Students often confuse the minute hand and hour hand of the clock and frequently struggle with various analog clocks in the real world that don't have numbers or use roman numerals instead.-When reading times, students confuse the clock number with the number of minutes passed (ie saying 2:6 when it is 2:30).-When solving problems with elapsed time, students frequently want to just add or subtract the times given in the problem
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<p>Standards for Mathematical Practice (bolded practices are emphasized in this unit) Math Practice Standards Posters</p>	<p>Kentucky Interdisciplinary Literacy Practices (KILP)</p>	
<p>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. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.</p>	<ol style="list-style-type: none"> 1. Recognize that text is anything that communicates a message. 2. Employ, develop, and refine schema to understand and create text. 3. View literacy experiences as transactional, interdisciplinary and transformational. 4. Utilize receptive and expressive language arts to better understand self, others, and the world. 5. Apply strategic practices, with scaffolding and then independently, to approach new literacy tasks. 6. Collaborate with others to create new meaning. 7. Utilize digital resources to learn and share with others. 8. Engage in specialized, discipline specific literacy practices. 9. Apply high level cognitive processes to think deeply and critically about text. 10. Develop a literacy identity that promotes lifelong learning. 	
<p>Essential Standards: KAS Content Standards CRA explanations for 3rd grade Unit 2</p>	<p>Prerequisite Skills & Essential Vocabulary</p>	<p>Sample Learning Intentions* & Sample Success Criteria*</p>
<p>KY.3.NBT.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, MP.3</p> <p>Students determine addition and subtraction strategies efficiently, accurately, flexibly and appropriately. Being</p>	<p>-Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.</p>	<p>I am learning to add and subtract numbers fluently within 1,000 using various strategies so...</p> <ul style="list-style-type: none"> • I can use place value reasoning, properties,

<p>fluent means students are able to choose flexibly among methods and strategies to solve contextual and mathematical problems, they understand and are able to explain their approaches and they are able to produce accurate answers efficiently.</p> <p>Note: Reaching fluency is an ongoing process that will take much of the year.</p> <p>Coherence KY.2.NBT.5 KY.2.NBT.7→KY.3.NBT.2→ KY.4.NBT.4</p>	<p>Regroup Conjecture Commutative (Order) Property of Addition Identity (Zero) Property of Addition Associative (Grouping) Property of Addition Inverse operations Place value</p>	<p>and mental math to add and subtract 3-digit numbers.</p> <ul style="list-style-type: none"> I can use different strategies to break apart and regroup when adding 3-digit numbers. I can use the relationship between addition and subtraction to solve problems.
<p>KY.3.NBT.1 Use place value understanding to round whole numbers to the nearest 10 or 100. MP.7</p> <p>On a number line, students determine 178 rounded to nearest 10 is 180.</p>  <p>Coherence KY.2.NBT.1→KY.3.NBT.1→ KY.4.NBT.3</p>	<p>-Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones. Understand the following as special cases: a. 100 can be thought of as a bundle of ten tens — called a “hundred.” b. 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). Round Benchmark number</p>	<p>I can use place value understanding to round to the nearest 10 or 100 so...</p> <ul style="list-style-type: none"> I am learning to round to the nearest 10 using a number line. I am learning to round to the nearest 100 using a number line. I can use place value and a number line to round numbers.

	midpoint	
<p>Attending to the Standards for Mathematical Practice 3.NBT</p> <p>Students look at the numbers in a problem and consider which strategy they will use to solve the given problem (MP.2). For example, for the problem $405 - 381$, a student notices these values are close to each other, so rather than take away 381, they find the difference. They count up to 400 (19) and add on 5 more to equal 24. For the problem $425 - 98$, the student notices 98 is close to 100, so chooses to take away 100 and add 2 more back on to equal 327. Students share the strategy they used, why it works and why they chose it (MP.3).</p>		
<p>KY.3.MD.1 Tell and write time to the nearest minute and measure elapsed time intervals in minutes. Solve word problems involving addition and subtraction of time intervals within and across the hour in minutes. MP.4, MP.6, MP.1, MP.4</p> <p>Students solve elapsed time problems using strategies and tools such as clock models and number lines (seeing a clock as a number line). Coherence KY.2.MD.7→KY.3.MD.1→ KY.4.MD.2</p>	<p>-Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.</p> <p>Intervals</p> <p>Elapsed Time</p>	<p>I am learning to tell and write time to the nearest minute so...</p> <ul style="list-style-type: none"> I can tell and write time to the nearest minute. <p>I am learning to determine and solve word problems involving elapsed time so...</p> <ul style="list-style-type: none"> I can determine the elapsed time by finding the interval between two given times using a clock model or number line. I can solve word problems using addition and subtraction to determine the elapsed time.
<p>Supporting Standards:</p>		

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<p>KY.3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. MP.3, MP.8</p> <p>Students observe 4 times a number is always even and explain why 4 times a number can be decomposed into two equal addends. Coherence KY.2.OA.3→KY.3.OA.9→KY.4.OA.5</p>	<p>-Determine whether a group of objects (up to 20) has an odd or even number of members; write an equation to express an even number as a sum of two equal addends.</p>	<p>I am learning to identify and explain patterns using the properties of operations so...</p> <ul style="list-style-type: none"> I can identify and explain the pattern using properties of operations.
<p>KY.3.MD.3 Investigate questions involving categorical data.</p> <p>a. Identify a statistical question focused on categorical data and gather data;</p> <p>b. Create a scaled pictograph and a scaled bar graph to represent a data set (using technology or by hand);</p> <p>c. Make observations from the graph about the question posed, including "how many more" and "how many less" questions. MP.3, MP.5, MP.6</p> <p>Students select a question of interest (how many pets does each classmate have), gather data and create a bar graph (each square in the bar graph might represent 2 pets).</p> <p>Coherence KY.2.MD.10→KY.3.MD.3</p>	<p>-Create a pictograph 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 compare problems using information presented in a bar graph.</p> <p>Scaled picture graph Scaled bar graph Key Scale Data Frequency table Survey</p>	<p>I am learning to pose and investigate questions about data so...</p> <ul style="list-style-type: none"> I can gather data about a question I created. I can create pictographs and bar graphs to represent data. I can make observations in order to answer questions about data.
<p>KY.3.MD.8 Solve real world and mathematical problems involving perimeters of polygons.</p>	<p>Perimeter</p>	<p>I am learning to solve real world problems involving perimeters</p>

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<p>a. Find the perimeter given the side lengths of a polygon. b. Find an unknown side length, given the perimeter and some lengths. MP.1, MP.4 Coherence KY.3.MD.8→KY.4.MD.3</p>	<p>Length Width Polygon Equilateral triangle</p>	<p>of polygons so...</p> <ul style="list-style-type: none"> • I can find the perimeter when given the side lengths of a polygon. • I can find the unknown length of a polygon by using a known measurement.
<p>Attending to the Standards for Mathematical Practice 3.MD Students understand the purpose of creating a graph is to make sense of data related to a question (MP.1). They look at the data they have collected and decide on how to set up a graph to best communicate the data (MP.6). Students determine if the scale on a dot plot should be in whole numbers, halves or fourths, based on the data gathered. For example, if they measured the length of each person's pencil to the nearest fourth inch, the related dot plot would be created using fourths (MP.6).</p>		
<p>*Disclaimer: Success Criteria is the evidence students must produce to demonstrate learning. These examples are not comprehensive.</p>		
<p>Practice Standards and Number Sense Resources:</p>		
<p>Mathematics Practice Standards, Games and Routines (Introduced in the first week and used throughout the year) -Math Practices & Problem Solving Handbook 3rd grade number sense routines slides (VA) (use number routines 5-10 minutes daily all year in addition to math class time)Math Routines & Resources</p>	<p>2nd Semester Take-Home Games -TheresaWills Games -EnVisionMathGames -KDE Family Math Games -Investigations Math Words and Ideas -Investigations Math Games -3rd grade HomeLetters Word Wall Cards 3rd grade additional practice Problem Solving Organizer The Problem with Key Words Numberless Word Problem Example Three Reads Strategy</p>	

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Additional: Number Routines used 5-10 minutes daily all year see routine “About and Between” (MD) 51 Esti-Mysteries Splat	-2nd Semester Teaching Tools 3rd grade Math FCPS Google Site of Resources
Anchor Resources by enVision Topic	Supplemental Resources by Standard
<p>Topic 9 – Fluently Add and Subtract within 1,000 Possibly Combine 9-2 & 9-3 and 9-6 & 9-7 3.NBT.2 (approximately two weeks)</p> <p>Use Hands-On or Online Manipulatives: Base 10 Blocks, Teaching tools: Base-10 sheet 3, Place Value Chart 5, Number lines 7, 100 Chart 10 Addition & Subtraction Sample Anchor Charts -Topic 9 Review What You Know Prerequisite Skills</p>	<p>GA Place Value, Addition and Subtraction unit 3.NBT.2 Word Problems: Addition and Subtraction Close to Zero (3-Digit) Kendall Hunt Illustrative Addition & Subtraction MathLearningCenter AddSubtract Unit Addition and Subtraction Games folder Kendall Hunt Illustrative Addition and Subtraction</p>
<p>Topic 8 – Use Strategies and Properties to Add and Subtract Possibly Omit 8-2 & 8-9 Combine 8-4 & 8-6 and 8-5 & 8-7 3.NBT.1 3.NBT.2 3.OA.9 (approximately two weeks)</p> <p>Use Hands-On or Online Manipulatives: Base-10 Blocks, Teaching Tools: Base-10 s , Place Value 5, Number lines 7, 100 Chart 10 -Topics 8, 9 & 10 Vocabulary Cards -Topic 8 Review What You Know Prerequisite Skills</p>	<p>3.NBT.1 Round to the Nearest Hundred Rounding to 50 or 500 Rounding to the Nearest 100 and 1000 Rounding to the Nearest Ten and Hundred 3.NBT.2 Estimating Sums (v. 1) Estimating Differences (v. 1)</p>
<p>Topic 16 – Solve Perimeter Problems 3.MD.8 (approximately one week)</p>	<p>3.MD.8 Kendall Hunt Illustrative Perimeter Squares on a Geoboard Rectangular Robot</p>

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<p>Use Hands-On or Online Manipulatives: Color tiles, Grid Paper Teaching Tools: Grid Paper 13 -14, Color tiles 8 -Topic 16 Review What You Know Prerequisite Skills Topics 15-16 Vocabulary Cards</p>	<p>Shapes and their Insides Building with Color Tiles Area Perimeter Activity (digital version) and inch grid paper Measuring Perimeter with a Ruler 1 Measuring Perimeter with a Ruler 2</p>
<p>Topic 11 – Use Operations with Whole Numbers to Solve Problems 3.OA.8 (approximately one week)</p> <p>Use Hands-On or Online Manipulatives: Base-10 Blocks, Teaching Tools: Base-10 sheet 3, Place Value Chart 5, Number lines 7, 100 Chart 10</p> <p>-Topic 11 Review What You Know Prerequisite Skills</p>	<p>3.OA.8 The Class Trip The Stamp Collection Word Problems: Arrays (Set 1) Word Problems: Two-Step (Set 2)</p>
<p>Topic 7 – Represent and Interpret Data Combine lesson 7-2 & 7-3 3.MD.3 3.OA.8 3.OA.3 (approximately one week)</p> <p>Use Hands-On or Online Manipulatives: Counters, Teaching Tools: Number lines 7, GridPaper 13-14 – Add: Question, Collect, Analyze Topic 7 Review What You Know Prerequisite Skills Topic 7 Vocabulary Cards</p>	<p>Data Sample Anchor Chart Examples 3.MD.3 Gummy Bear Graph Paper Ball Throw Classroom Supplies **Slow reveal graphs</p>
<p>Topic 14 – Solve Time (lessons 14-1 to 14-3 only) 3.MD.1 (approximately one week)</p> <p>Use Hands-On or Online Manipulatives:</p>	<p>GA Measurement Unit Time Sample Anchor Charts 3.MD.1: Interactive clocks - Great for smartboard activity Clock Works Type the Time Digital Activity #1</p>

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<p>Variety of Measurement tools and containers, Teaching Tools: Clock faces 20, Number lines 7 Topic 14 Review What You Know Prerequisite Skills **All Aboard (3 Act Task - 3.MD.1)</p>	<p>Type the Time Digital Activity #2 Analog Clock Matching Activity Elapsed Time Chart</p>
<p>Summative Assessment</p>	
<p>(Common Unit Assessment on ADAM) This unit assessment will focus on conceptual models of addition and subtraction using various representations including partial sums to solve problems. It will also focus on finding the perimeter of shapes and understanding data displays.</p>	