Blackwater Community School
Curriculum Map 2015-2016

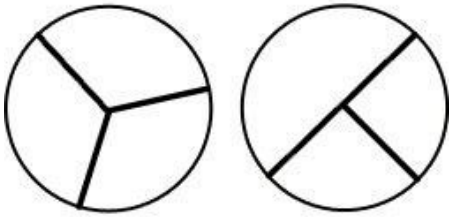
Third Grade Quarter 3

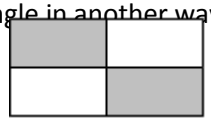
Module 5: Fractions as Numbers on the Number Line

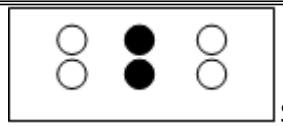
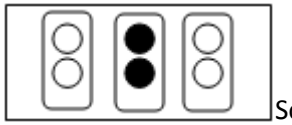
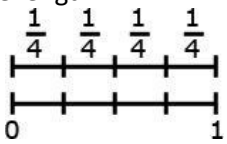
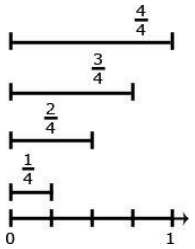
Approximately 35 Days – Begin around January 4th

In this 35-day Grade 3 module, students extend and deepen second grade practice with "equal shares" to understanding fractions as equal partitions of a whole. Their knowledge becomes more formal as they work with area models and the number line.

Major Clusters:	**3.NF.A – Develop understanding of fractions as numbers.**
Supporting Clusters:	3.G.A – Reason with shapes and their attributes.
Vocabulary	Unit fraction, Non-unit fraction, Fractional unit, Equal parts, Unit interval , Equivalent fraction, Copies

Domain	Cluster	Standard	Arizona's College and Career Ready Standards	Explanations & Examples	Notes & Resources
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.MP.1.* Make sense of problems and persevere in solving them. *3.MP.4.* Model with mathematics *3.MP.7.* Look for and make use of structure.	Some important concepts related to developing understanding of fractions include: • Understand fractional parts must be equal-sized Example: Non-example:  These are thirds. These are NOT thirds. • The number of equal parts tell how many make a whole • As the number of equal pieces in the whole increases, the size of the fractional pieces decreases • The size of the fractional part is relative to the whole o The number of children in one-half of a classroom is different than the number of children in one-half of a school. (the	**Engage NY** M5 Lessons 1-13 **enVision** Topic 9

Domain	Cluster	Standard	Arizona's College and Career Ready Standards	Explanations & Examples	Notes & Resources
				whole in each set is different therefore the half in each set will be different) • When a whole is cut into equal parts, the denominator represents the number of equal parts • The numerator of a fraction is the count of the number of equal parts o ¾ means that there are 3 one-fourths o Students can count *one fourth, two fourths, three fourths* Students express fractions as fair sharing, parts of a whole, and parts of a set. They use various contexts (candy bars, fruit, and cakes) and a variety of models (circles, squares, rectangles, fraction bars, and number lines) to develop understanding of fractions and represent fractions. Students need many opportunities to solve word problems that require fair sharing. To develop understanding of fair shares, students first participate in situations where the number of objects is greater than the number of children and then progress into situations where the number of objects is less than the number of children. **Examples**: • Four children share six brownies so that each child receives a fair share. How many brownies will each child receive? • Six children share four brownies so that each child receives a fair share. What portion of each brownie will each child receive? • What fraction of the rectangle is shaded? How might you draw the rectangle in another way but with the same fraction shaded?  Solution: $\frac{2}{4}$ or $\frac{1}{2}$ • What fraction of the set is black?	

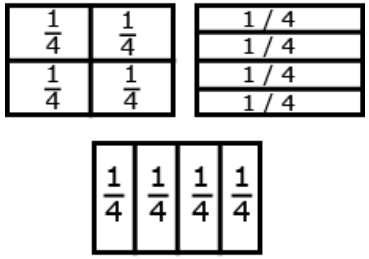
			Arizona's College and Career Ready Standards	Explanations & Examples	Notes & Resources
				 Solution: $\frac{2}{6}$  Solution: $\frac{1}{3}$	
3.NF	**A**	**2**	Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/*b* on a number 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. b. 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. *3.MP.1.* Make sense of problems and persevere in solving them. *3.MP.4.* Model with mathematics *3.MP.7.* Look for and make use of structure.	Students transfer their understanding of parts of a whole to partition a number line into equal parts. There are two new concepts addressed in this standard which students should have time to develop. 1. On a number line from 0 to 1, students can partition (divide) it into equal parts and recognize that each segmented part represents the same length.  about their size. 	**Engage NY** M5 Lessons 14-19 **enVision 9** 2. Students label each fractional part based on how far it is from zero to the endpoint.
3.NF	**A**	**3**	Explain equivalence of fractions in special cases, and compare fractions by reasoning	— —	An interactive whiteboard may be used to help students

develop these concepts.

An important concept when comparing fractions is to look at the size of the parts and the number of the parts. For example, $\frac{1}{8}$ is smaller than $\frac{1}{2}$

Engage NY
M5 Lessons 5-30

Domain	Cluster	Standard	Arizona's College and Career Ready Standards	Explanations & Examples	Notes & Resources
			a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. b. 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. c. 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.* d. 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. 3.MP.1. Make sense of problems and persevere in solving them. 3.MP.2. Reason abstractly and quantitatively. 3.MP.3. Construct viable arguments and critique the reasoning of others. 3.MP.4. Model with mathematics. 3.MP.6. Attend to precision.	because when 1 whole is cut into 8 pieces, the pieces are much smaller than when 1 whole is cut into 2 pieces. Students recognize when examining fractions with common denominators, the wholes have been divided into the same number of equal parts. So the fraction with the larger numerator has the larger number of equal parts. $\frac{2}{6} < \frac{5}{6}$ To compare fractions that have the same numerator but different denominators, students understand that each fraction has the same number of equal parts but the size of the parts are different. They can infer that the same number of smaller pieces is less than the same number of bigger pieces. $\frac{3}{8} < \frac{3}{4}$	**enVision** Topic 10

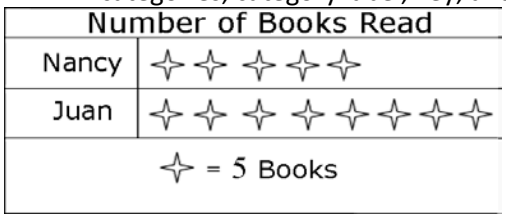
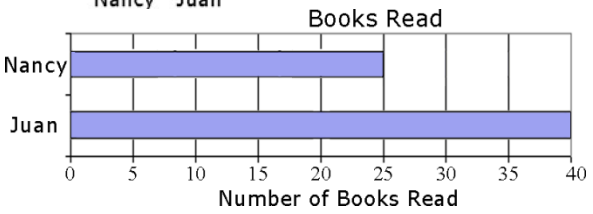
Domain	Cluster	Standard	Arizona's College and Career Ready Standards	Explanations & Examples	Notes & Resources
			3.MP.7. Look for and make use of structure. 3.MP.8. Look for and express regularity in repeated reasoning.		
3.G	A	2	Partition shapes into parts with equal areas. Express the area of each 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. *3.MP.2.* Reason abstractly and quantitatively. *3.MP.4.* Model with mathematics. *3.MP.5.* Use appropriate tools strategically.	Given a shape, students partition it into equal parts, recognizing that these parts all have the same area. They identify the fractional name of each part and are able to partition a shape into parts with equal areas in several different ways. 	**Engage NY** M5 Lessons 1-13 **enVision** Topic 14

Module 6: Collecting and Displaying Data

Approximately 10 Days – Begin around February 22nd

This 10-day module builds on Grade 2 concepts about data, graphing, and line plots. The two topics in this module focus on generating and analyzing categorical and measurement data. By the end of the module, students are working with a mixture of scaled picture graphs, bar graphs, and line plots to problem solve using both categorical and measurement data.

Major Clusters:					
Supporting Clusters:			3.MD.B – Represent and interpret data.		
Vocabulary			Bar graph, Data, Fraction, Line plot, Picture graph		
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	Students should have opportunities reading and solving problems using scaled graphs before being asked to draw one. The following graphs all use five as the scale interval, but students should experience different intervals to further develop their understanding of scale graphs and number facts.	**Engage NY** M6 Lessons 1-4 **enVision** Topic 16

Domain	Cluster	Standard	Arizona's College and Career Ready Standards	Explanations & Examples	Notes & Resources
			presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets. 3.MP.1. Make sense of problems and persevere in solving them. 3.MP.4. Model with mathematics. 3.MP.6. Attend to precision. 3.MP.7. Look for and make use of pattern.	• Pictographs: Scaled pictographs include symbols that represent multiple units. Below is an example of a pictograph with symbols that represent multiple units. Graphs should include a title, categories, category label, key, and data.  **How many more books did Juan read than Nancy?** • **Single Bar Graphs: Students use both horizontal and vertical bar graphs. Bar graphs include a title, scale, scale label, categories, category label, and data.**  	
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. *3.MP.1.* Make sense of problems and	Students in second grade measured length in whole units using both metric and U.S. customary systems. It's important to review with students how to read and use a standard ruler including details about halves and quarter marks on the ruler. Students should connect their understanding of fractions to measuring to one-half and one-quarter inch. Third graders need many opportunities measuring the length of various objects in their environment. Some important ideas related to measuring with a ruler are:	**Engage NY** M6 Lessons 5-9 **enVision** Topic 16

Domain	Cluster	Standard	Arizona's College and Career Ready Standards	Explanations & Examples	Notes & Resources
			persevere in solving them. *3.MP.4.* Model with mathematics. *3.MP.6.* Attend to precision.	• The starting point of where one places a ruler to begin measuring • Measuring is approximate. Items that student's measure will not always measure exactly ¼, ½ or one whole inch. Students will need to decide on an appropriate estimate length. • Making paper rulers and folding to find the half and quarter marks will help students develop a stronger understanding of measuring length Students generate data by measuring and create a line plot to display their findings. An example of a line plot is shown below: