Grade Level	5	**Content Area**	Mathematics
Course Title (grades 9-12 Only)	NA		
Expected Prior Knowledge *List the knowledge/skills mastered earlier in the year that are foundational to the mastery of the Required Standard(s).*	At this point in the year, scholars will have developed a strong sense and ability to recognize and generate equivalent fractions; they will be able to explain why a fraction a/b is equivalent to a fraction *(n x a)/(n x b)* by using visual fraction models. Scholars will also have the ability to compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fractions such as 1/2. They will also show fluency in understanding addition and subtraction of fractions as joining and separating parts referring to the whole. These skills are critical in mastering the skills in this unit.		
Alignment to Program of Instruction *Describe how the methods of instruction found in this sequence of lessons align to the Program of Instruction described in the application package.*	The Arizona College and Career math standards form the basis for The Grande Innovation Academy's math curriculum. Scholars will learn standards using the Arizona College and Career building from year to year. EngageNY will be used along with manipulatives to build conceptual understanding. First in Math online will be used for developing automaticity with math facts to increase mathematical fluency. Scholars, Kindergarten through Eighth Grade, will annually participate in The Grande Innovative Academy's Math Olympics program to generate motivation for math fluency.		
Standard Number* and Description *The standard number and description of the Required Standard(s) being instructed and assessed to mastery in the curriculum sample.*	**5.NF.6**. Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.		
Materials/Resources Needed *List all items the teacher and students will need for the entire sequence of instruction (excluding common consumables)*	Whiteboards and markers, independent worksheets and interactive math notebook. • Whiteboards • Markers • Geoboard recording paper • Rubber bands (one for each student) Independent Worksheets Interactive Math Notebook/Journal 12-inch string		

* ***Standard Number****: For English Language Arts (Reading and Writing), use Grade, Strand, Standard (e.g., 3.RI.2). For K-8 Math, use Grade, Domain, Cluster, Standard (e.g., 6.EE.B.7). For HS Math, use Conceptual Category-Domain, Cluster, Standard (e.g., A-REI.C.6).*

Lesson (add as needed)	**Instructional Strategies -** *List and describe teacher actions, lesson by lesson, which will provide students with opportunities to engage the grade-level rigor defined by the Required Standard(s). Indicate alignment of instructional strategies to specific component(s) or content/skill(s) of the Required Standard/component.*	**Student Activities -** *Describe the activities, lesson by lesson, in which students will engage to allow them to master the grade-level rigor defined by the Required Standard(s). Indicate alignment of student activities to specific component(s) or content/skill(s) of the Required Standard/component.*
1	**Anticipatory Set:** Teacher will (TW) display problem on the mimio with three antipatory questions, "How much of the garden will be flowers?" , "How much is 1/2 of a whole?" and "Is the result more or less than the whole?" "Mr. McGregor has a garden that is a rectangle 3 units by 2 units. He wants to plant flowers on half of the garden. Show how he would divide his garden on the geobard. Then draw it on paper and shade in the part that would be flowers with one of the colors." **Objective and Purpose:** TW post on board for scholars to write in their interactive daily math journal. Scholars will be able to explain the size of the product and relate fraction and decimal equivalence to multiplying a fraction by 1. **Instructional Delivery: Whole Group** TW post problem 1 on the board telling scholars to write a multiplication expression for this problem. TW then instruct students to work with a partner to find the product of 2 halves and 3 fourths. TW draw an area model to verify the solution. Teacher: (Write 6/8). Draw a rectangle and label it 1. What are we taking 2 halves of? TW ask how does the size of the product, 6/8, compare to the size of the original fraction, 3/4. Students should recognize that they're exactly the same amount, 3 fourths is just 6 eighths in simplest form. Eighths are a smaller unit than fourths but we have twice as many of them, so really the two fractions are equal. Teacher states that the product, 6/8, is equal to the amount that we had at first, 3/4. We multiplied. How is it possible that our quantity has not changed? TW ask students to name some other fractions that are equal to 1. Teacher will then ask students to test their hypothesis by working with a	**Anticipatory Set:** Scholars will work in pairs to solve this problem. One scholar will manipulate the geoboard and the other will draw the results on the geoboard recording paper. **Objective and Purpose:** Scholars will write posted objective and purpose in their interactive daily math journal. **Instructional Delivery: Whole Group** The scholars will work with a partner to solve problem 1. Scholars will record answers in their interactive daily math journal. **Modeling:** Scholars will observe teacher drawing an area model. Scholars will draw an area model and definition in their interactive daily math journal. Students will check their work by comparing answers with a partner before going over answers as a class. **Check for Understanding** (CFU, using Teach Like a Champ) Scholar stands as teachers g ives Check for Understanding signal of "Get Ready Get Ready, scholar." Scholar replies with response of three-fourths. If scholar doesn't respond in five seconds, scholar will still need to be ready as there is no opt out and teacher will come back again. **Guided Practice: Small Groups** Scholars will engage in small group listening for guidance from teacher. Scholars will find 1/5 x 2/2 by drawing an area model as well as

	partner to find 3/3 of 3/4. One partner can multiply the fractions while the other draws and area model. The teacher will select students to share their solutions. **Modeling:**TW model by writing on board 2 halves of 3 fourths. TW will draw an area model and solve. TW will write 6/8 and draw a rectangle and label it 1. We are taking 2 halves of 6 eighths. **Check for Understanding** (CFU, using Teach Like a Champ) TW circulate the room and say "Get Ready, Get Ready, scholar name" to check for solutions. TW wait no more than five seconds for response. If no response TW call on another scholar while circulating the room, then goes back to scholar with no response, says "What did scholar say" **Guided Practice:** The scholar will participate in small groups to promote concept development of multiplication of fractions. TW display another problem on the board. TW distribute dry erase markers and erasers for personal white boards at each table. TW guide scholars to find the product of 1/5 x 2/2 and express in decimal form. TW then ask students to try 3 fifths. How can we change 3 fifths to a decimal? Follow similar sequence for 1/20, 1 1/20, 6/25, and 51/50. TW circulate the room, checking for scholar understanding at each step. **Independent Practice:** TW pass out problem sets and scholars should do their personal best to complete their independent practice set within the allotted 10 minutes. For some scholars it may be appropriate to modify the assignment by specifying which problem they work on first. Students solve these problems using the RDW approach used for application problems. **Closure:** TW review the lesson objective of explaining the size of the product and relate fractions and decimal equivalence to multiplying a fraction by 1.	expressing the product in decimal form. Scholars will follow a similar sequence for 1/20, 1 1/20, 6/25/ and 51/50. **Independent Practice:** The scholars will complete seven independent problems on the problem set, using their area model diagram to show their multiplication. Scholars will have ten minutes to complete their problem sets. Scholars are expected to do their personal best with high quality work correctly, completing all seven problems for mastery. **Closure/Exit Ticket:** Scholars will write 1/4 x 2/5 on their notecard and express the product as a decimal. Scholars will wait for teacher to call for closure and check for understanding. **Independent Practice:** The scholars will do their personal best to complete 8 problems within the allotted 10 minutes. Scholars will work with their table group to find the product of 1/5 x 2/2 and express in decimal form. **Independent Practice:** and scholars should do their personal best to complete their independent practice set within the allotted 10 minutes. For some scholars it may be appropriate to modify the assignment by specifying which problem they work on first. Students solve these problems using the RDW approach used for application problems. **Independent Practice:** Scholars will do their personal best to complete 8 problems in the allotted 10 minutes. **Exit Ticket:** Scholars will solve 1/4 of 2/5 on a notecard and express in decimal form. Scholars will wait for teacher to call on them.

	Teacher will invite students to review their solutions and share their thought process from select questions from their independent problem set practice. **Exit Ticket:** After the student closure, TW pass out note cards and instructs them to solve 1/4 of 2/5 and express as a decimal. A review of their work will help you assess the students understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students. TW will call on scholars one by one to review exit ticket for understanding and closure.	
2	**Anticipatory Set:** TW ask scholars "If I were to give you 6/8 of a dollar, how much money is that? What is the amount in decimal form?" **Objective:** TW post objectives onto the board for scholars to write into their interactive daily math journals. Scholar will compare the size of the product to the size of the factors. **Instructional Delivery: Whole Group** TW post Problem 1 on the board: Find the products of these expressions. a. 4/4 x 12 inches b. 3/4 x 12 inches c. 5/4 x 12 inches TW allow scholar several minutes to work out above problems. Teacher asks scholars to compare the size of the products they found to the size of the factor. (TW point to 12 inches) TW ask scholars "did multiplying by 12 inches by 4 fourths change the length of this string?" (TW hold up string) Why or why not? TW instruct scholars to turn and talk with their table group. TW write 4/4 x 12 inches = 12 inches under the first expression. TW ask scholars "Did multiplying by 3 fourths change the size of our other factor, 12 inches? If so, how? Turn and talk. TW write 3/4 x 12< 12 under the second expression. TW as the question "How can it be that multiplying made 12 smaller when I thought multiplication always made numbers get bigger?" TW instruct scholars	**Anticipatory Set:** The scholars will sit at their tables and raise their hands accordingly. Two or three scholars will share their responses as called upon. **Objective and Purpose:** The scholars will write in the lesson objective and purpose in their interactive daily math journals. The scholars will compare the size of the product to the size of the factors. **Instructional Delivery: Whole Group** Scholars will write these problems in their interactive math journals and solve. Scholars will discuss with their table group that the product is equal to 12 inches. When we multiplied we got 48 twelfths, but that's just another name for 12 using a different unit. Scholars will come to the conclusion that it's 4 fourths of the string, all of it and multiplying it by 1 means just 1 copy of the number, so it stays the same. Scholars will discuss with their table group that the string got shorter because we only took 3 of 4 parts of it. We got almost all of 12, not quite. The factor got smaller after we multiplied. We got 9 this time instead of 12. Scholars discuss with their table group that they only took part of 12 and when you take part of something it is smaller than what you start with. We ended up with 3 of the 4 parts, not the whole thing.

	to turn and talk with their table group. TW ask scholars to consider the last expression from problem 1. "How does multiplying by 5 fourths change or not change the size of the other factor, 12?" "How would it change the length of the string? Turn and talk." TW write 5/4 x 12>12 under the third expression. **Key Points:** • Benchmark Fractions are common fractions that you can use to judge other numbers against. • Scaling Factor can change the size of the other factor **Check for Understanding** (CFU, using Teach Like a Champ) TW circulate room and cold call on 5 select students. **Guided Practice: Small Groups/Pairs** TW guide scholars to increase their recognition that comparing our products to one factor, 12 inches, in each of these expressions.. The scholar will participate in small group exercises to promote concept development in comparing the size of the product to the size of the factors and explaining the changes they see by thinking about the other factor. TW post Problem 2 (a-c) on the board telling scholars to keep in mind the relationships that we've just seen between our products and factors, evaluate these expressions. TW will continue with problems 1/2 x 5/5, 1/2 x 3/5 and 1/2 x 9/5 **Independent Practice:** TW will provide scholars with copies of the problem set. Scholars should do their personal best to complete the problem set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method of solving. Scholars solve these problems using the RDW approach. **Closure/Exit Ticket:** TW circulate room as scholars give thumbs up to show they have completed independent practice. TW hole punch their problem sets with correct answers.	Scholars discuss with their table group that the answer is bigger than 12 because its more than 4 fourths of it. We copies a number bigger than 1 twelve times. **Check for Understanding** (CFU, using Teach Like a Champ) Scholars are ready as teacher gives Check for Understanding of the cold call. **Guided Practice: Small Groups/Pairs** Scholars will write Problem 2 (a-c) in their interactive math journal. a. 4/4 x 1/3 b. 3/4 x 1/3 c. 5/4 x 1/3 Scholars will begin working. The scholars will recognize that the size of 1/3 did not change when multiplied by a scaling factor equal to 1. The scholars will recognize that the scaling factor in the problem "b" is 3 twelfths. That is less than 1 third which is 4 twelfths. We only wanted part of 1 third this time, so the answer had to be smaller than 1 third. The scholars will recognize that the scaling factor of 5/4 is more than 1/3. Scholars will work to answer the next set of questions. **Independent Practice:** The scholars will do their personal best to complete 8 problems within the allotted 10 minutes. **Closure/Exit Ticket:** Scholars will give a thumbs up when completed and wait for teacher to come check for understanding and mastery. Teacher will hole punch problem set paper to verify closure.

S.A.	*Provide an opportunity for the student to complete the summative assessment items which is clearly separate from instruction and guided or independent practice, and in which the student is assessed independently. In the Student Activities column, provide a brief description of the summative assessment (S.A.) items that will allow students to demonstrate mastery of the rigor of the Required Standard(s)/components, and the context in which the items will be administered.*	**Direct Instruction:** Scholars will be seated at their tables listening for directions. **Independent Practice:** The scholars will be seated at their tables to complete their math and solving real world problems involving multiplication of fractions and mixed numbers by using visual fraction models or equations to represent the problem.

Summative Assessment Item 1: *There are four possible points in the assessment, (see rubric) scholar mastery is set at 3 points. (75%)*

Solve:

A castle has to be guarded 24 hours a day. Five knights are ordered to split each day's guard duty equally. How long will each night spend on guard duty in one day?

a. Record your answer in hours.

b. Record it in hours and minutes.

c. Record your answer in minutes.

Summative Assessment Item 2: *There are four possible points in the assessment, (see rubric) scholar mastery is set at 3 points. (75%)*

Fill in the blanks to make the equation true.

On the blank, write a division expression that matches the situation.

a. _____ Mark and Jada share 5 yards of ribbon equally. How much ribbon will each get?

b. _____ It takes half of a yard

c. Draw a diagram for each problem and solve.

$5 \div 2$ $5 \div 1/2$

d. Could either of the problems also be solved by using 1/2 x 5? If so, which one(s)? Explain your thinking.

Summative Assessment Item 3: *There are four possible points in the assessment, (see rubric) scholar mastery is set at 3 points. (75%)*

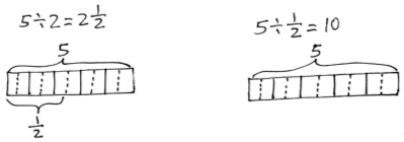
3. a. Jill's mom used 1/4 of a gallon of honey to bake 3 loaves of bread. If she used an equal amount of honey each loaf, how much honey did she use for 1 loaf?

b. Jill uses some of her honey to make lotion. If each bottle of lotion requires 1/4 of a gallon, and she uses a total of 3 gallons, how many bottles of lotion does she make?

Answer Key:

SA #1 a. 4.8 hours b. 1/10 of 60 minutes = 6 minute 6 min x 8 = 48 min 4.8 hours = 4 hours and 48 minutes

SA #2 a, 5÷2 b. 5÷1/2 c.

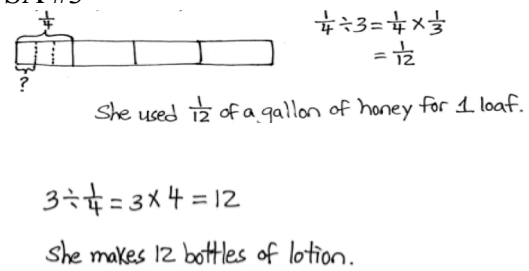


d. 5 ÷ 2 = 5 x 1/2. Dividing by 2 is the same as taking 1/2 of something.

Which means multiplying. 1/2 x 5 is that same as

5 x 1/2.

SA #3



A Progression Toward Mastery				
Assessment Task Item	**STEP 1** **Little evidence of reasoning without a correct answer.** **(1 Point)**	**STEP 2** **Evidence of some reasoning without a correct answer.** **(2 Points)**	**STEP 3** **Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer.** **(3 Points)**	**STEP 4** **Evidence of solid reasoning with a correct answer.** **(4 Points)**
Summative Assessment 1	The student has no correct answers.	The student has one correct answer.	The student has two correct answers.	The student correctly answers all three items: a. 4.8 hours b. 4 hours, 48 minutes c. 288 minutes

A Progression Toward Mastery				
Summative Assessment 2	The student gives one or fewer correct responses among Parts (a), (b), (c), and (d).	The student gives at least two correct responses among Parts (a), (b), (c), and (d).	The student gives at least three correct responses among Parts (a), (b), (c), and (d).	The student correctly answers all four items: a. $5 \div 2$ b. $5 \div \frac{1}{2}$ c. Draws a correct diagram for both expressions and solves. d. Correctly identifies $5 \div 2$, and offers solid reasoning.
Summative Assessment 3	The student has 1or fewer correct answers with no reasonableness	The student has one correct answer with some reasonableness	The student has 2 correct answers with some reasonableness	The student correctly answers all two items with reasonableness: e. $\frac{1}{12}$ gal f. 6 c g. 12 bottles