Grade Level	Content Area	Course Title *(For 9-12 Samples Only)*	Unit Title
Fourth	Mathematics		Interpreting Multiplication Equations

Length of Unit	Time of Year Taught	Expected Prior Knowledge
2 weeks	1st Quarter:	Common vocabulary of multiplication and mathematical operations.

Unit Description

The students will be interpreting multiplication equations. They will be using manipulatives and real world problems to demonstrate a variety of multiplication problems. The students will write the equations and express them orally. The learning will be done through modeling and small group instruction. The small group instruction will be done through flexible grouping. The instructor will monitor the progress of the students and adjust the groups when necessary.

Standards: See instructions on page 15.	**Operations and Algebraic Thinking (OA)** Use the four operations with whole numbers to solve problems. 4.OA.1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
Summative Assessment *In addition to the description, include a copy of the summative assessment in the application package.*	The assessment contains three sections. The first section requires the students to write two equations that could represent the written sentence. In the second sentence, the students will write two written phrases that correlate to the equations given. Five word problems will be given at the end where the students have to write the solutions as two separate equations. A copy of the summative assessment along with the scoring rubric is attached.
Scoring for Summative Assessment *In addition to the description, include a copy of the answer key and scoring rubric (if applicable) for the summative assessment in the application package.*	Each problem in the assessment requires two answers so the students can receive two points per problem. Mastery = 16/20 A copy of the summative assessment along with the scoring rubric is attached.

Materials/Resources Needed *Include all items for the entire unit.*	Whiteboards Whiteboard markers Manipulatives Differentiated Independent Practice: Multiple levels based on sub-groups

	Lesson 1	Lesson 2	Lesson 3	Lesson 4	Lesson 5
Instruction and Timeline	The teacher will explain to the class that they will be taking a pre-assessment. The class will be instructed that this will provide the teacher with information on the prior knowledge that the students have coming into this unit. The teacher will then analyze the data and form six leveled small groups for this unit. The groups don't need to have the same amount of students. The students will be grouped based on who falls far below (10 or less correct), approaches (11 to 15 correct), or master the content (16 to 20 correct). This will allow the teacher to create small group instruction focused on the needs of the students.	The teacher will begin by writing on the board "6 x 3." The students will be directed to think in their head or write on their whiteboards, the answer to this problem. After checking the students' responses, the teacher writes '18' on the board. The teacher will model that a multiplication equation involves connecting two equal expressions: 6 x 3 = 18. The students listen to the teacher's think aloud which elaborates on multiple ways to represent this equation: 6 x 3 = 18 3 x 6 = 18 18 = 6 x 3 18 = 3 x 6 Six times three equals eighteen Three times as many as six equals eighteen Eighteen equals six times as many as three Eighteen equals three times as many as six The teacher will write 32 = 8 x 4 and direct the students to write multiple comparisons of this	Falls far below groups: The teacher will model a lesson tailored to multiplication. The teacher will demonstrate multiplication using blocks. The teacher will model the multiplication and the students will follow along with their blocks. The problems will be focused on basic multiple facts: 2 x 3 = 6 or 4 x 3 = 12. This instruction will focus on leading students to understand multiplication equations as a comparison (e.g. 6 is three times the amount as 2). Students will be able to physically see this with the blocks. The teacher will then give each student in the group basic problems and ask the students to make the problem with blocks and record it in their journals. This small group will be called throughout the school year and increasing the level of difficulty to achieve mastery level. The teacher will monitor each student closely and move students to a higher group when necessary.	Approaching groups: The teacher will demonstrate how to use manipulatives and various ways to write equations. During guided practice, the teacher will provide examples in two forms: written words and equations. They will demonstrate how these problems can be written in different forms. For example, "24 is 3 times as many as 8 and 8 times as many as 3." The teacher will continue to verbally express how the equations are comparisons of each other and provide multiple examples to allow for the students to interpret and write the comparison statement. The second part of the group will be focused on word problems. The students will be presented with a variety of word problems. The teacher will instruct them to	Mastery group: The teacher will be creating lessons based on the standard but a higher level. These students will most likely be out of the concrete stage but will still have access to manipulatives. The teacher will focus on multi-step word problems where the students will write their solution in as many ways as possible. Guided Practice problem: Joe has three friends who all have five toy cars and then two friends who only have two cars. How many cars do Joe's friends have? The instructor demonstrates the thought process and writes a possible solution. 3 x 5 + 2 x 2 = 19 The students are directed to come up with other possible equations with their shoulder partner. The group shares with each other and records equations in their interactive math journal. The teacher will then provide more real world problems for the students

		multiplication equation on their whiteboards. The teacher will check for understanding and note students who are struggling and showing signs of mastery. The teacher will adjust if necessary and then proceed to independent practice. The independent practice will range from basic problems of writing comparisons to word problems. This will span a few class periods which will allow for small group instruction that provides remediation and extension. Each group will meet at least twice with the instructor after the modeling lesson.		write two possible equations that go with each problem. The teacher will continue to progress monitor the students. Individual students may be moved to the higher group or lower group at the instructor's discretion. This allows for the students to continue growing at their own level.	to solve. They will closely monitor the students' progress to make sure all students are at the appropriate level.

	Lesson 1	**Lesson 2**	**Lesson 3**	**Lesson 4**	**Lesson 5**
Student Activities and Timeline	The students will be taking a pre-assessment that will be used to place them into appropriate groups for this unit.	The students will be led through the lesson and use whiteboards to demonstrate their understanding. They will write multiple comparison equations for	The students will be creating models of the sample problems given by the instructor. They will represent each problem in a multiple of ways. They will record all work and	The students will be creating models of the sample problems given by the instructor. They will represent each problem in a multiple	The students will be creating models of the sample problems given by the instructor. They will represent each problem in a multiple of ways. They will record

		the examples presented by the instructor. They will also be writing notes and reflection in their journal to provide a reference during independent practice. For the next few class periods, they will be working on independent practice that will include basic problems to word problems that allow for connection of the learning to their life. They will be allowed to collaborate with their classmates and seek remediation during small group instruction. At the end of the unit, they will take the post-assessment to demonstrate mastery and allow for future instructional planning by the teacher.	solutions in their interactive math journal. The students who are in the approaching and mastery sub-groups will be provided with independent practice that is differentiated at the appropriate level. The independent practice will focus on connecting the concept of interpreting multiplication equations as comparisons to real world application. All students will be working on differentiated independent practice when their sub-group is not participating in small group instruction.	of ways. They will record all work and solutions in their interactive math journal.	all work and solutions in their interactive math journal.

4th Grade Mathematics Pre-/Post- Assessment

Interpreting Multiplication Equations

Name_____ Date_____

Mastery = 16 / 20

Student score = ____ / 20

Directions: Write two different equations that represent the solution to the problem. (2 pts. per question)

1. 48 is 6 multiplied by 8 _____ _____
2. 15 is 5 times larger than 3 _____ _____
3. 9 times 3 equals 27 _____ _____

Directions: Give two possible written descriptions for the problems. (2 pts. per question)

4. 5 x 6 = 30 or 6 x 5 = 30 _____ _____
5. 90 = 9 x 10 or 90 = 10 x 9 _____ _____

Directions: Write two different equations that represent the solution to the word problem. (2 pts. per question)

6. Nine children are playing tennis together. They all brought six balls. How many balls do they have in total?

7. The Smith family has five members. Each member has a small towel and a bath towel. How many towels hang in the bathroom?

8. The Jones family orders four pizzas to eat. Each pizza is sliced into six parts. How many pizza slices do they get?

9. A town has three post offices. In each post office there are five workers. How many workers do the post offices have in total?

10. There are eight tables in the classroom and four students per table. How many students are in Mr. Jones' class?

4th Grade Mathematics Pre-/Post- Assessment

Interpreting Multiplication Equations

Name_____ Date_____

Mastery = 16 / 20

Student score = ____ / 20

Directions: Write two different equations that could represent the solution to the problem. (2 pts. per question)

1. 48 is 6 multiplied by 8 ___48 = 6 x 8_____ _____48 = 8 x 6_____
2. 15 is 5 times larger than 3 ___15 = 5 x 3_____ _____15 = 3 x 5_____
3. 9 times 3 equals 27 ___9 x 3 = 27_____ _____3 x 9 = 27_____

Directions: Give two possible written descriptions for the problems. (2 pts. per question)

4. 5 x 6 = 30 or 6 x 5 = 30 ___5 times 6 is 30_____ ___6 times 5 is 30_____
5. 90 = 9 x 10 or 90 = 10 x 9 ___90 equals 9 times 10_____ ___90 equals 10 times 9_____

Directions: Write two different equations that represent the solution to the word problem. (2 pts. per question)

6. Nine children are playing tennis together. They all brought six balls. How many balls do they have in total?

   9 x 6 = 54; 6 x 9 = 54

7. The Smith family has five members. Each member has a small towel and a bath towel. How many towels hang in the bathroom?

   5 x 2 = 10; 2 x 5 = 10

8. The Jones family orders four pizzas to eat. Each pizza is sliced into six parts. How many pizza slices do they get?

   4 x 6 = 24; 6 x 4 = 24

9. A town has three post offices. In each post office there are five workers. How many workers do the post offices have in total?

   3 x 5 = 15; 5 x 3 = 15

10. There are eight tables in the classroom and four students per table. How many students are in Mr. Jones' class?

    8 x 4 = 32; 4 x 8 = 32

Summative Assessment

The assessment contains three sections. The first section requires the students to write two equations that could represent the written sentence. In the second sentence, the students will write two written phrases that correlate to the equations given. Five word problems will be given at the end where the students have to write the solutions as two separate equations. A copy of the summative assessment along with the scoring rubric is attached.