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| **TEAM Lesson Plan Template** |
| Teacher: Rachael Worley and Carrie Stringer |
| Subject/Grade: 5th grade Math  |
| Lesson Title: “Interpret Multiplication as Scaling Mini Lesson” |
| **STANDARDS:** |
| 5.NF.B.5a Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. For example, know if the product will be greater than, less than, or equal to the factors. |
| **OBJECTIVES:** |
| I can statement:* I can determine whether a product will be greater than, less than or equal to one factor based on the other factor. (level 3)
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| **MATERIALS AND RESOURCES:** |
| Materials: * Chart paper
* Set 1: fraction multiplied by whole number equations. These equations should be displayed on chart paper. (see end of lesson plan)
* Set 2: whole number multiplied by improper fraction equations. These equations should be displayed on chart paper. (see end of lesson plan)

What if technology is not working?* Ideally, this is shown under document cameras and observations are recorded on a whiteboard; however, the list of equations can be displayed on a white board or chart paper.

Routine for distributing materials: * No materials will be distributed. The list of equations will be displayed using a document camera and on chart paper.
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| **ACCOMMODATIONS/ADAPTATIONS:** |
| Accommodations: * Preferential seating
	+ Close to teacher for behavior or attention needs
	+ Close to a peer for students with math difficulties

Enrichment option:* Students will create equations where the product will be less than one of the factors.
* Students will create equations where the product will be greater than both of the factors.

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| **MOTIVATING STUDENTS/ANTICIPATORY SET:** |
| Hook Question/Class discussion:* The teacher asks, “When we multiply two numbers greater than one do we get a product that is greater than, less than, or equal to the two factors?” Teacher provides examples such as 3 x 4 = 12, 5 x 5 = 25, or 7 x 3 = 21. Display this question and equations on chart paper for students to reference. Using advancing and assessing questions, the teacher should help the students reach the conclusion that the product is larger than the two factors in the equation. Record student conclusions on chart paper.
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| **INSTRUCTIONAL PROCEDUCRES:** |
| **Lesson Layout**Introduction:* Display Set 1: fraction multiplied by whole number equations on chart paper. The teacher asks, “What do you notice about the factors in the equations?” Using advancing and assessing questions, the teacher helps guide the students to determine that one factor is less than one whole while the other factor is greater than one whole. Record conclusions on the chart paper. Once that conclusion is reached, the teacher asks, “What do you notice about the products of these equations?” Using advancing and assessing questions, the teacher helps guide the students to determine that the product decreases and is less than the whole number. Record conclusions on the chart paper. When that conclusion is reached, the teacher asks, “How can that be possible if we determined that when we multiplied two factors our product got bigger?” Using advancing and assessing questions, the teacher helps guide the students to the understanding that when we multiply a whole number greater than one by a whole number greater than one the product increases and when we multiply a whole number greater than one by a number less than one our product decreases because we are finding a “part of a whole”. Record this conclusion on the chart paper.

Middle: * Display Set 2: whole number multiplied by improper fraction equations on chart paper. The teacher asks, “What do you notice about the factors in these equations?” Using advancing and assessing questions, the teacher helps guide the students to determine that both factors are greater than one whole, emphasizing that an improper fraction is a number greater than one whole. Record conclusions on the chart paper. Once that conclusion is reached, the teacher asks, “What do you notice about the products of these equations?” Using advancing and assessing questions, the teacher helps guide the students to the conclusion that when both factors are greater than one whole the product will increase and be greater than both factors. Record conclusions on the chart paper. Link this back to the hook question.

End/Closure: * Exit ticket: Direct student attention back to the hook question asked in the anticipatory set. The teacher asks, “When you multiply two numbers will the product always increase? Why/why not?” Students record their answers on a piece of paper.

**Motivating Students*** Verbal praise; make sure to praise the *process* and not the end result. This helps encourage those struggling learners and keeps them engaged in putting forth the effort.

**Presenting Instructional Content** * Class discussion with teacher assessing and advancing questioning and accountable talk.

**Instructional Strategies** Input: * Hook

Exploration and Discussion: * Teacher guides exploration through assessing and advancing questions during class discussion.

Check for Understanding: * Check for understanding through questioning
	+ Struggling Students: Have them repeat important parts of the discussion in their own words right after another student states a conclusion. Guide them in their restatement if needed.
	+ Challenging Students: Extend thinking by having students give examples of equations where the product would decrease and where the product would increase.
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| **QUESTIONING/THINKING/PROBLEM SOLVING:**  |
| Questioning - These questions will occur throughout the activity as prompts based on groups’ or individual students’ progress and needs. These are also meant to be springboards to other questions.Knowledge: * What is a factor, product, equation, improper fraction?
* What do you notice about the factors in the equations?
* What do you notice about the products of these equations?

Comprehension: * How can that be possible if we determined that when we multiplied two factors our product got bigger?
* When you multiply two numbers will the product always increase? Why/why not?

**Thinking**Analytical: * Examining and determining conclusions about factors.
* Examining and determining conclusions about products based on factors.

What am I going to do to give students an opportunity to: * Generate a variety of ideas?
	+ Use assessing and advancing questions during the class discussion.
	+ Allow students to use class discussion to build on each other’s ideas.
* Analyze problems from multiple viewpoints?
	+ Facilitate class discussions and encourage a variety of thoughts/ideas from different levels of students.

**Problem Solving**Class discussion: * Allow time for students to expand on each other’s ideas during class discussion.

Predicting outcomes: * Hook question
* End/Closure question

Improving solutions: * Teacher-led discussion using assessing and advancing questions based on student ideas
* Exit ticket
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| **ASSESSMENT** |
| * Hook and Exit Ticket
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| **CLOSURE** |
| Students record thoughts on exit ticket question and turns in to teacher.  |

Set 1: fraction multiplied by whole number equations:

* $\frac{1}{2}$ x 3 = 1 $\frac{1}{2}$
* $\frac{1}{6}$ x 5 = $\frac{5}{6}$
* 4 x $\frac{1}{3}$ = 1 $\frac{1}{3}$
* 2 x $\frac{1}{4}$ = $\frac{1}{2}$

Set 2: whole number multiplied by improper fraction equations:

* 3 x $\frac{4}{3}$ = 4
* 2 x $\frac{3}{2}$ = 3
* $\frac{5}{3}$ x 4 = 6 $\frac{2}{3}$
* $\frac{6}{4}$ x 5 = 7 $\frac{1}{2}$

**NOTES:**

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