

Title:	Animated Word Problems
Grade(s):	4-5
Subject(s):	Math
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Overview:	The class will create and solve multiplication and division word problems. They will illustrate examples using Scratch.
Content Standards:	<p>MA(4) 2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. [4-OA2]</p> <p>MA (5) 8. Fluently multiply multi-digit whole numbers using the standard algorithm. [5-NBT5]</p> <p>MA (5) 9. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. [5-NBT6]</p> <p>TC (3-5) 12. Create a product using digital tools.</p>
Local/National Standards:	
Primary Learning Objectives:	The students will be able to write, solve, and illustrate multiplication and division word problems.
Additional Learning Objectives:	
Approximate Duration of Lesson:	1-2 hours
Materials and Equipment:	Math Journals
Technology Resources Needed:	Computer with Scratch
Background/Preparation:	Students will be knowledgeable of how to program in Scratch. Teacher will have sample Scratch presentation available for students: Animated Word Problems.sb
Procedures/Activities:	<p>Step 1 The class will review multiplication and division word problems using their math journals and/or other past multiplication and division resource materials.</p>

Step 2 The teacher will ask students how multiplication and division concepts can be expressed in words. The teacher will write on the board the key components of creating and comprehending word problems. The following list includes key words that are used to express math in sentence form:

- Multiplication
 - Of
 - Times, multiplied by
 - Product of
 - Increased/decreased by a factor of
- Division
 - Per
 - Out of
 - Ratio of, quotient of
 - Percent
- Equals
 - Is, are, was, were, there, will be
 - Gives, yields
 - Sold for

The above lists have been adapted from
<http://www.purplemath.com/modules/translat.htm>

Step 3 The teacher will explain how each word represents a specific operation. Next, the teacher will explain how word problems can be constructed and solved using these key words.

Step 4 The teacher will show a sample Scratch program that reiterates the concepts in Steps 2 and 3. It also demonstrates what is expected of the students.

Step 5 Students will work in pairs to write and solve a multiplication and a division word problem using the appropriate words from the list.

Step 6 The pairs will then move to the computers and begin inputting their problems into a Scratch animation.

Step 7 When completed the students will present their Scratch animation to the class.

Attachments:

Scratch Getting Started Guide
<http://info.scratch.mit.edu/sites/infoscratch.media.mit.edu/docs/ScratchGettingStartedv14.pdf>

Scratch Cards
http://info.scratch.mit.edu/support/scratch_cards

**Assessment
Strategies:**

Rubric
http://rubistar.4teachers.org/index.php?screen>ShowRubric&module=Rubistar&rubric_id=2201420&

**Extension:
Remediation:**

Those that finish early can complete more word problems in Scratch. Begin with addition and subtraction word problems for the Scratch project. Then, move on to multiplication word problems.