

Reading Strategies in Math: 9<sup>th</sup> Grade Algebra I  
**By Tom Stull, Ludlow High School**

\*<http://www.jackson.k12.ky.us/readingstrategies/more/math/tomstull.htm>

Tom Stull works for a school district that has been aggressively working to improve students' reading abilities, and has conducted numerous professional development workshops on reading in mathematics and science. At the website above\*, you will find many videos. Some of the resources include [Teaching Reading in the Content Areas: If Not Me, then Who?](#) by Rachel Billmeyer and [Teaching Reading in Mathematics \(2nd Edition\)](#) by Mary Lee Barton and Clare Heidema.

**Teacher Talk**

Explain how you analyze the written material your math students will be reading and plan for the instruction students will need before, during, and after they read. Cite the impor-

tance of establishing prior knowledge of vocabulary and mention some of the specialized reading needs for math.

Video\* at <http://www.jackson.k12.ky.us/readingstrategies/more/math/tomstull.htm>

Reading Strategies

**Activate Prior Knowledge**

Use an anticipation guide too assess what prior knowledge of vocabulary and concepts students bring to a math lesson. Ask students to mark statements they read as true or false. As they share their responses with a partner, both will draw on prior knowledge to review concepts and anticipate or predict meaning for new concepts.

Video\* at <http://www.jackson.k12.ky.us/readingstrategies/more/math/tomstull.htm>

**Algebra I  
Anticipation Guide  
Primitive Pythagorean Triples**

**Directions:** In the column labeled *Me*, place a check next to any statement with which you agree. After reading the text compare your opinions about those statements with information in the text.

<b>Me</b>	<b>Text</b>	
_____	_____	1. The lengths of the sides of a right triangle must be integers.
_____	_____	2. A Pythagorean triple is a group of three numbers that could be the lengths of the sides of a right triangle.
_____	_____	3. Pythagorean relationships occur in <b>all</b> triangles.
_____	_____	4. A primitive Pythagorean triple is a group of three numbers that could be the lengths of the sides of a right triangle.

## READING STRATEGIES IN MATHEMATICS CONT.

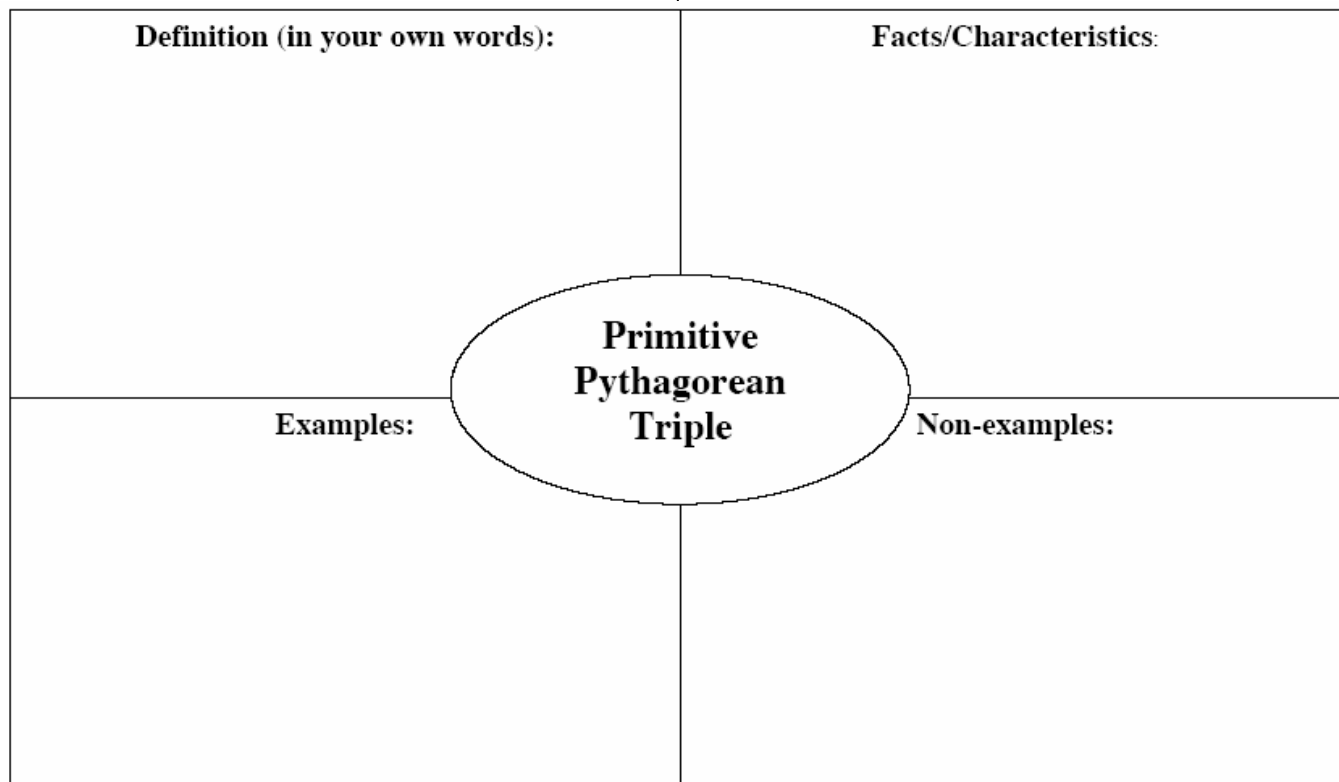
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### Understand Vocabulary

Use graphic organizers to isolate one topic or phrase for students. Ask students to paraphrase a topic's definition, list facts and characteristics, and provide examples and non-examples. Gradually lead students toward inde-

pendent use of the graphic organizer, introduce the topic for your class and review the students' work.

Video\* at <http://www.jackson.k12.ky.us/readingstrategies/more/math/tomstull.htm>



### Monitor Comprehension

Talk about various ways that reading in math can differ from reading material organized in paragraphs. Describe how students react to word problems and discusses use of a KNWS (Students read the problem and record what facts they know, what information is not needed, what the problem is asking them to find, and what strategy they will use to solve the problem.) Ask students to read a word problem, and model charting the information in the proper columns.

Video\* at <http://www.jackson.k12.ky.us/readingstrategies/more/math/tomstull.htm>

The **KNWS sheet** is on the next page

Explain how to construct questions as a guide for students as they read the math textbook. Address vocabulary issues and require students to paraphrase key ideas. After a student reads the math text orally, direct students' attention to a specific term and ask them to compare its defini-

tion to an earlier prediction they made about it.

Video\* at <http://www.jackson.k12.ky.us/readingstrategies/more/math/tomstull.htm>

*During Reading Questions and Information Sheet* on the next page.

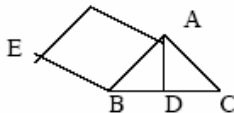
### Reflect on Reading

Discuss how reflecting upon what was accomplished in class allows both students and teacher to better understand what they were doing and what they learned from the experience. At the end class, ask students to paraphrase important concepts addressed that day, create a question based on the material for a classmate to answer, and write a statement about when they would use a specific concept in order to connect it to their lives.

Video\* at <http://www.jackson.k12.ky.us/readingstrategies/more/math/tomstull.htm>

# K-N-W-S Worksheet

**The Problem:** A tent will have the shape shown when it is pitched. When he unpacks the tent, Andy measures length AB as 5.5 feet. He measures length BC as 6.2 feet and length BE as 7.8 feet. What will be the length of the pole, AD, when the tent is pitched?



**K**

What facts do I **KNOW** from the information in the problem?

**N**

Which information do I **NOT** need?

**W**

WHAT does the problem ask me to find?

**S**

What **STRATEGY/** operation/tools will I use to solve the problem?

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## Algebra I    Primitive Pythagorean Triples    During Reading Questions

As you read the information on the Primitive Pythagorean Triples sheet, please write a short answer for each of the following questions. You may discuss the questions with your partner.

1. Are all integers numbers?
2. Are all numbers integers?
3. In your own words, what does the expression " $u > v$ " mean?
4. In your own words, what is a "prime number"?
5. If two numbers are "relatively prime," what does that mean?

## Algebra I    Primitive Pythagorean Triples    Definitions:

- A **Pythagorean triple** is a group of three numbers that could be lengths of the sides of a right triangle.
- A **primitive Pythagorean triple** is a group of three integers that could be the lengths of the sides of a right triangle.

### Generating Primitive Pythagorean Triples:

To generate primitive Pythagorean triples, choose two integers,  $u$  and  $v$ , as generating numbers that meet the following conditions:

- $u > v$
- $u$  and  $v$  must be relatively prime
- $u$  and  $v$  cannot be both odd or both even

The primitive Pythagorean triple  $a, b, c$  will be defined by the following:

$$a = u^2 - v^2$$

$$b = 2uv$$

$$c = u^2 + v^2$$

Complete the following table:

Generating Numbers		Pythagorean Triples		
$u$	$v$	$a$	$b$	$c$
2	1	—	—	—
3	2	—	—	—
4	—	—	—	—
—	—	—	—	—
—	—	—	—	—