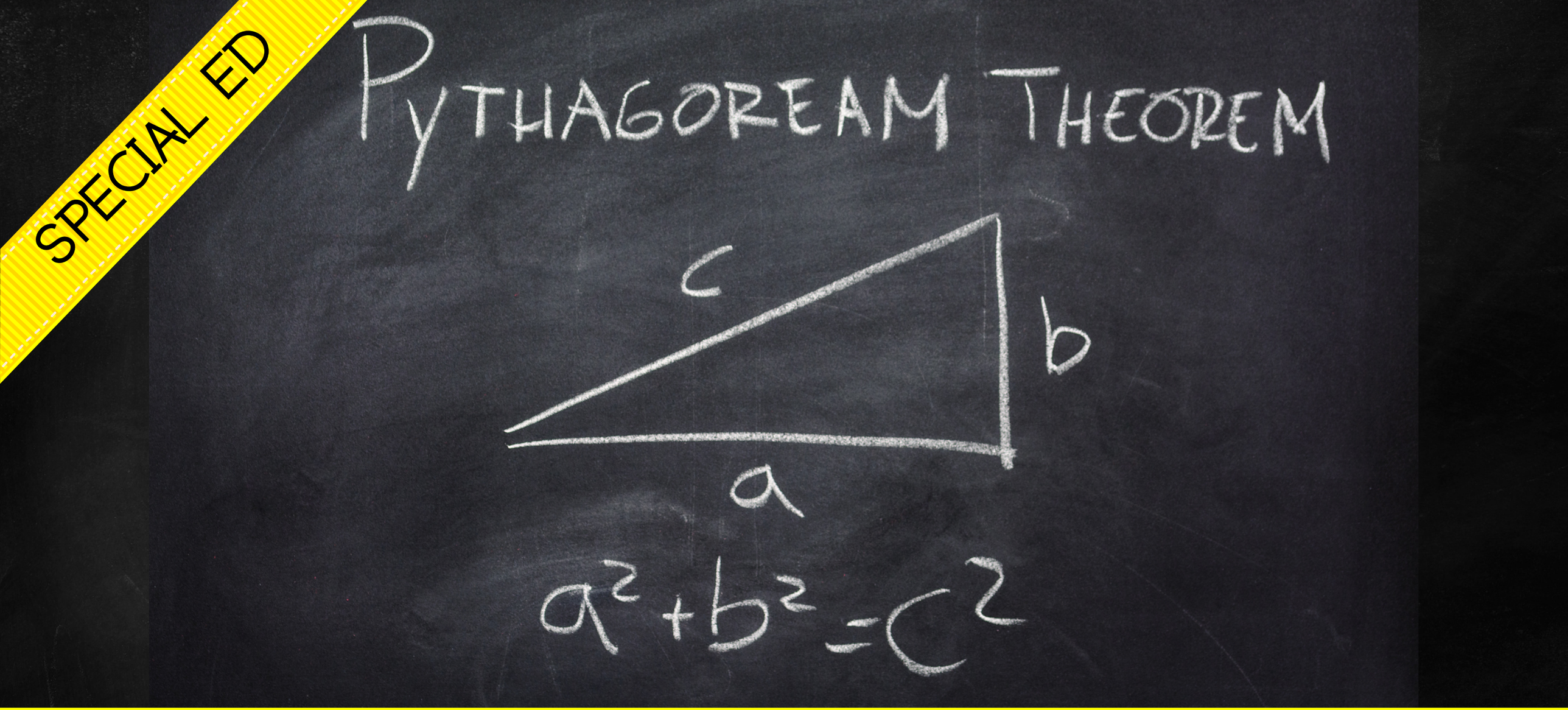
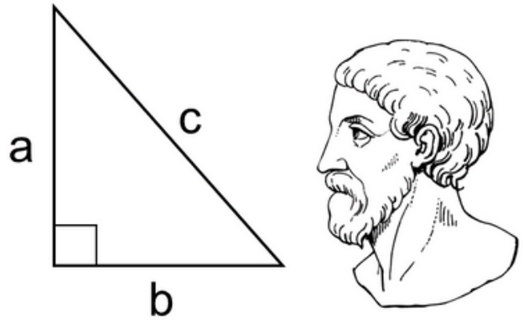



INCLUDES GOOGLE SLIDES

This unit was created with this guy in mind. He has autism and an intellectual disability. He is a non-reader, has a very short attention span, and has a few foundational math skills. With some support, he is able to do this unit and enjoys the challenge. He is my tester!!

# Pythagorean Theorem

By
Christa Joy
Special Needs for Special Kids






$$a^2 + b^2 = c^2$$



## Table of Contents



In separate files you will find:

- Lesson plans
- Voice recorded PowerPoint
- Directions and links to digital activities



This unit contains over 100 pages of material and 54 google slides. I have included a detailed lesson plan to help you make the most of everything in this unit including how to add some group activities.

# *Pythagorean Theorem Lesson Plan*

**Preparation**

- Print out a vocabulary board for each student to use throughout unit
  - Laminate or place in page protector
- Book
  - Print out, laminate, and bind
  - OR your students can listen to the pre-recorded movie included in the pdf that has directions and links to digital activities.
- Vocabulary cards
  - Print out a set of cards onto cardstock and laminate
  - Make one set for each student and also one for the teacher to use in I Spy games
- Power card
  - Make a copy for each student and laminate

**Teaching Tips**

1. *Color Coding*: this is a really easy way to add more structure to a matching activity. Outline or color in an empty box or sorting label. Outline or color in the corresponding picture symbols the same colors. Becomes a color matching task.
   a. For more info, read more here: https://specialneedsforspecialkids.org/2015/09/05/using-color-coding-for-differentiation/
   b. I also have a blog post on differentiating one activity 3 ways: https://specialneedsforspecialkids.org/2018/10/22/differentiating-1-activity-3-ways-easily-and-effectively/
2. *Make you own copies of the activities*: Every day I review the activity we did yesterday. For that reason:
   a. I often complete the activity myself and often laminated it for easy review that I could use year after year.
   b. My copies were also helpful as either a model for students who needed more support or as a way for more advanced students to self-check their work.
3. *Options for Use*: Turn any activity into a reusable file folder activity by laminating and adding Velcro.
   a. For more info, watch this video here: https://www.teacherspayteachers.com/Product/Making-File-Folder-Activities-3474240

The lesson plans contain:

Overall tips for teaching students with significant needs

Quick Look

| Day | Activity | Day | Activity | Day | Activity |
|---|---|---|---|---|---|
| 1 | • Book/movie<br>• Vocabulary and power card introduction<br>• Identify right triangles | 7 | • Book/movie<br>• Working with Pythagorean Theorem: writing equation | 13 | • Book/movie<br>• Working with Pythagorean Theorem: solving for c |
| 2 | • Book/movie<br>• Vocabulary and power card review<br>• Identify hypotenuse and legs of right triangle | 8 | • Book/movie<br>• Working with Pythagorean Theorem: solving for $c^2$ | 14 | • Book/movie<br>• Vocabulary cut and paste |
| 3 | • Book/movie<br>• Vocabulary and power card review<br>• Label parts of a right triangle | 9 | • Book/movie<br>• Working with Pythagorean Theorem: solving for $c^2$ | 15 | • Assessment |
| 4 | • Book/movie<br>• Vocabulary and power card review<br>• Label parts of a right triangle | 10 | • Book/movie<br>• Working with Pythagorean Theorem: solving for $c^2$ | | |
| 5 | • Book/movie<br>• Vocabulary and power card review<br>• Label parts of a right triangle | 11 | • Book/movie<br>• Working with Pythagorean Theorem: solving for c | | |
| 6 | • Book/movie<br>• Working with Pythagorean Theorem: writing equation | 12 | • Book/movie<br>• Working with Pythagorean Theorem: solving for c | | |

The lesson plans contain:

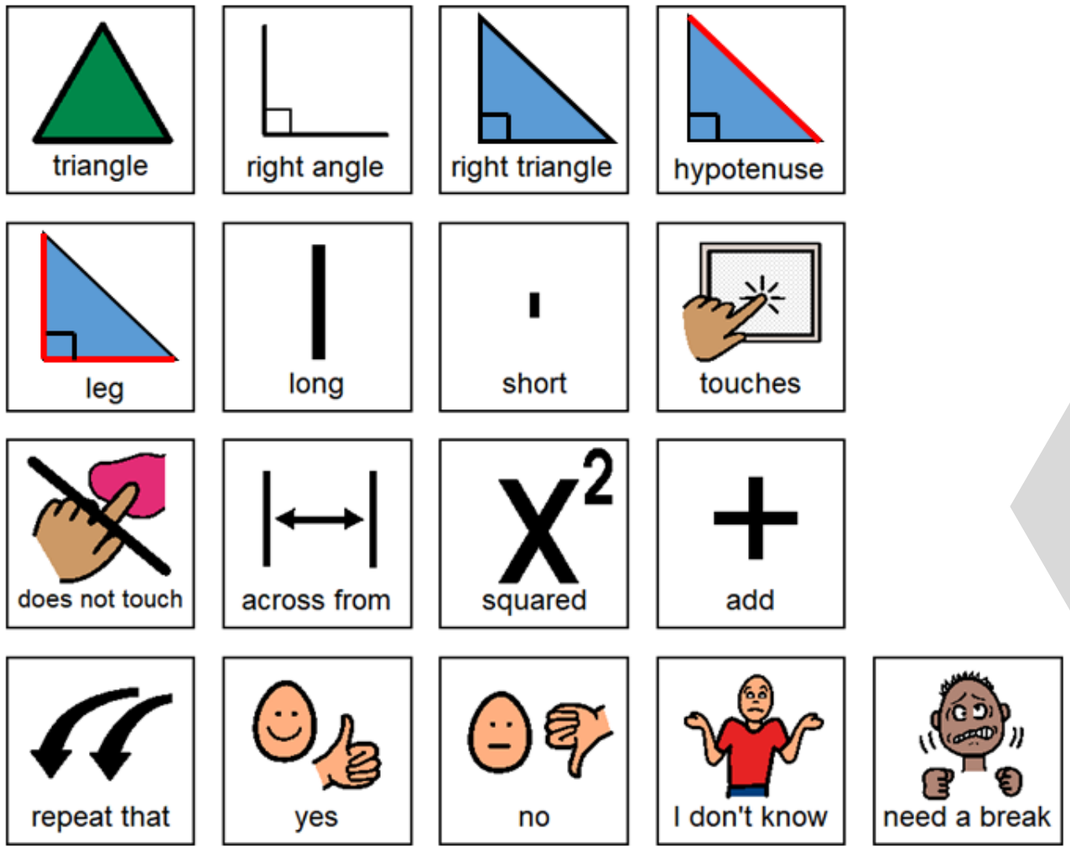
A quick look at what you will do each day

Day 3

| Activity | Notes | Materials |
|---|---|---|
| Read or listen to the movie of the book (10 minutes) | • Read through the story, asking lots of questions<br>• Continue to make connections between book and vocabulary board | • Book<br>• Vocabulary board |
| Vocabulary cards Scavenger Hunt (10 minutes) | • Place one set of the vocabulary cards around the room before lesson<br>  o Students walk around and find them, bring them back and matching them to their own set of cards<br>  o You can do this same activity with the vocabulary board. Just cut the individual symbols apart and place around the room. | • Vocabulary cards (extra sets)<br>• |
| Power cards review (5 minutes) | • Quick review. | • Power card |
| Worksheet review (5 minutes) | • Review the worksheet done yesterday | • Worksheet from yesterday |
| Worksheet: label parts of the triangle (10 minutes) | • Complete the first 2 worksheets where students label the parts of the right triangle<br>• One worksheet uses words and ones uses a,b,c; do both to get students used to the naming nomenclature used with the Pythagorean Theorem<br>• Use color-coding for differentiation if needed.<br>• Make frequent references to power card. | • Worksheet<br>• Scissors<br>• glue |
| Sharing (10 minutes) | • Each student shares one of their finished problems with the group using the communication method of their choice | • Completed worksheets<br>• Communication devices |

The lesson plans contain:

Detailed instructions on how that day's lesson should run

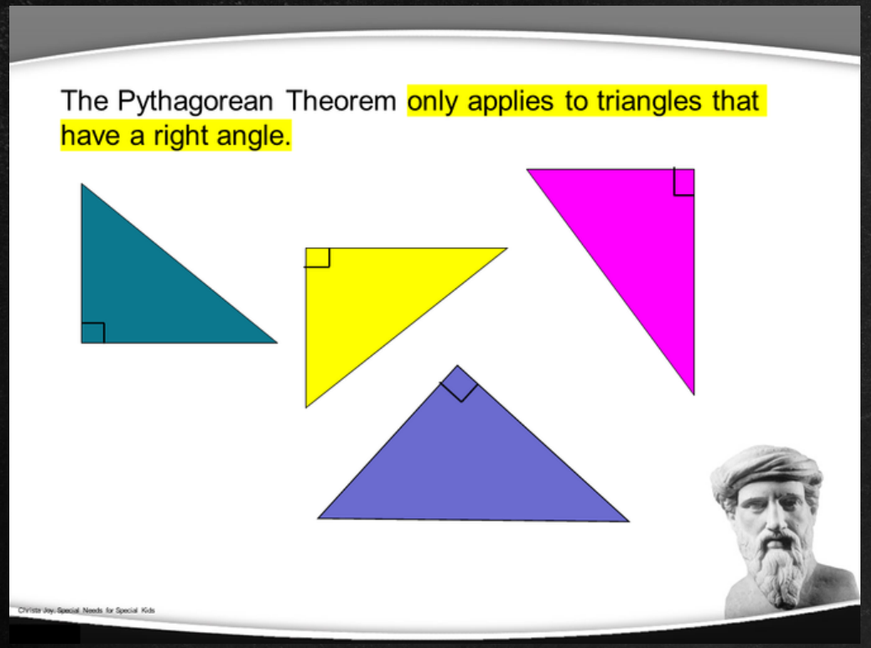


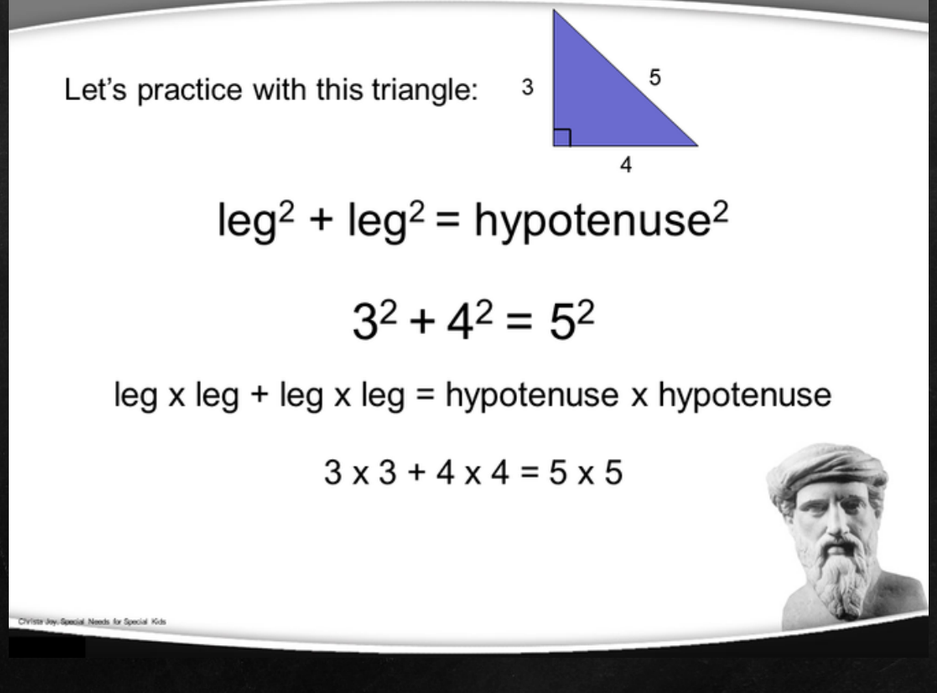



This unit comes with a vocabulary board.

Vocabulary boards are great for ALL students to assist with participation and engagement in group discussions.

Tips on how to use in the unit!!




There is a 30 page book using simple text and photos. It walks students through how to apply the Pythagorean Theorem.

- pdf version
- voice-recorded PPT
- mp4 movie format

**Pythagorean Theorem**

Solve for hypotenuse of a right triangle.

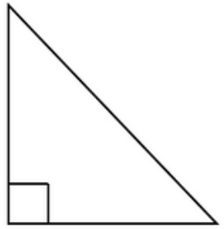
$a^2 + b^2 = c^2$

**right angle**

Angle that measures 90º

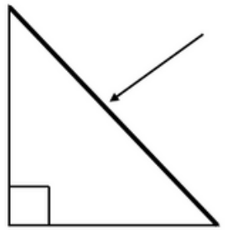
**right triangle**

Triangle with one angle that equals 90º



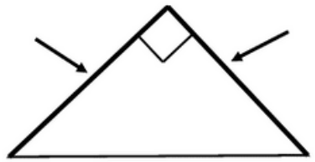
**hypotenuse**

The longest side of a right triangle.



**leg**

One of the 2 shorter sides of a right triangle.



**squared**

When the variable is multiplied by itself.

a x a

There are 6 vocabulary cards that cover vocabulary specific to this unit.

Included are suggestions for group activities to do with these each day.

**Pythagorean Theorem**

Solve for hypotenuse of a right triangle.

**right angle**

Angle that measures 90º

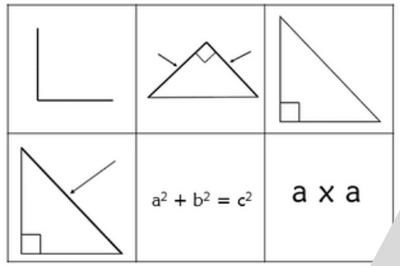
**right triangle**

Triangle with one angle that equals 90º

**hypotenuse**

The longest side of a right triangle.

Cut apart and match pictures with definition.

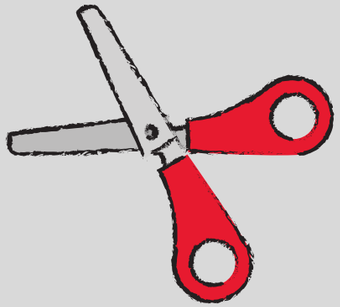


$a^2 + b^2 = c^2$

a x a

| | |
|---|---|
| The longest side of a right triangle. | |
| Solve for hypotenuse of a right triangle. | Wh |
| One of the 2 shorter sides of a right triangle. | Triangle |

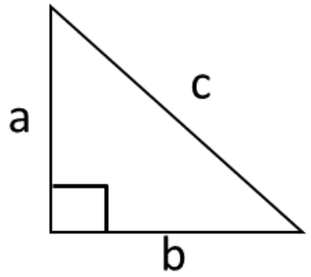
There is a cut and paste activity where students will match either the picture to the definition (easier) or the definition to the picture (harder).



Step by step cards for solving problems using the Pythagorean Theorem.
Made to fit on 4x6 index card.

- Print on cardstock and laminate
- Glue together back-to-back

**Pythagorean Theorem**




$a^2 + b^2 = c^2$

a = leg
b = leg
C = hypotenuse

Remember:

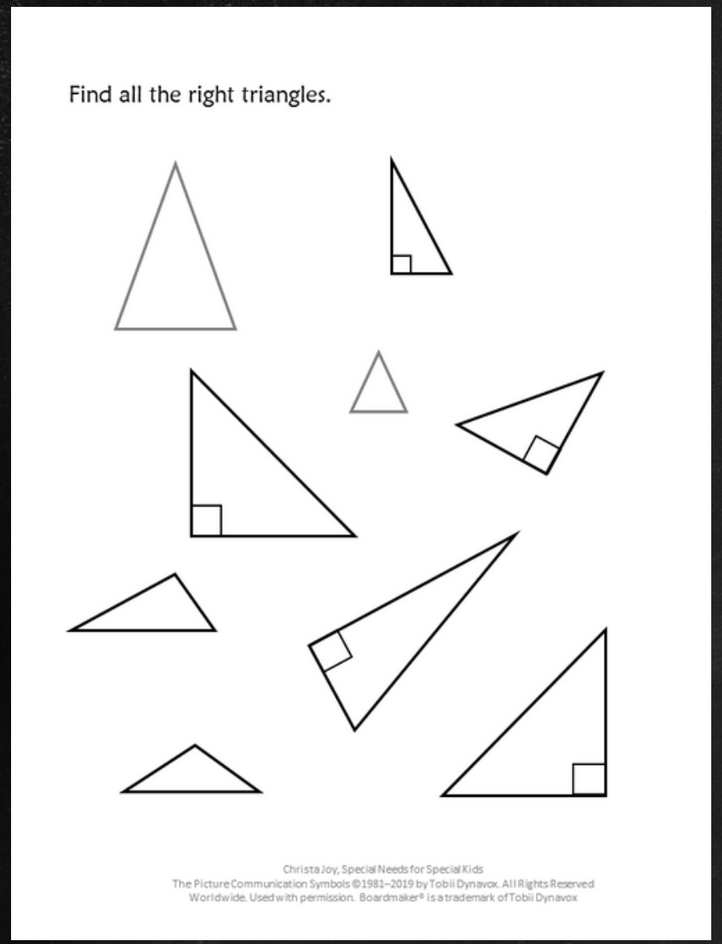
1. Hypotenuse is the longest side.
2. Hypotenuse is opposite the right angle.
3. Hypotenuse does not touch right angle.

***Can only use with right triangles.***

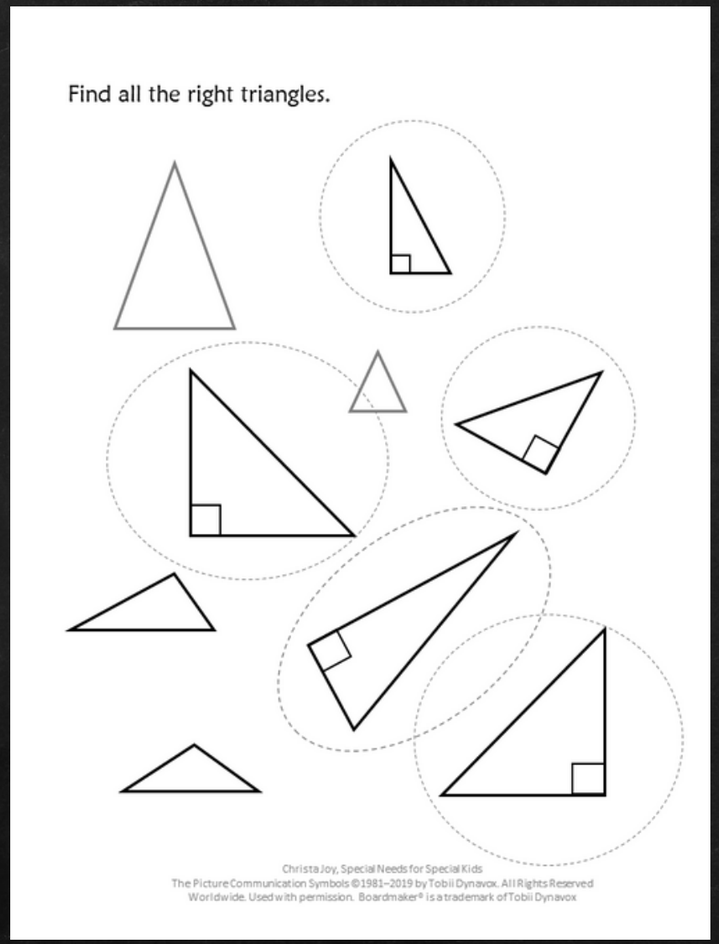
$a^2 + b^2 = c^2$

(axa) + (bxb) = (cxc)

There is a power card that summarizes what students need to remember when using the Pythagorean Theorem.

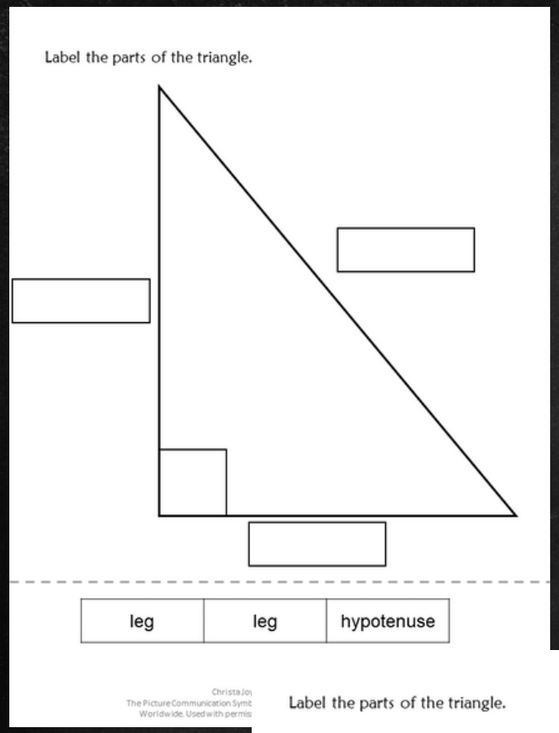


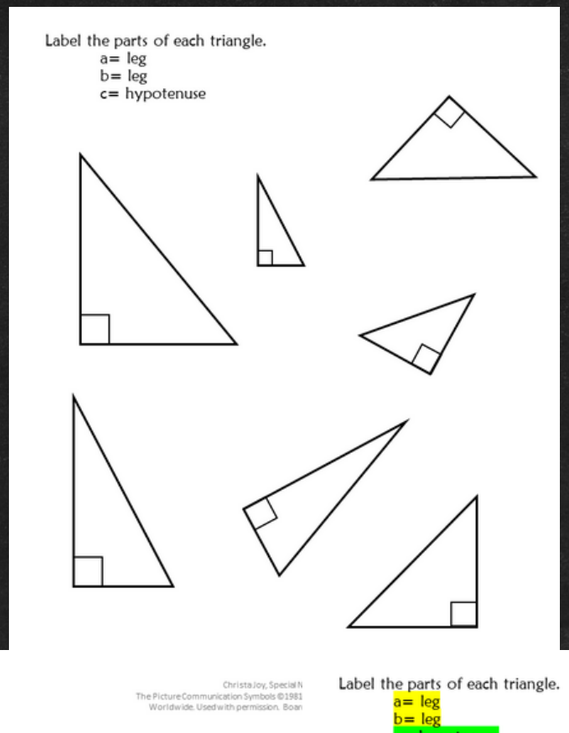

# Review

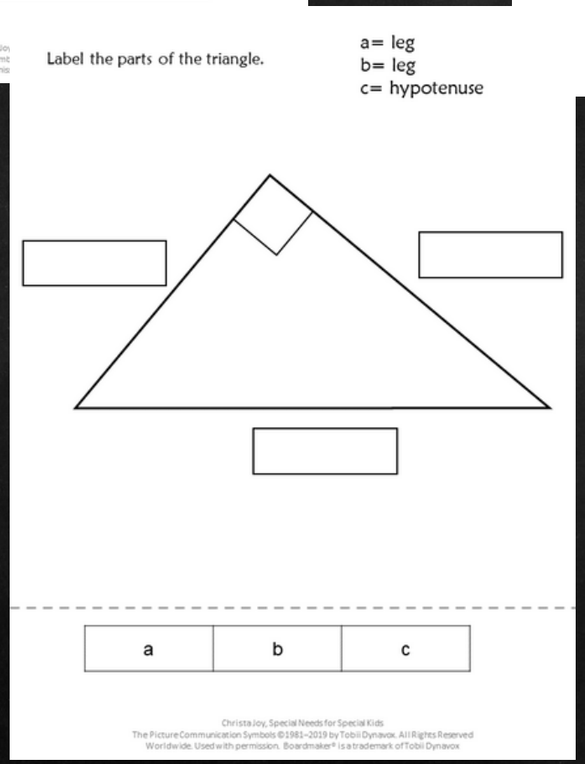


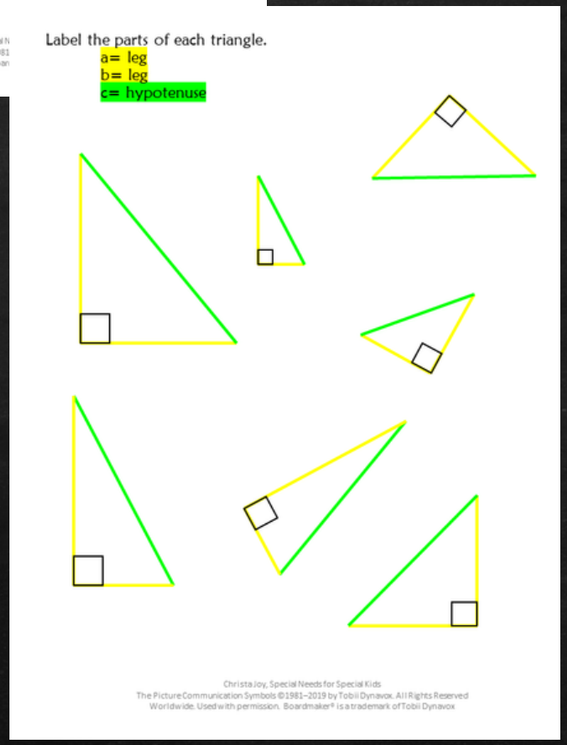

Students will review what right triangles look like. A differentiated version is included that has dashed circles for students to trace.

# Parts of a triangle

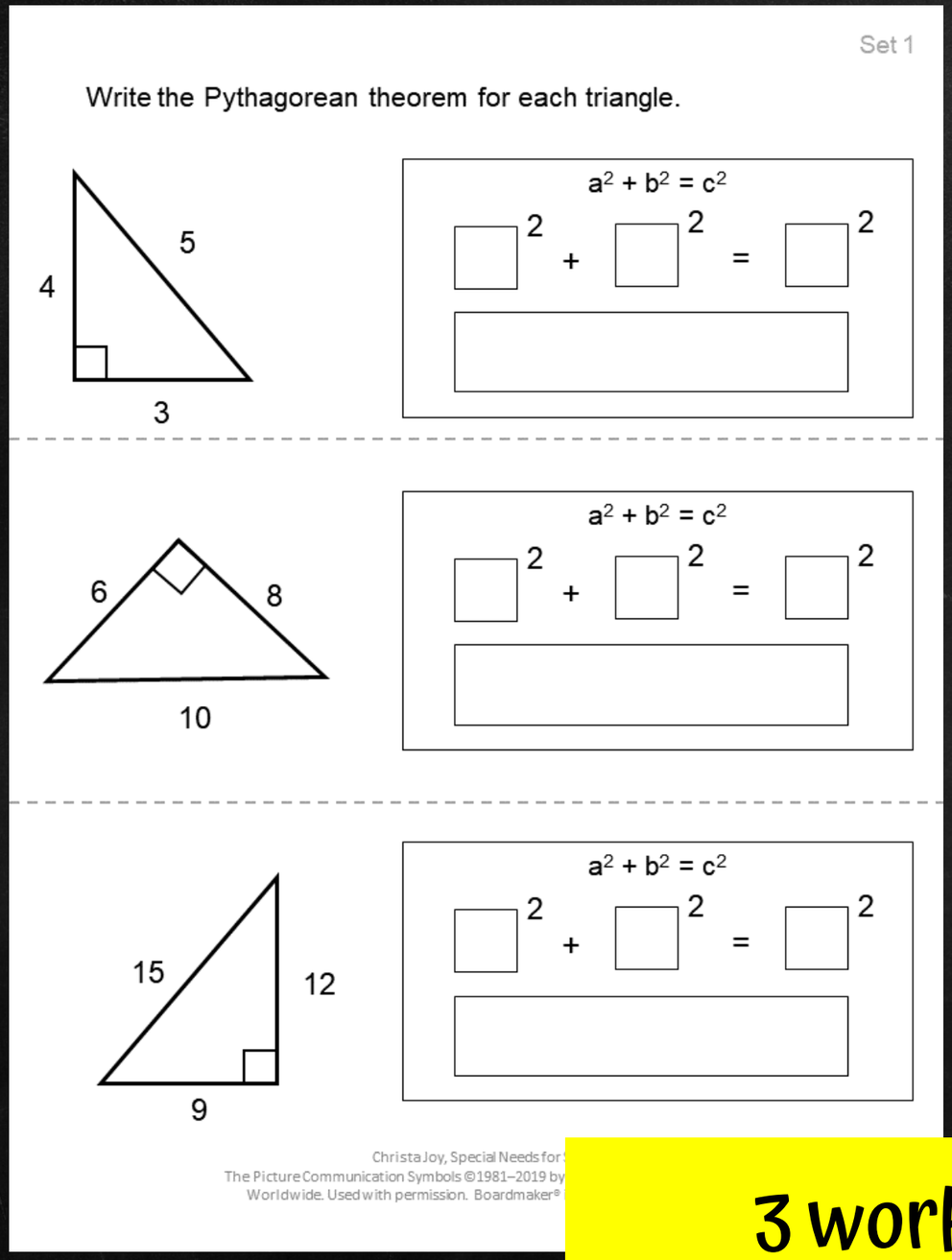



Students will label parts of a right triangle (legs and hypotenuse.) There are differentiated versions included.



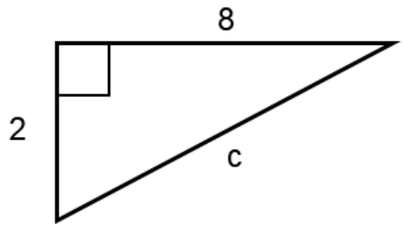

**3 worksheets**

# Scaffolded

Students will start actually working with the Pythagorean Theorem. There are 3 worksheet sets that will build the skills needed to finally solve for c (hypotenuse). First, students will practice writing out the equation.

Set 2

Solve for $c^2$ using the Pythagorean Theorem.




$a^2 + b^2 = c^2$

$\square^2 + \square^2 = \square^2$

x + x = $\square^2$

$\square^2 + x = \square^2$

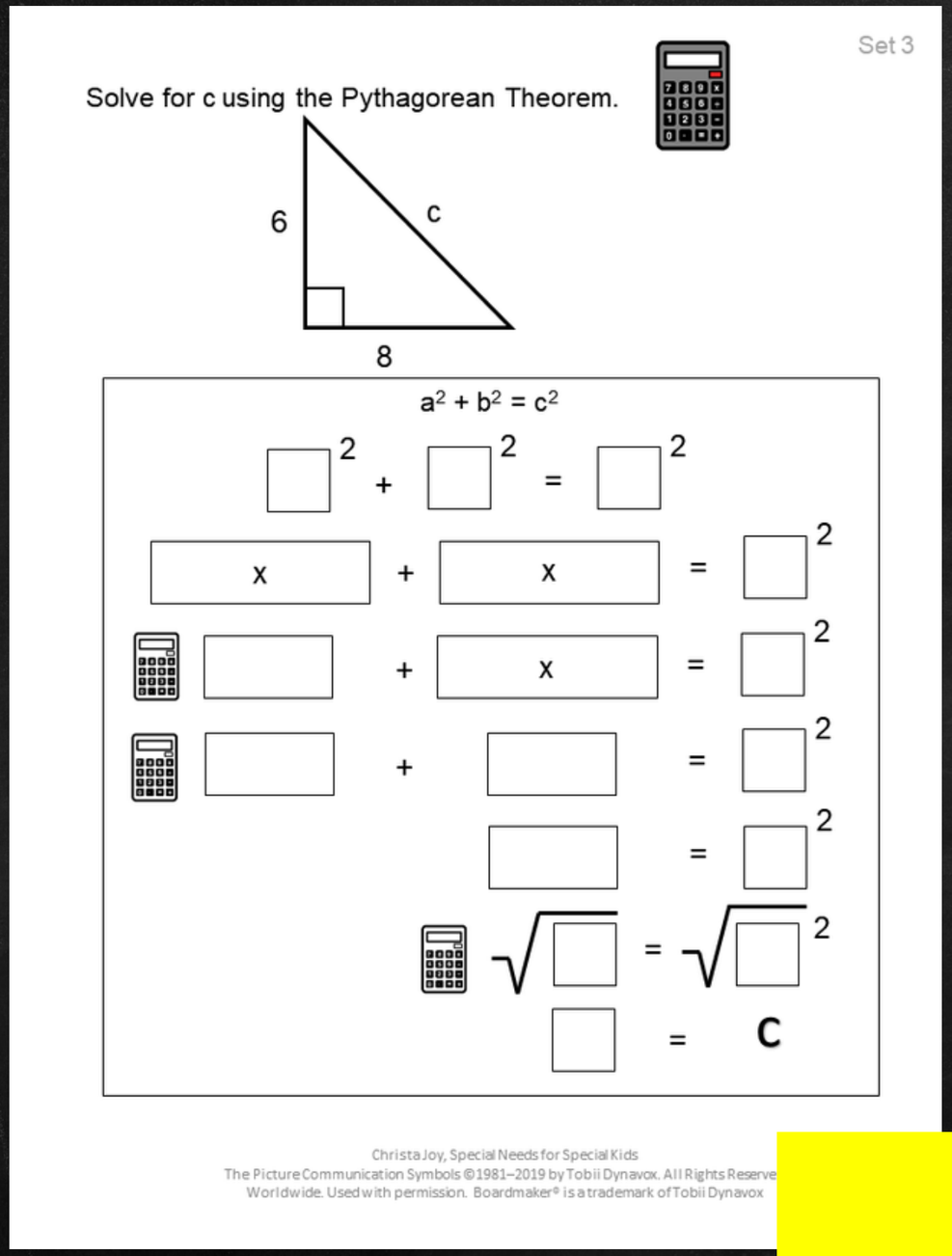
$\square^2 + \square = \square^2$

$\square = \square^2$



In set 2, students will solve for c2. It works through the problem step by step.

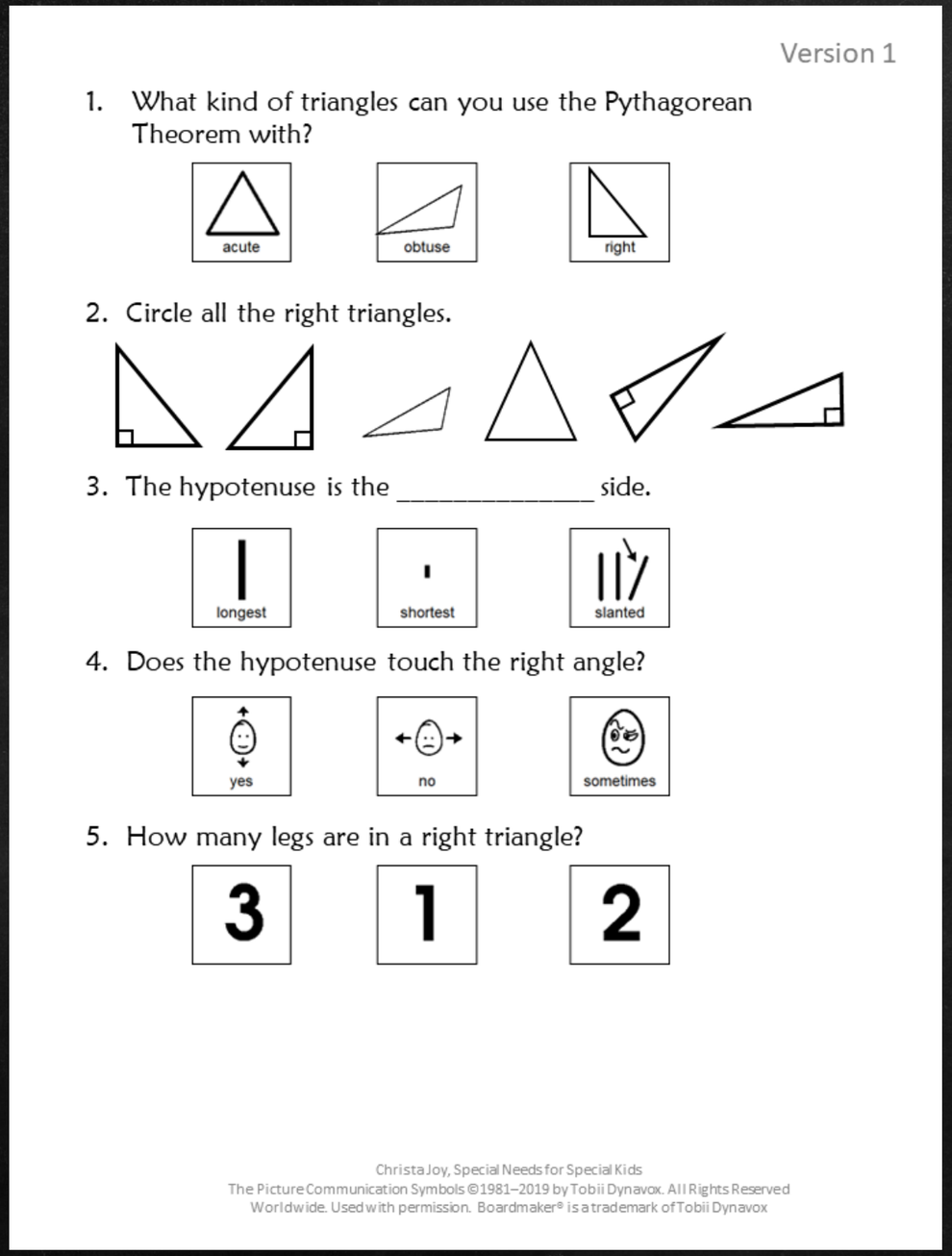
**7 worksheets**




In set 3, students will finally solve for c. It works through the problem step by step. These problems ass use Pythagorean Triples, so c will always be a whole number.

Answer key is included.

**7 worksheets**



Version 1

1. What kind of triangles can you use the Pythagorean Theorem with?

acute | obtuse | right

2. Circle all the right triangles.

3. The hypotenuse is the _____ side.

longest | shortest | slanted

4. Does the hypotenuse touch the right angle?

yes | no | sometimes

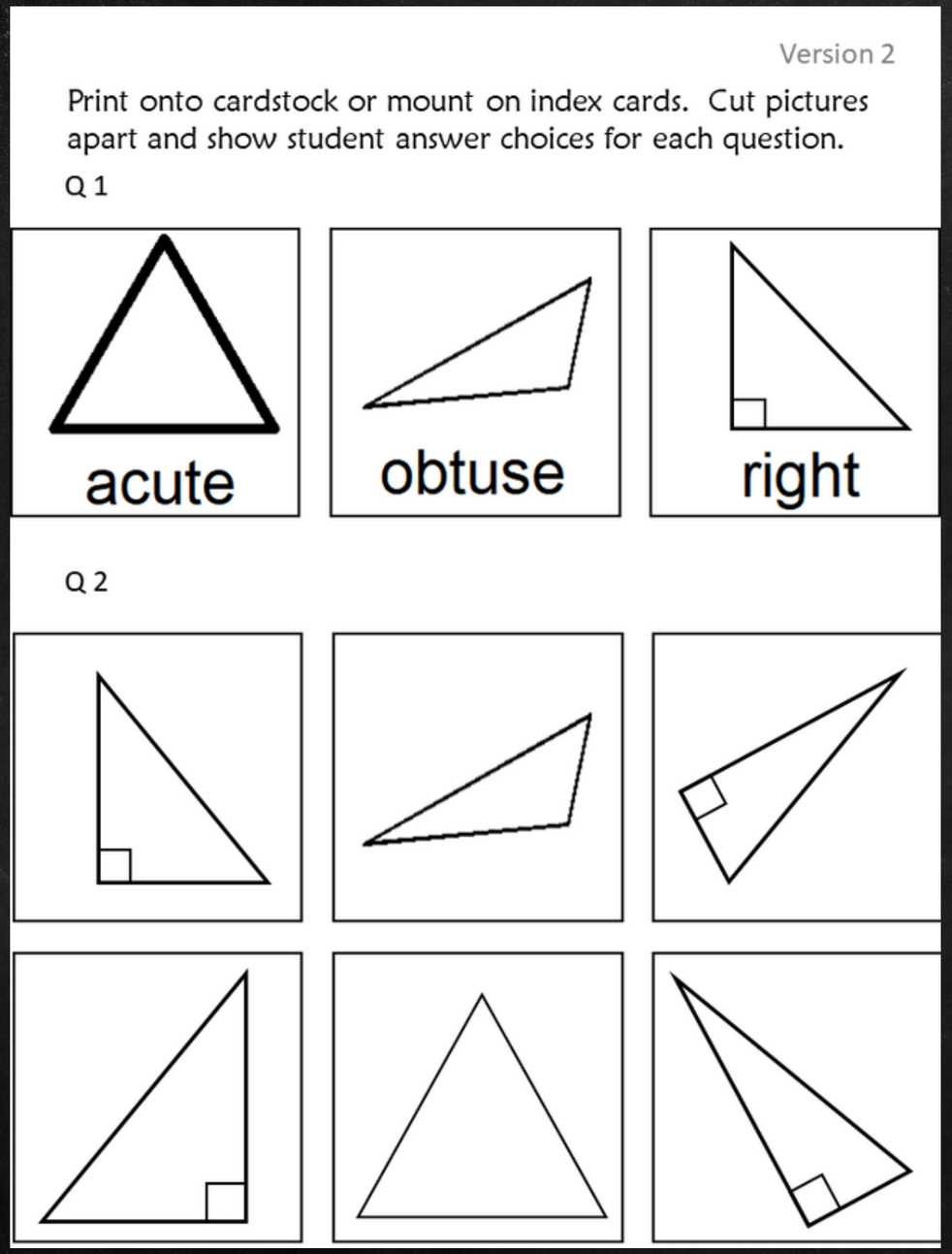
5. How many legs are in a right triangle?

3 | 1 | 2



FINALLY the assessment!! There are 3 versions. This version has 10 questions with 3 picture choices for each question.

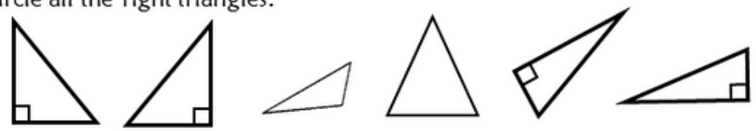
Answer key included.




With this version, you cut out the answer choices and glue them on index cards. Ask the student the question, and they point to the correct answer.

Version 3

1. What kind of triangles can you use the Pythagorean Theorem with?
   A. Acute
   B. Obtuse
   C. Right
2. Circle all the right triangles.



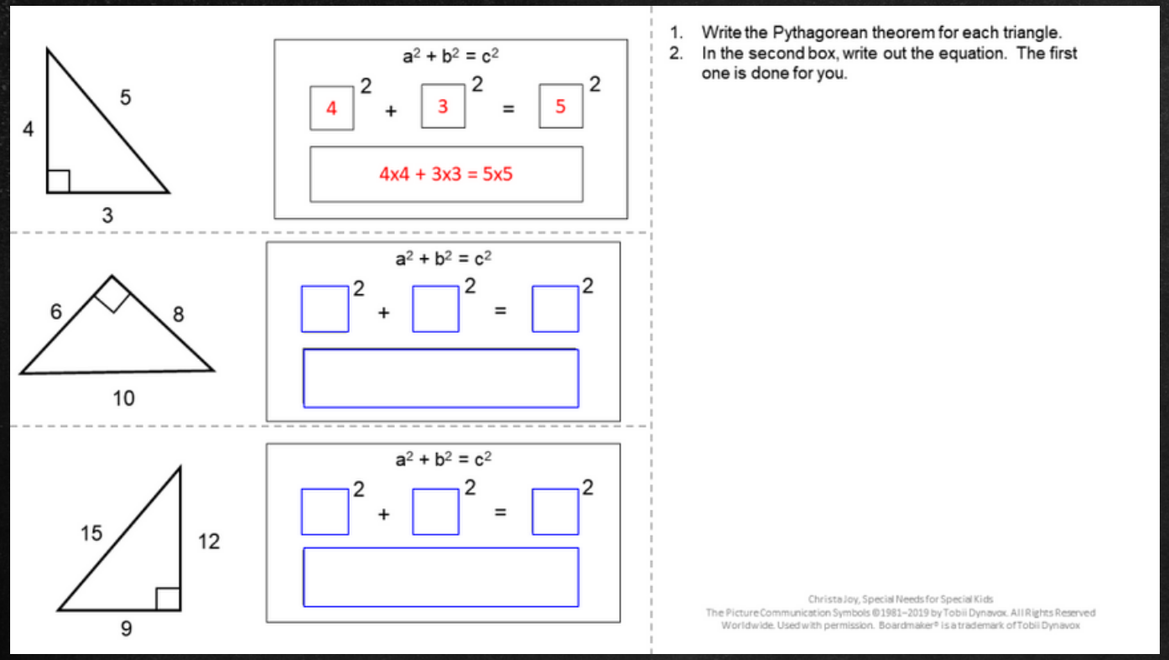
3. The hypotenuse is the _____ side.
   A. Longest
   B. Shortest
   C. Slanted
4. Does the hypotenuse touch the right angle?
   A. Yes
   B. No
   C. Sometimes
5. How many legs are in a right triangle?
   A. 3
   B. 1
   C. 2
6. Circle the Pythagorean Theorem.
   A. $a^2 + b^2 = c$
   B. $a^2 + b^2 = c^2$
   C. $2a + 2b = 2c$

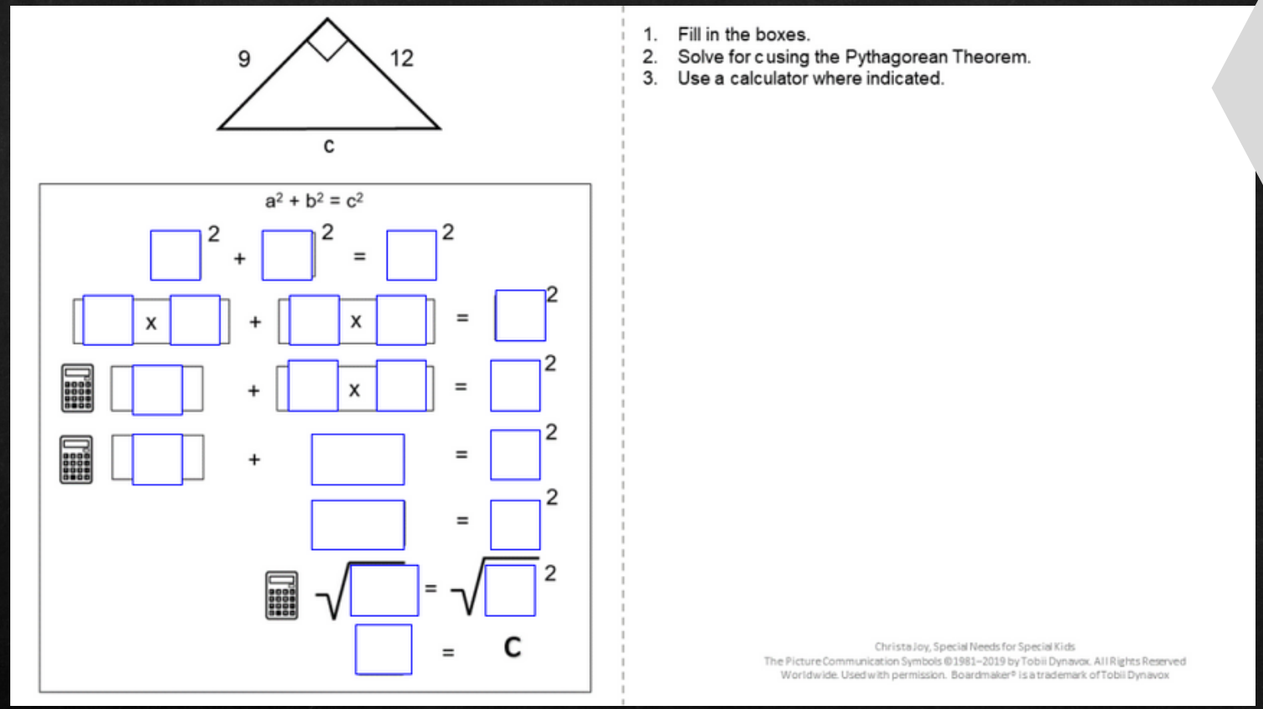


This is your traditional multiple choice version. It can also be used as a recording sheet if your students are using the version with index cards.

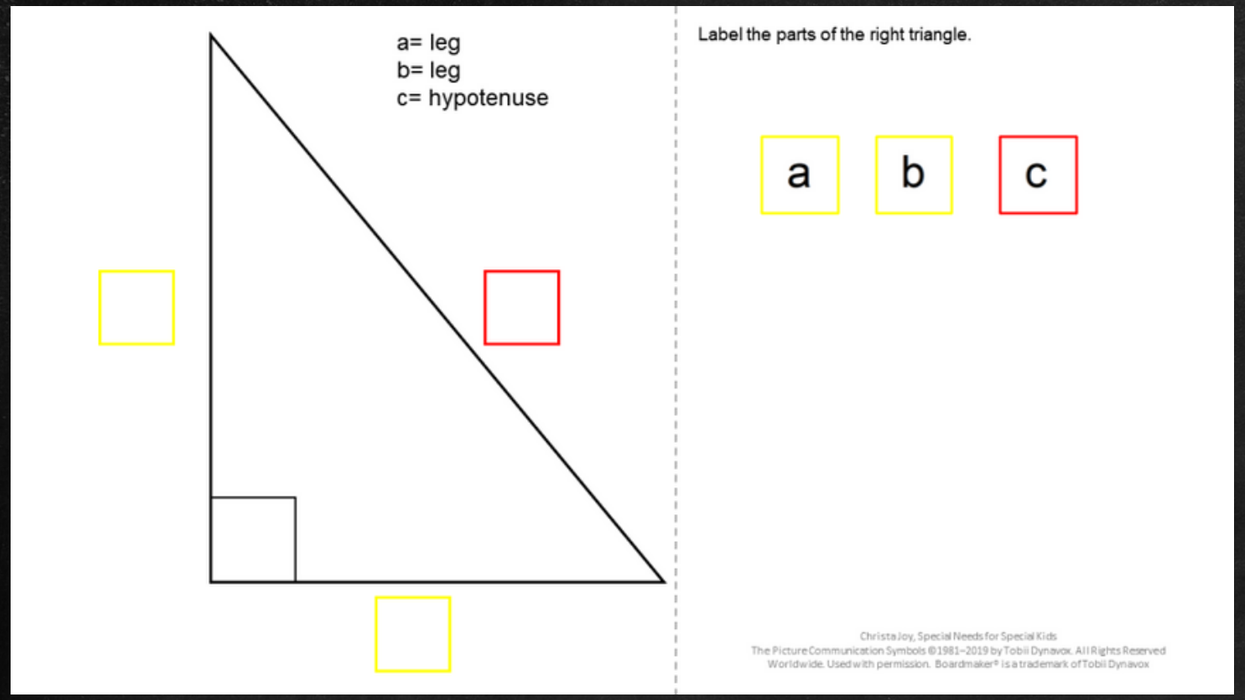
Listen to the book read aloud

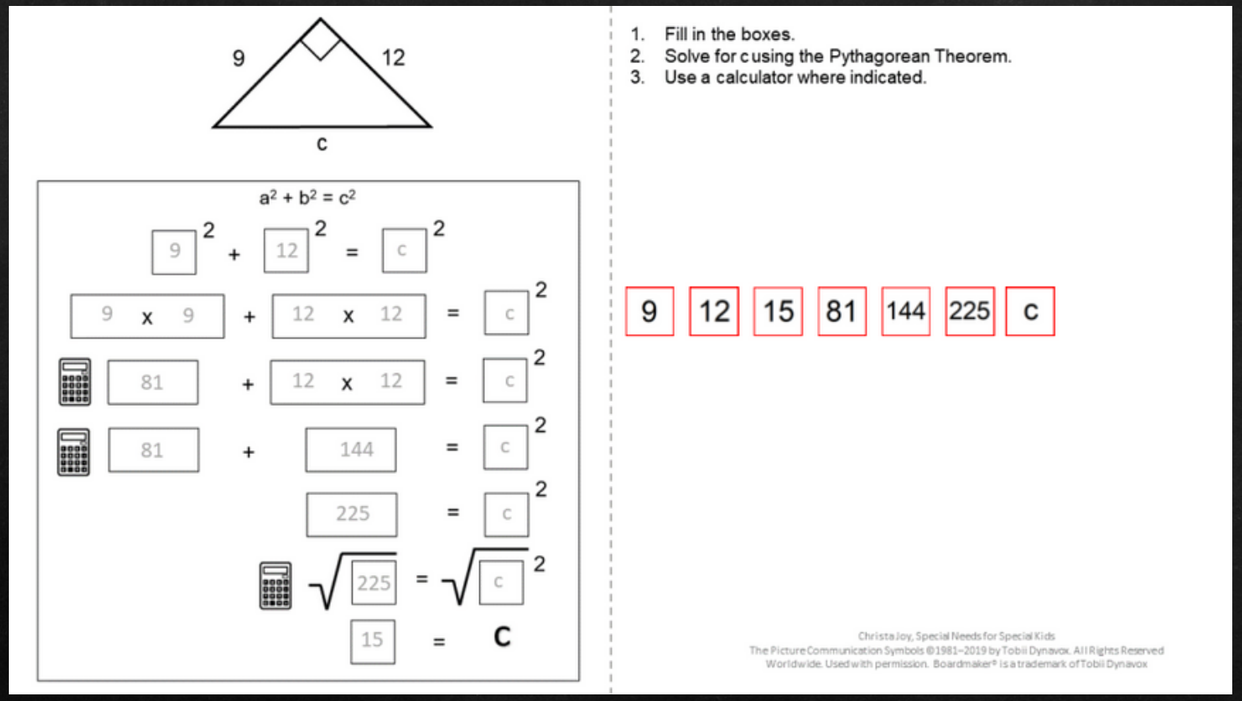

This unit also has digital activities. There is a movie version of the book students can listen to read aloud.




The digital activities have students click and drag their answers or type their answers in. There are 2 sets of 27 slides.




The second set of slides is differentiated using either color or numbers for students to match to. There is no typing in this set of slides.

I realize there will be some students out there unable to do cutting activities. I have a blog post with ways to complete activities without a pair of scissors!!

All of the activities (except the book) come in color and black and white.

**Click Here to read more!!**