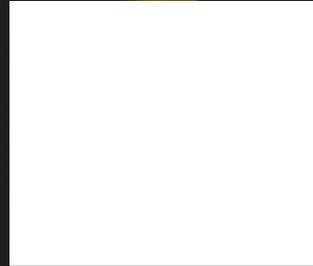


Progetto CLIL - Leone A. 2016



Pythagoras of Samos is often described as the first pure mathematician

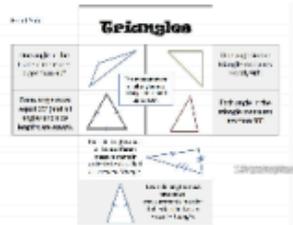
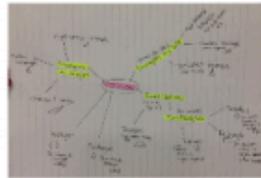
Pythagoras

and his famous theorem

Activity 1

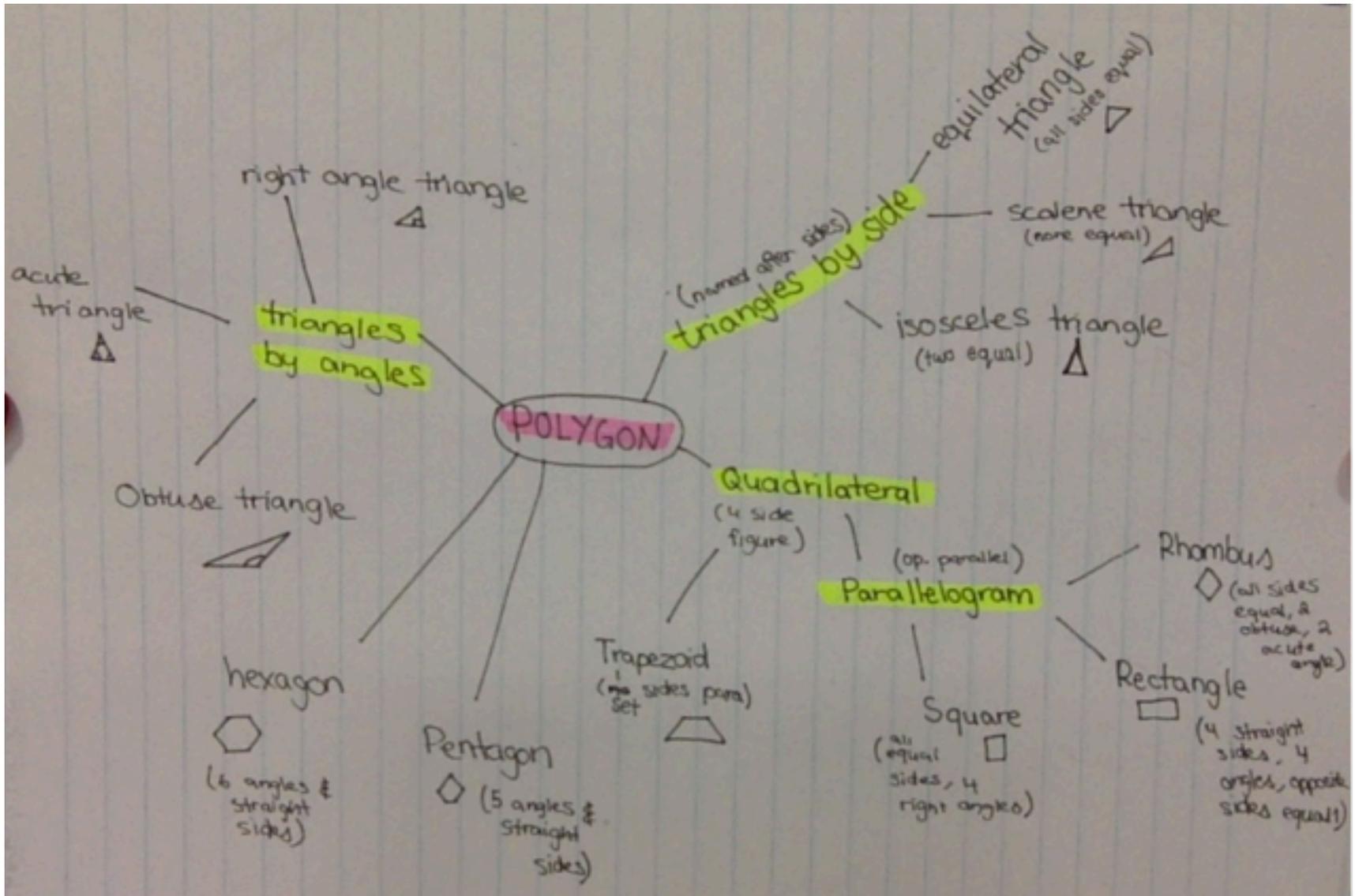
Triangle features

Which characteristic of triangles do I know?

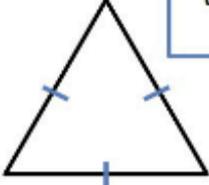
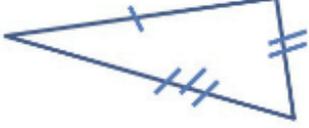


Handwritten notes and a list of names at the bottom of the slide.

dettaglio slide 3



dettaglio slide 3

Front Side	<h1>Triangles</h1>		
One angle in the triangle measures larger than 90° .			One angle in the triangle measures exactly 90° .
Every angle must equal 60° (and all angles and side lengths are <i>equal</i>).		<p>The measurement of all angles in a triangle must add up to 180°.</p>	
	The side lengths must all have different measurements in order to be classified as a <i>scalene triangle</i> .		
		Two side lengths must have equal measurements in order to be classified as an <i>isosceles triangle</i> .	

dettaglio slide 3

SENTENCE STARTERS MATH

(different activities)

MATH TALK

MAKING OBSERVATION

I noticed

If you look at, you'll see that

REPORTING AN IDEA

I think this because

This is what I think.....

I agree because

The drawing tells me

When I thought about the question, I remembered

ASKING FOR CLARIFICATION

....., what do you mean by

....., will you explain that to me/us again?

I have a question about

I don't quite understand

SOLLICITING A RESPONSE (talking to each others)

What do you think,

....., do you agree?

What are your thoughts?

MAKING PREDICTIONS

I predict/imagine that

Based on, I hypothesize that

REFERENCING THE TEXT

I was reading in the paragraph in the sentence, and I When I saw/read

....., I thought

....., where in the text do you find that?

REPORTING A GROUP'S IDEA

We decided/agreed/determined that

We concluded that

Our group sees it differently. We think

INTERJECTING AN IDEA

I would like to add an idea.

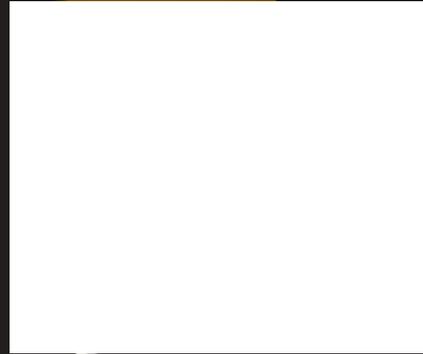
Can I say something?

DISAGREEING

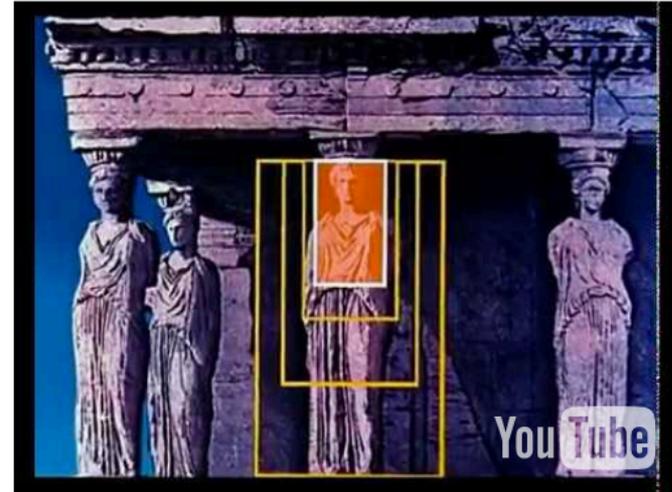
I disagree with somewhat/completely:

I see it differently:

Activity 2-3-4



Pythagoras of Samos is often described as the first pure mathematician



Caricato il 19 ott 2010
In Mathmagic Land, Donald visits Ancient Greece and discovers some history of mathematics and why it's important.
Categoria
Istruzione
Licenza
Licenza YouTube standard C<https://www.youtube.com/watch?v=xyQBVMCVZws>

www.youtube.com/watch?v=xyQBVMCVZws

Mappa concettuale lavoro CLIL

Who was Phytagoras?



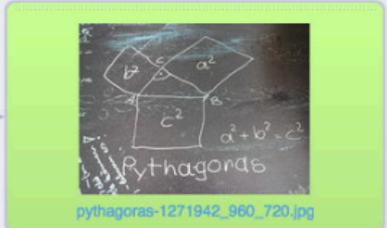
Why is this so important?
<http://study.com/academy/lesson/finding-distance-with-the-pythagorean-theorem.html>

Phytagoras' Theorem

Glossary

to spend = trascorrere
square = quadrato
each side = ogni lato
to prove = provare
to sum = somma

A right-angled triangle



pythagoras-1271942_960_720.jpg

Donald and Pythagoras - Script:

[HIGHER NOTE PLAYS]
AND THE NEXT.
[HIGHER NOTE PLAYS]
PYTHAGORAS DISCOVERED
THE OCTAVE HAD A RATIO OF 2 TO 1.
WITH SIMPLE FRACTIONS HE GOT THIS...

♪ ♪

♪ ♪

AND FROM THIS HARMONY IN NUMBERS
DEVELOPED THE MUSICAL SCALE OF
TODAY.

[PLAYS SCALES]

[BOING]

BY GOLLY,

YOU DO FIND MATHEMATICS IN THE
DARNEDEST PLACES.

YOU CAN IMAGINE HOW EXCITED
PYTHAGORAS WAS

WHEN HE SHARED HIS FINDINGS WITH
HIS PALS--

A FRATERNITY OF EGGHEADS KNOWN AS
THE PYTHAGOREANS.

Spirit, whispering: THEY USED TO MEET IN
SECRET

TO DISCUSS THEIR MATHEMATICAL
DISCOVERIES.

THEY HAD A SECRET EMBLEM:

THE PENTAGRAM.

[.....]

IT WAS OUR OLD FRIEND PYTHAGORAS
WHO DISCOVERED

THAT THE PENTAGRAM WAS FULL OF
MATHMAGIC.

THE 2 SHORTER LINES COMBINED
EXACTLY EQUAL THE THIRD.
AND THIS LINE SHOWS THE MAGIC
PROPORTIONS
OF THE FAMOUS GOLDEN SECTION.
THE SECOND AND THIRD LINES EXACTLY
EQUAL THE FOURTH.

ONCE AGAIN WE HAVE THE GOLDEN
SECTION.

BUT THIS IS ONLY THE BEGINNING.

HIDDEN WITHIN THE PENTAGRAM

IS A SECRET FOR CREATING A GOLDEN
RECTANGLE,

WHICH THE GREEKS ADMIRIED

FOR ITS BEAUTIFUL PROPORTIONS

AND MAGIC QUALITIES.

THE STAR CONTAINS THE GOLDEN
RECTANGLE

MANY TIMES OVER.

IT'S A MOST REMARKABLE SHAPE.

IT CAN MATHEMATICALLY REPRODUCE
ITSELF INDEFINITELY.

ALL THESE RECTANGLES

HAVE EXACTLY THE SAME PROPORTIONS.

THIS FIGURE ALSO CONTAINS A MAGIC
SPIRAL

THAT REPEATS THE PROPORTIONS OF
THE GOLDEN SECTION

INTO INFINITY.

TO THE GREEKS, THE GOLDEN
RECTANGLE

REPRESENTED A MATHEMATICAL LAW
OF BEAUTY.

[SPOOKY MUSIC PLAYS]
MIGHTY STRANGE.
HA! THAT'S AN ODD-LOOKING CREATURE.
WHAT KIND OF A CRAZY PLACE IS THIS?
Donald: WELL, WHAT DO YOU KNOW!
SQUARE ROOTS!

PI IS EQUAL TO 3.141592653589747...

ET CETERA, ET CETERA, ET CETERA.

HUH?

HELLO!

[ECHOING] HELLO!

Spirit: HELLO, DONALD.

THAT'S ME!

WHERE AM I?

MATHMAGIC LAND.

MATHMAGIC LAND?

NEVER HEARD OF IT.

IT'S THE LAND OF GREAT ADVENTURE.

WELL, WHO ARE YOU?

I'M A SPIRIT.

THE TRUE SPIRIT OF ADVENTURE.

THAT'S FOR ME!

WHAT'S NEXT?

A JOURNEY THROUGH THE WONDERLAND
OF MATHEMATICS.

MATHEMATICS?

THAT'S FOR EGGHEADS.

EGGHEADS?

NOW, HOLD ON, DONALD.
YOU LIKE MUSIC, DON'T YOU?
YEAH.
WELL, WITHOUT EGGHEADS,
THERE WOULD BE NO MUSIC.
AWW!
COME ON.
LET'S GO TO ANCIENT GREECE,
TO THE TIME OF PYTHAGORAS--
THE MASTER EGGHEAD OF THEM ALL.
PYTHAGORAS?
THE FATHER OF MATHEMATICS AND
MUSIC.
MATHEMATICS AND MUSIC?
AH, YOU'LL FIND MATHEMATICS IN THE
DARNEDEST PLACES.
WATCH.
FIRST WE'LL NEED A STRING.
HEY!
GOOD AND TIGHT.
PLUNK IT.
[LOW NOTE PLAYS]
ALF.
PLUNK AGAIN.
[HIGHER NOTE PLAYS]
YOU SEE?
IT'S THE SAME TONE, ONE OCTAVE
HIGHER.
NOW DIVIDE THE NEXT SECTION.

WE FIND IT IN THEIR CLASSICAL
ARCHITECTURE.

THE PARTHENON...

PERHAPS ONE OF THE MOST FAMOUS OF
EARLY GREEK BUILDINGS,

CONTAINS MANY GOLDEN RECTANGLES.

THESE SAME GOLDEN PROPORTIONS

ARE ALSO FOUND IN THEIR SCULPTURE.

IN THE CENTURIES THAT FOLLOWED,

THE GOLDEN RECTANGLE DOMINATED

THE IDEA OF BEAUTY IN ARCHITECTURE

LD.

THE CATHEDRAL OF NOTRE DAME IS AN
OUTSTANDING EXAMPLE.

THE RENAISSANCE PAINTERS KNEW THIS
SECRET WELL.

TODAY, THE GOLDEN RECTANGLE IS VERY
MUCH A PART

OF OUR MODERN WORLD.

MODERN PAINTERS HAVE REDISCOVERED

THE MAGIC OF THESE PROPORTIONS.

INDEED, THIS IDEAL PROPORTION IS TO
BE FOUND IN LIFE ITSELF.

[.....]

EXTRAS

★
Who was
Pythagoras?



Pythagoras was a Greek philosopher and a mathematician. He lived about 2,500 years ago. He was born in Samos, Greece, but he spent a lot of his life in Sicily and southern Italy. Both areas were Greek territories at that time. In about 529 BC Pythagoras opened a school of philosophy and religion in Croton in Calabria. The school had about 300 students. They were young men and women. The students studied Arithmetic, Geometry, Music, Astronomy, Philosophy and Religion. Pythagoras was a very religious man and his students lived simple lives. They were vegetarians and they didn't cut their hair or wear shoes. Pythagoras is very famous because he wrote an important mathematical rule - Pythagoras's theorem. Today students all over the world learn the theorem at school, but it's also important outside of school. Architects, astronomers, geologists and even artists use it every day.

https://youtu.be/5_Y2t8Q0Of4

TEXT:

Pythagoras was a Greek philosopher and a mathematician. He lived about 2,500 years ago. He was born in Samos, Greece, but he spent a lot of his life in Sicily and southern Italy. Both areas were Greek territories at that time. In about 529 BC Pythagoras opened a school of philosophy and religion in Croton in Calabria. The school had about 300 students. They were young men and women. The students studied Arithmetic, Geometry, Music, Astronomy, Philosophy and Religion. Pythagoras was a very religious man and his students lived simple lives. They were vegetarians and they didn't cut their hair or wear shoes. Pythagoras is very famous because he wrote an important mathematical rule - Pythagoras's theorem. Today students all over the world learn the theorem at school, but it's also important outside of school. Architects, astronomers, geologists and even artists use it every day.



Pythsgoras
teorem

ACTIVITY 5

Pythagoras was interested in triangles and particular right-angled triangles. A right-angled triangle always has one angle of 90° . The longest side in a right-angled triangle is the hypotenuse. The hypotenuse is always opposite the right angle.

TEXT:

Pythagoras was interested in triangles and particular right-angled triangles. A right-angled triangle always has one angle of 90° . The longest side in a right-angled triangle is the hypotenuse. The hypotenuse is always opposite the right angle.



ACTIVITY 5

Matching pairs of numbers and square root on the trivia game.

[https://www.quia.com/
cc/65631.html](https://www.quia.com/cc/65631.html)

Matching pairs of numbers and square root on the trivia game.

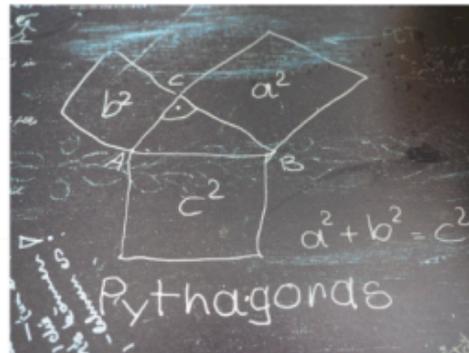
<https://www.quia.com/cc/65631.html>

ACTIVITY 1

(lesson 2)

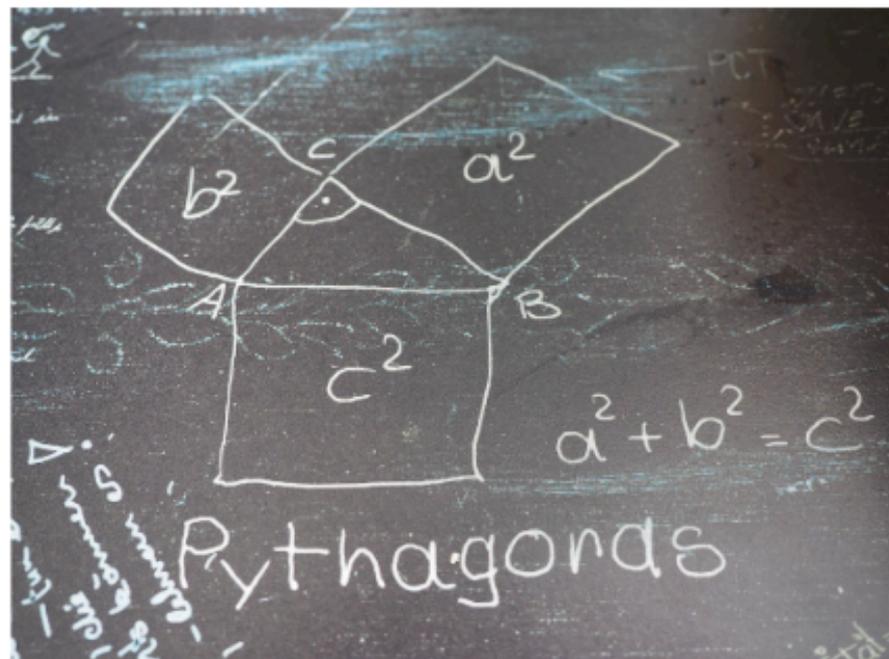
★
A right-angle triangle

Pythagoras drew a square on each side of a right-angled triangle. He proved that the square on the hypotenuse (c) always has the same area as the sum of the the squares on the others two sides ($a + b$).



Pythagoras drew a square on each side of a right-angled triangle. He proved that the square on the hypotenuse (c) always has the same area as the sum of the the squares on the others two sides (a + b).

<https://youtu.be/PrjTkWGLk2Q>





★
Play-way

ACTIVITY 1 (lesson 2)

Using flash cards online students have to match them with the subject-specific vocabulary.

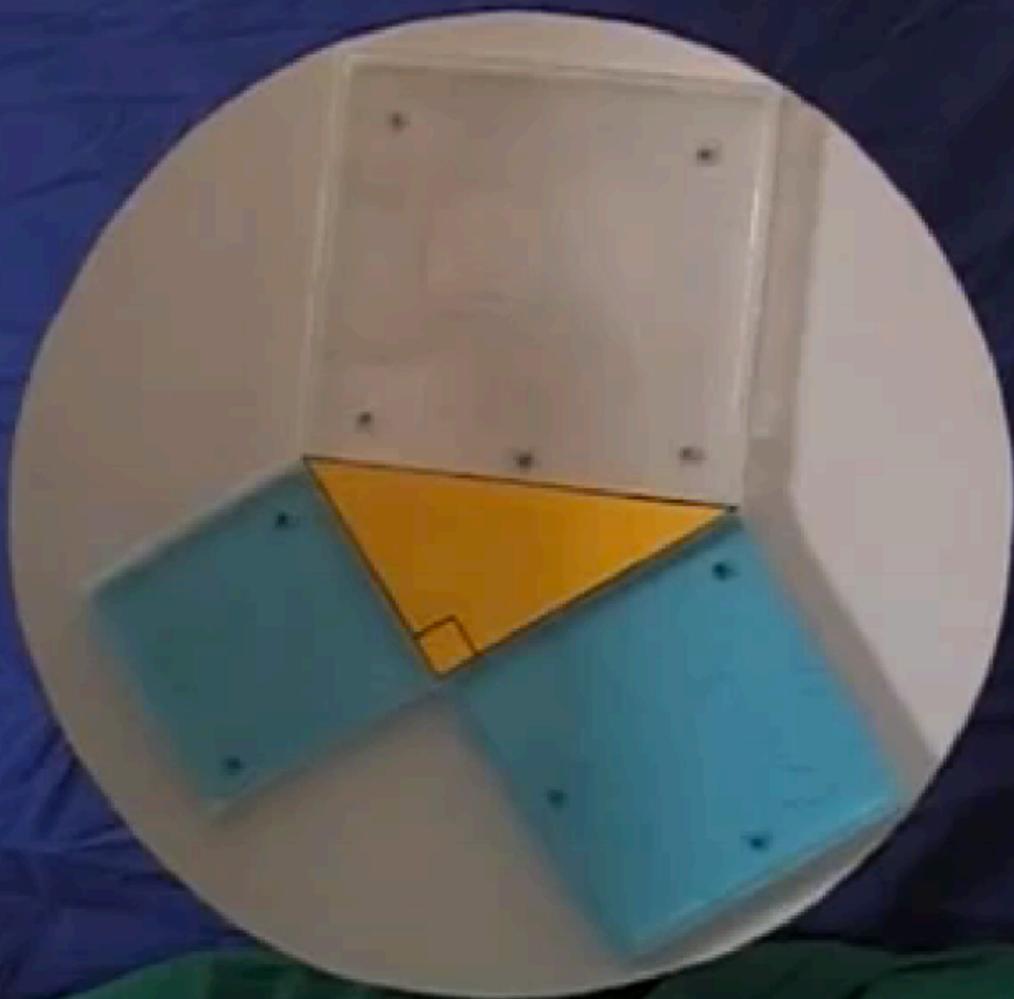
<https://quizlet.com/110750113/flashcards>

<https://quizlet.com/110750113/scatter>

<https://quizlet.com/110750113/flashcards>

<https://quizlet.com/110750113/scatter>

★
Activity 2
(Lesson 2)



Activity 3
(Lesson 2)

Individual work:
students will follow the
instructions and using a
dissection prove the
Pythagorean theorem.

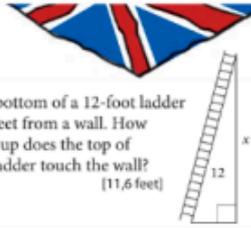
Activ
(Less

Individual work:
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Pythagorean theorem.

Why is this so important

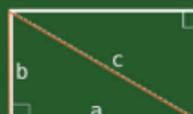
★ Activity 4 (Lesson 2)

When we know the length of the sides of a right-angled triangle, we can use Pythagoras's theorem to calculate the length of the third side.



1 The bottom of a 12-foot ladder is 3 feet from a wall. How high up does the top of the ladder touch the wall? [11,6 feet]

2 A right triangle has legs with lengths 6" and 7". Find the length of its hypotenuse, to the nearest tenth. [9,2"]


$$a^2 + b^2 = c^2$$
$$4^2 + 3^2 = c^2$$
$$16 + 9 = c^2$$
$$25 = c^2$$

Source Exercise Book:
[http://
online.scuola.zanichelli.it/
contaci/](http://online.scuola.zanichelli.it/)

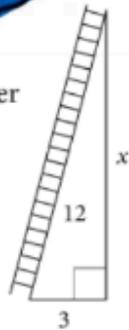
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Why is this so important

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- 1 The bottom of a 12-foot ladder is 3 feet from a wall. How high up does the top of the ladder touch the wall?
[11,6 feet]



- 2 A right triangle has legs with lengths 6" and 7". Find the length of its hypotenuse, to the nearest tenth. [9,2"]

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$$25 = c^2$$

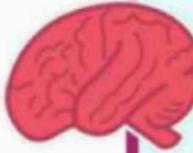
wikiHow

Students As Teachers

★
Activity 5
(Lesson 2)

CC image: <https://i.ytimg.com/vi/HujuoxwNEKU/hqdefault.jpg>

Good Feedback
=
Improves
Student Learning





Webliography

Spider Scribe <http://www.spiderscribe.net/>

Prezi <https://prezi.com>

Creative commons ([https://
search.creativecommons.org/](https://search.creativecommons.org/))

<https://www.quia.com/web>



Hunting for Treasure using the Pythagorean Theorem

Use the Pythagorean Theorem to hunt for buried treasure! Students will find the distance between two points plotted on a coordinate grid.

You are hunting for the hidden treasure. On the coordinate grid below, X marks the spot for the location of the treasure. Find the distance between your location and the location of the treasure.

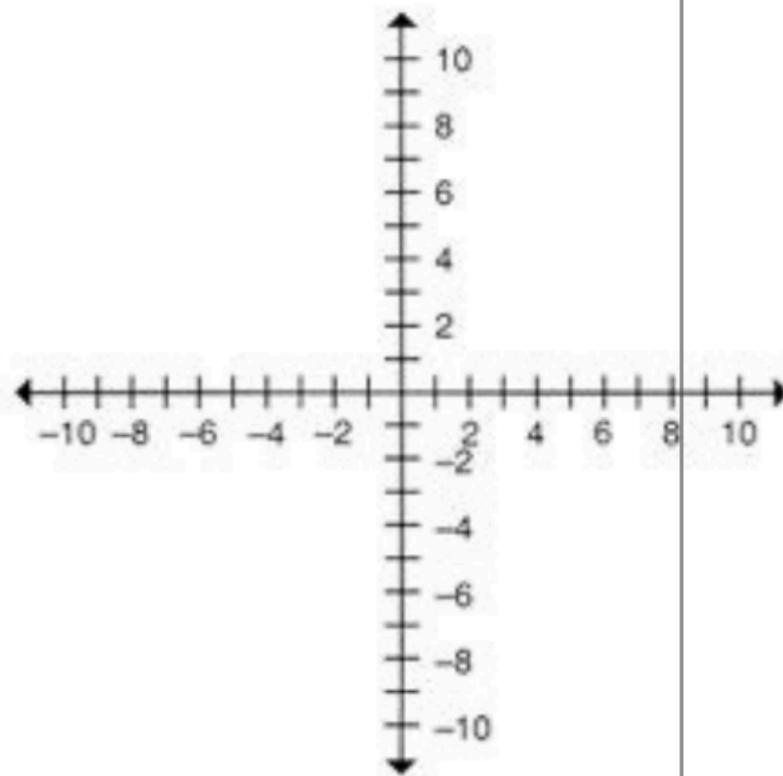
Procedure

1. Your location is (6, 9). Plot the location on the coordinate grid below. Label the point, P.
2. The location of the treasure is (3, 5). Plot the location on the coordinate grid. Label the point, X.
3. Draw a right triangle using these points as two of the corners of the right triangle.
4. Label the horizontal line segment, a. Label the vertical line segment, b.
5. Find the length of side a of the right triangle by subtracting the x-coordinates of the two points, $x_2 - x_1 = a$
6. Find the length of side b of the right triangle by subtracting the y-coordinates of the two points, $y_2 - y_1 = b$
7. Use the Pythagorean Theorem, $a^2 + b^2 = c^2$, to find the length of side c of the right triangle. The length of side c is the distance between your location and the location of the treasure. Calculate the length to the nearest tenth.



EXTRAS

Hunting for Treasure using the Pythagorean Theorem



http://www.brighthubeducation.com/middle-school-math-lessons/127818-hunting-for-treasure-using-the-pythagorean-theorem/#imgn_0

Glossary

To Spend = trascorre
Square = quadrato
Each side = ogni lato
To Prove = provare
Sum = somma

Look!!!

Come si legge:
 a^2 = squared
= the square root of
= degrees