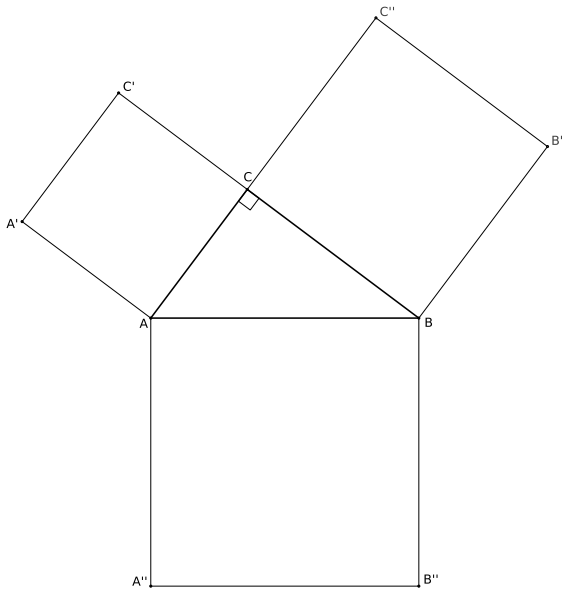
The Pythagorean Theorem

In this activity we will prove the most famous theorem of all.

Question 1 *Remind us, what is the most famous theorem of all and what exactly does it assert?*

Euclid's proof

Question 2 *What would one need to prove about the following diagram to prove the Pythagorean Theorem?*



Let's see if we can do this!

Question 3 *Draw a line perpendicular to $\overline{AB}$ that passes though both C and $\overline{A''B''}$. Call the intersection between this line and $\overline{AB}$, point E; call the intersection point between this line and $\overline{A''B''}$, point E'. Explain why $\triangle ACA''$ has half the area of rectangle $AEE'A''$.*

Question 4 *Explain why $\triangle ABA'$ has half the area of square $ACC'A'$.*

Learning outcomes:
Author(s):

Question 5 *Explain why $\triangle ACA''$ is congruent to $\triangle ABA'$.*

Question 6 *Explain why area of square $ACC'A'$ is equal to the area of rectangle $AEE'A''$.*

Question 7 *Use similar ideas to complete a proof the Pythagorean Theorem.*

The converse

Question 8 *What is the converse to the Pythagorean Theorem? Is it true? How do you prove it?*