Rational numbers and similarity

In this activity we play a game of "what if" and see a reason that the ancient Greeks might have wanted every number to be rational.

Exploration 1 *Think about plain old plane geometry. What are some theorems that you would want to be true?*

Question 2 *What are the basic theorems involving similar triangles?*

OK—now we are going to do something very strange. Let's suppose that every number is rational. In essence, let's put ourselves into the mindset of the ancient Greeks, **before** they knew that irrational numbers existed.

Exploration 3 *Suppose that you have two triangles whose angles are congruent. Can you make a fairly simple argument, using the fact that the sides are rational numbers, that shows that the sides are proportional? Hint: You may need to use ASA.*

Exploration 4 *Suppose that you have two triangles whose sides are proportional. Can you make a fairly simple argument, using the fact that the sides are rational numbers, that shows that the angles are congruent? Hint: You may need to use SSS.*

Learning outcomes:
Author(s):