

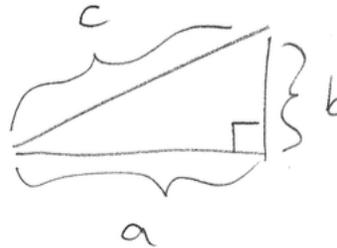
A Human Introduction to Geometry

Reading Quiz 1

Spring 2017
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1. Accurately state the Pythagorean Theorem.

Consider a right triangle with side lengths a, b, c as in the following figure:



Then we must have $a^2 + b^2 = c^2$. In words: the area of the square on the hypotenuse is equal to the sum of the areas of the squares on the other two sides.

2. What discovery of the Pythagoreans caused the “Crisis of Incommensurables”?

The discovery that $\sqrt{2}$ is not a ratio of whole numbers. Geometrically, we say that the side and diagonal length of a square are incommensurable.

3. Name the five Platonic solids.

tetrahedron, cube, octahedron, icosahedron, dodecahedron

4. Which Platonic solid corresponds to the element Water?

icosahedron

5. If each face of a Water atom is broken down into 6 triangles, how many triangles will there be in total?

An icosahedron has 20 triangular faces. If each face is broken down further into 6 triangles then the total number of triangles is

$$6 \times 20 = 120.$$

- 6 (Bonus). Plato's *Timaeus* says that it is possible to break down atoms of Fire/Air/Water and to rearrange them in various ways. Write down an equation involving these three elements.

$$1W = 2A + 1F$$