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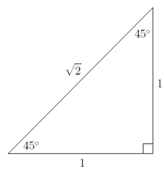
Prompt: A student teacher was explaining to her students the difference between irrational and rational numbers. She sated “because irrational numbers do not end, you cannot draw a segment with an irrational length.” A student noted a poster on the wall that illustrated the following relationship.



Mathematical Foci: *Irrational number, measurement and construction, commensurability, right triangle relationships,

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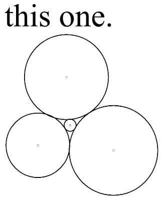
Prompt: After studying tangent circles, a teacher gave her 8th grade honors geometry students a copy of the poem “A Kiss Precise” that describes a formula about the relationship of the radii of four mutually tangent circles… Soddy Circles. The goal of the lesson was her students would use the poem to illustrate and explain the theorem.

After reading the 1st verse of the theorem, most groups developed a diagram similar to this one.



However, after discussing “thrice externally” vs “thrice internally,” one group suggested that circles be “drawn all inside each other.”

The discussion then moved to the 2nd verse of the poem and the development of the formula.

- ✓ What kind of discussion should the teacher have provided about the meaning of “bend?”
- ✓ What are some ways the students could have investigated the formula described in the poem?
- ✓ What would suffice as a “proof” of the theorem?

The Kiss Precise
by Frederick Soddy

For pairs of lips to kiss maybe
Involves no trigonometry.
'Tis not so when four circles kiss
Each one the other three.
To bring this off the four must be
As three in one or one in three.
If one in three, beyond a doubt
Each gets three kisses from without.
If three in one, then is that one
Thrice kissed internally.

Four circles to the kissing come.
The smaller are the benter.
The bend is just the inverse of
The distance form the center.
Though their intrigue left Euclid dumb
There's now no need for rule of thumb.
Since zero bend's a dead straight line
And concave bends have minus sign,
The sum of the squares of all four bends
Is half the square of their sum…

Prompt: A student teacher was planning for a unit on Permutations and Combinations. She read in the book that 0! = 1. There was no discussion offered in the text. She knew that students would ask why 0! = 1 but was unclear herself.

Prompt: Students were investigating properties of quadrilaterals. They had two-sided geoboards as well as square and isometric dot paper. The teacher asked, “Is it possible to construct a rhombus on a geoboard? Why or why not?