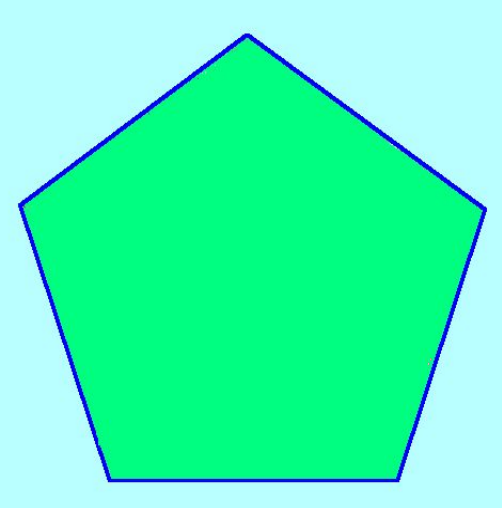
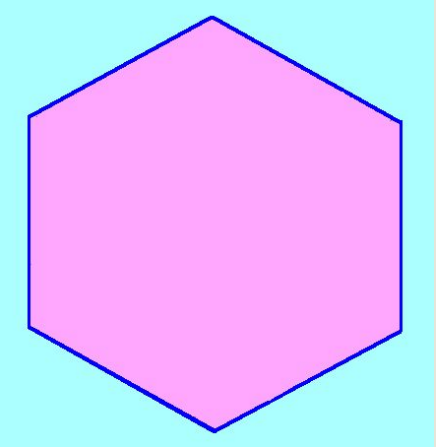
Mathe-Magical Scissors

Polygons Equidecomposibility

By Harry Main-Luu

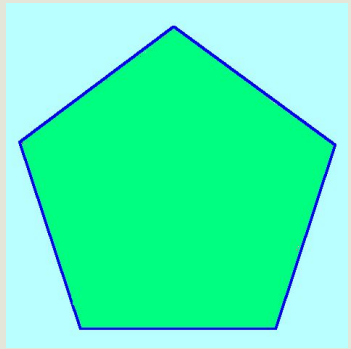
Challenge: Can I chop up the pentagon and glue it back into a hexagon?

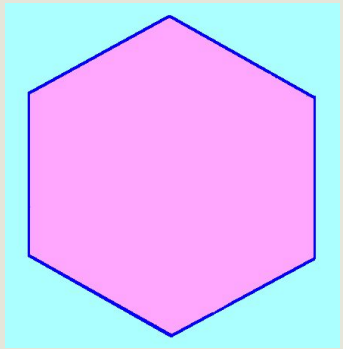




Can I cut the green one into *finitely* many pieces then put it back to fit perfectly into the pink?

Challenge: Can I chop up the pentagon and glue it back into a hexagon?





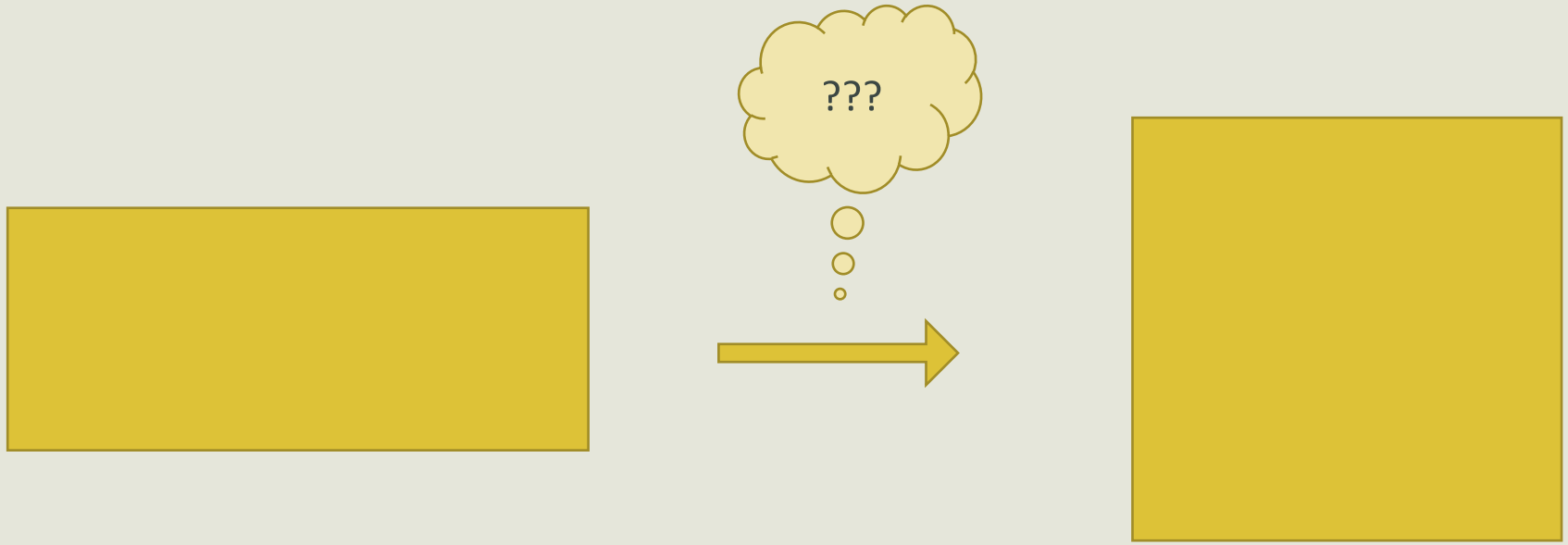
Can I cut the green one into *finitely* many pieces then put it back to fit perfectly into the pink?

If it were possible, what can we say about their area?

Fancy words alert: Is this a *necessary* or *sufficient* condition?

Hmm… Let's try an easier problem! My students LIKE easy…

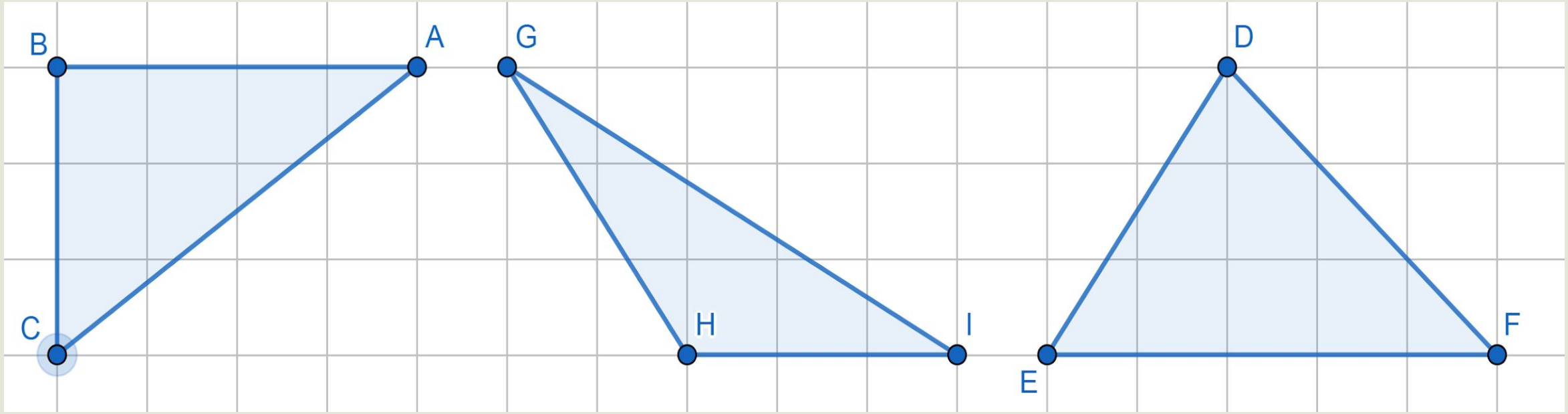
Let's try to cut things up and put them back in a square!



Open your handout and let's get to work!

Q: What's the area of a triangle? WHY?

Area of triangles?

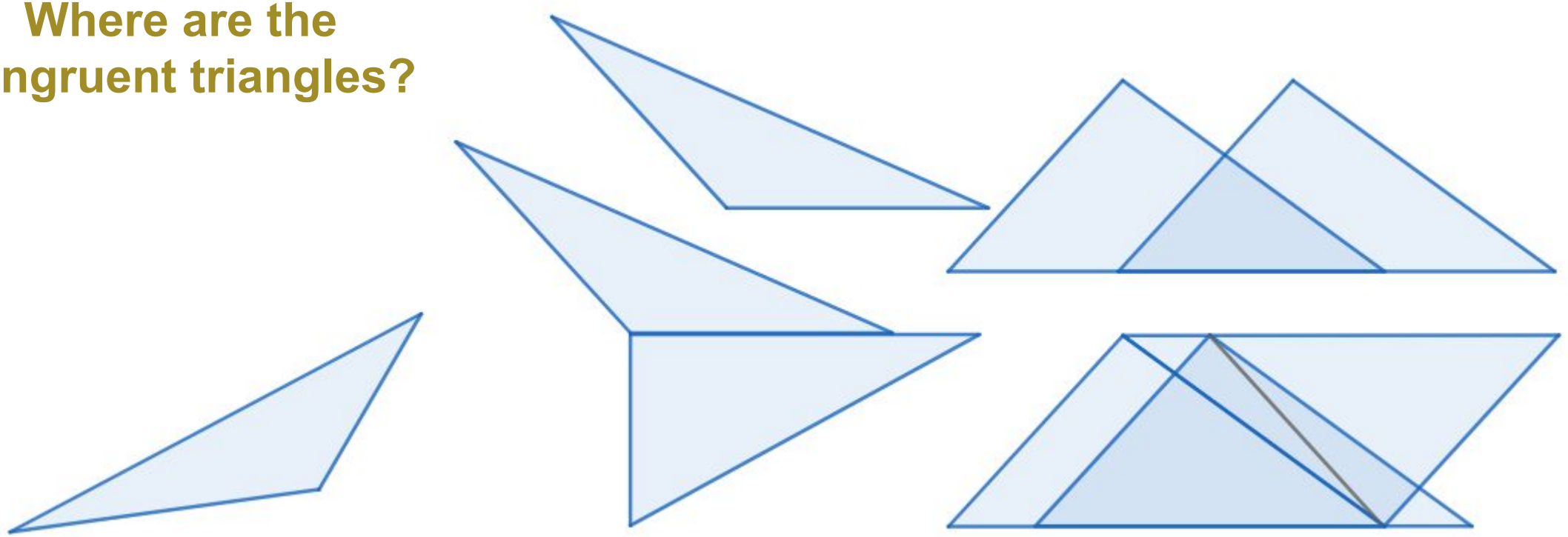


Q: What's the area of a parallelogram?

Area of parallelogram?

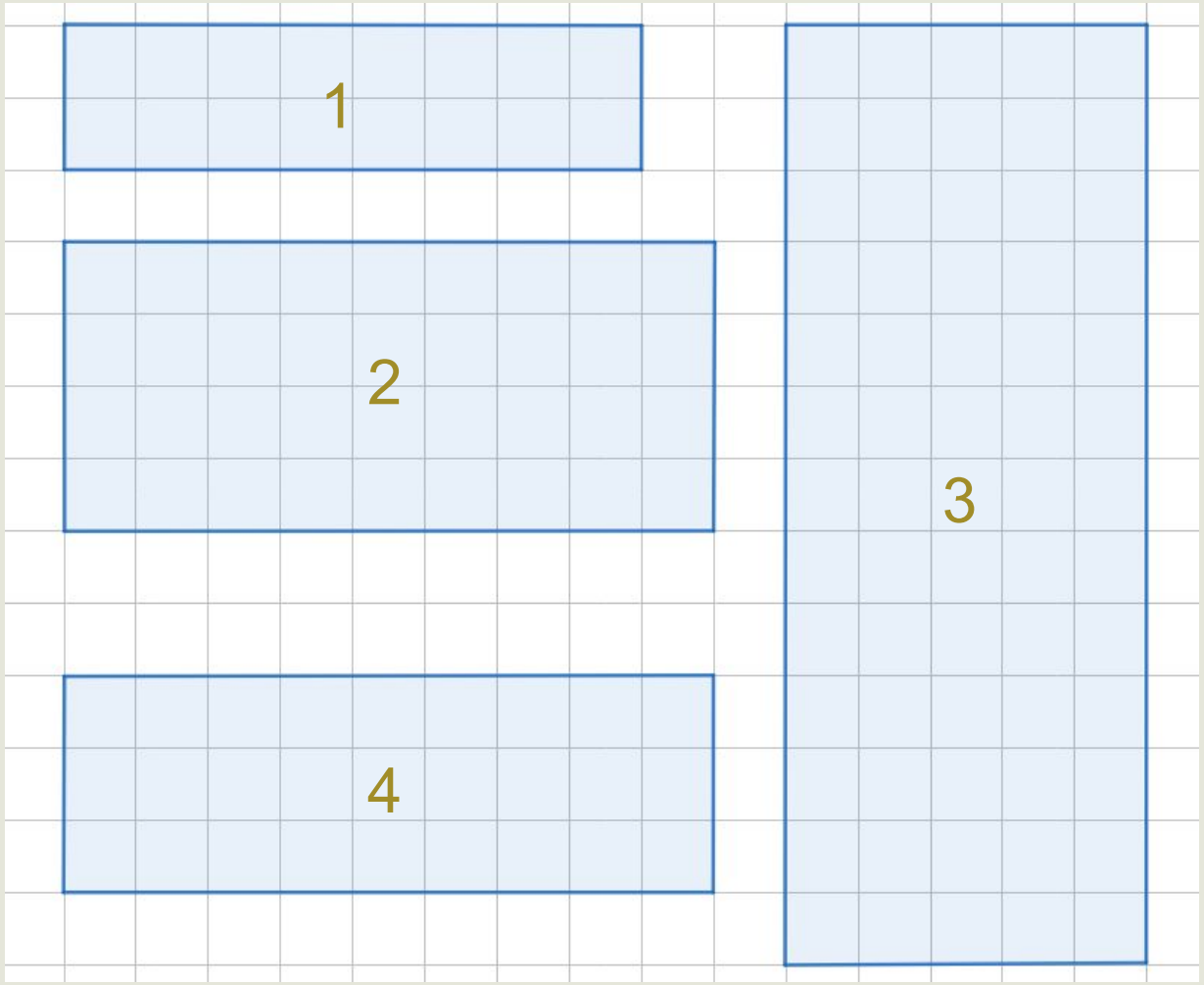
Find all congruent triangles

Where are the congruent triangles?



Q: How to cut a rectangle into finitely many pieces and put it back in a square?

Let's try to cut these!



Okay… the last rectangle is difficult! Is it even possible?