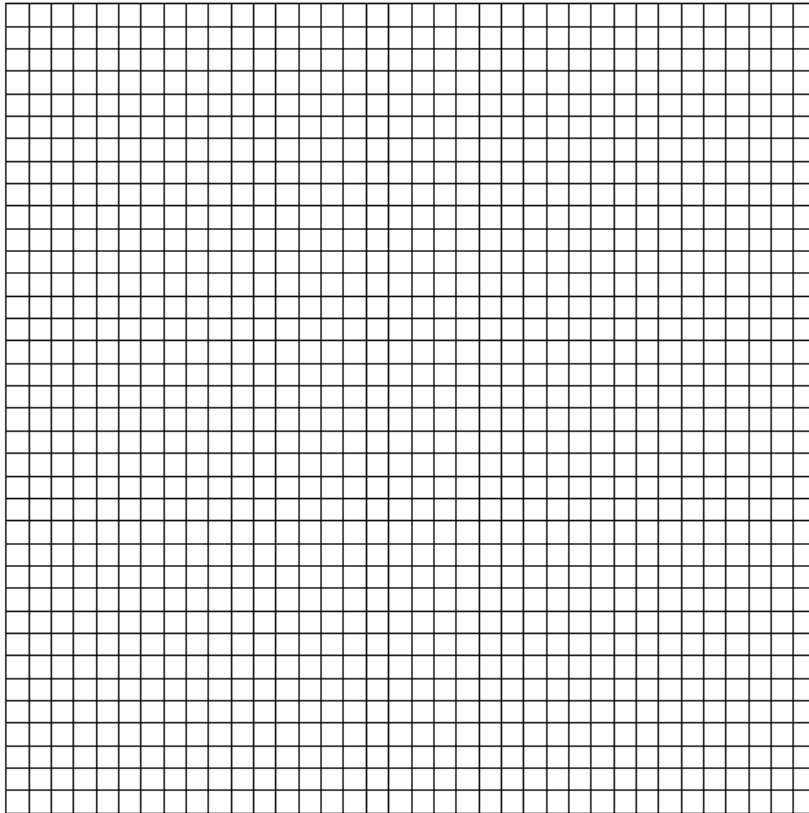


An infinite sum?



1. Divide the square above in half by drawing a diagonal. Color in half the square. If the entire square has area 1, what's the area of the triangle you have colored in?
2. Now divide the uncolored triangle into two congruent triangles (that is, two triangles with the same shape and size) and color in one of those triangles. What is the area of the small triangle? What is the **total** area of the two triangles you have colored in?

3. Continue in this way, dividing the uncolored triangle into two congruent triangles and coloring in one of those two. Complete the chart on the right – can you figure out the numbers for stages 20 and 100?

Stage	Area of Smallest Triangle	Total Area Colored In
1	$\frac{1}{2}$	$\frac{1}{2}$
2	$\frac{1}{4}$	$\frac{1}{2} + \frac{1}{4} = \frac{3}{4}$
3		
4		
5		
20		
100		

4. Imagine that you develop super-human powers and that you do this infinitely many times. Can you write down a sum that gives you the area you have colored in after this super-human feat? Can you add up this sum? Is the total area you colored after this super-human feat finite or infinite?