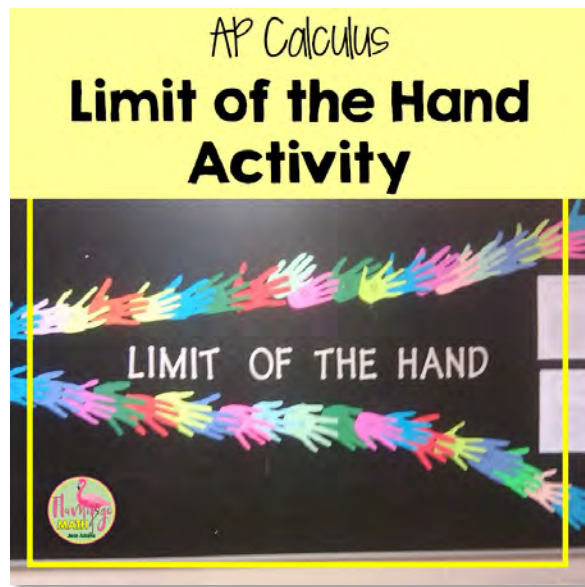




Limit of the Hand Activity

Your AP Calculus students will find limits of their hand and investigate the “limiting factor” and accumulation of change.

This is “hands-on” activity will give your students a personal understanding for the concepts found in both differential and integral calculus.

College Board® Topics:

Topic 1.7: Selecting Procedures for Determining Limits

Topic 6.1: Exploring Accumulation of Change

ABOUT THE ACTIVITY:

This resource is designed to help your **Calculus** students recognize “**the limiting factor**” when calculating area using smaller and smaller squares for the size of their hand.

This activity was shared with me by a colleague when I first started teaching AP Calculus in 2001. I don’t know where the original idea came from, but I have adapted it to fit into your classroom activities. Students can create their hand image on card stock during a class period and find the remaining calculations as a week-long assignment. Be sure to have students write their names on the hand template and create an interesting bulletin board of the data collected from the class.

Engaging fun and truly visualizes limiting factors in a real-world application. As an added benefit, students will be able to connect area under a curve and the method of slicing for accumulation concepts in the second semester.



Activity

Limits of the Hand

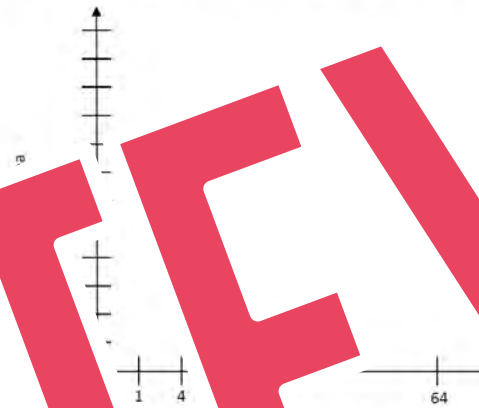
Name _____

The purpose of this exercise is to gain some first-hand knowledge of limits and how they work. Follow these instructions to complete the project.

- Trace your hand, carefully, on a piece of construction paper or card stock and cut it out.
- On each of the four grid papers, lay your hand cutout and trace around it. Try to keep it in approximately the same place on each page. We use the cutout instead of your hand in order to be consistent.
- On the page of 1" squares, count the number of squares that are completely inside the outline of your hand, i.e. not touching the outline, at all. Record that number in the chart below.
- On the same grid, count the number of squares that are touching the outline of your hand. Add this number to the one found in step 3 for each corresponding grid and record the sum in the chart below.
- Repeat steps 3 and 4 for the $\frac{1}{2}$ " , $\frac{1}{4}$ " , and $\frac{1}{8}$ " blocks, record both in the chart below.

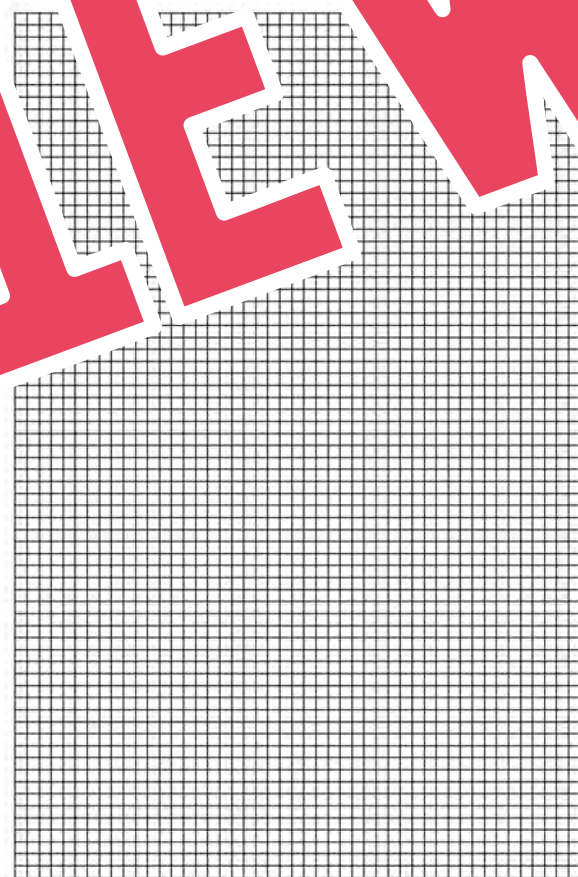
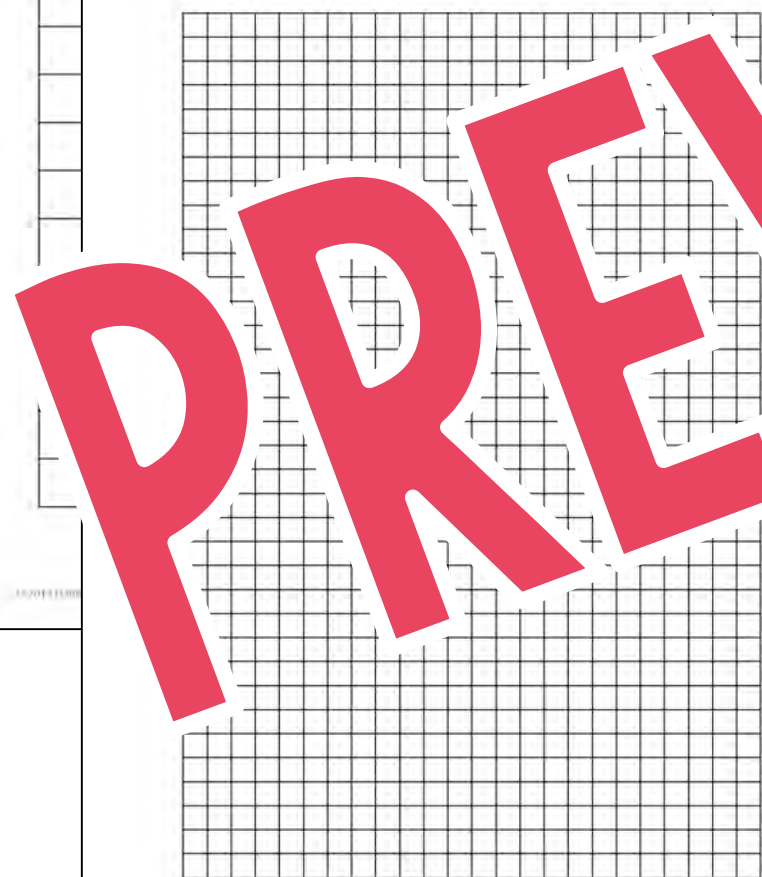
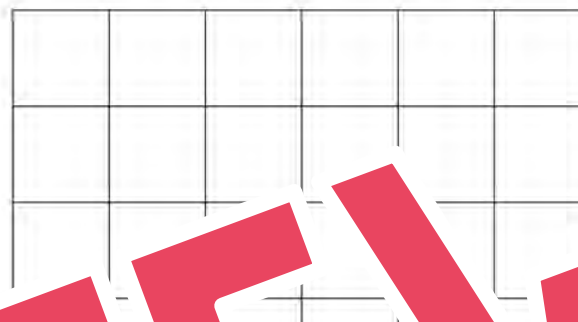
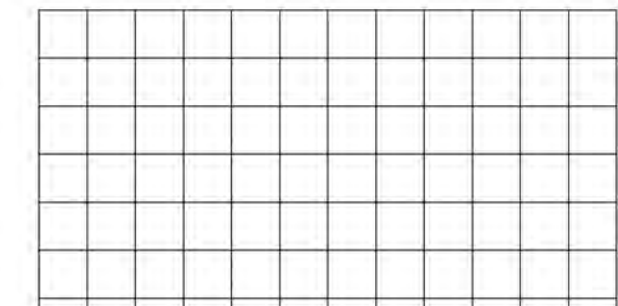
	1"	$\frac{1}{2}$ "	$\frac{1}{4}$ "	$\frac{1}{8}$ "
Inside				
Touching				
Sum				

- Graph your results on the graph provided below. (Area vs. Number of squares per square inch). Sketch two curves to fit the two sets of points.



- Based on your graph, do you arrive at this conclusion? Can you support your conclusion? Should the accuracy be affected if you used smaller squares? (I'm glad I didn't have you do $\frac{1}{16}$ " squares?)

Graph Paper



PREVIEW

Detailed Directions and Examples

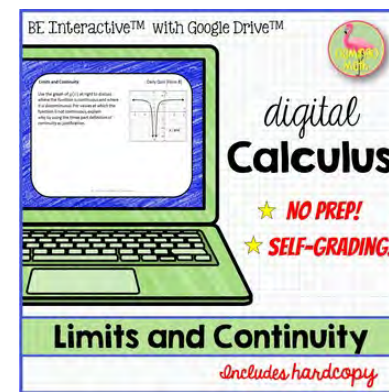
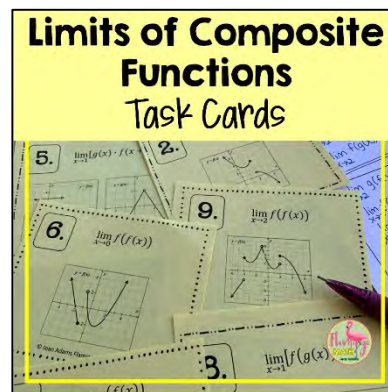
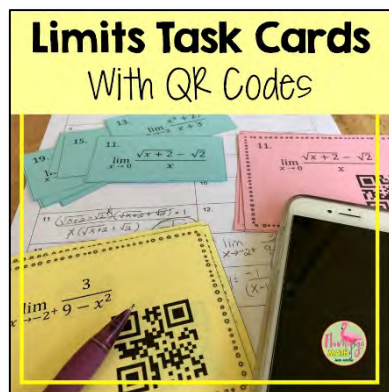
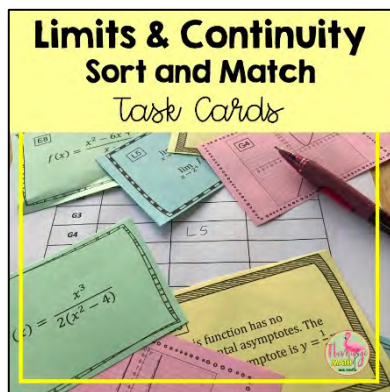




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