

Pyramid in the Desert

Name: _____

	Latitude	Longitude
Mark #		
Mark #		
Mark #		

Your assignment is to draw a 3-4 stage Sierpinski triangle in Google Earth. Above are the coordinates for the 3 vertices of your triangle. Follow the directions below to complete the assignment.

- 1) Create a folder under “My Places” in Google Earth. Give this folder your name as a title.
- 2) Create two folders within this folder. Title them “Triangles” and “Marks”.
- 3) Create three folders within the “Triangles” folder. Label them “Stage 1”, “Stage 2”, and “Stage 3”.
- 4) As you work, you should put the placemarks you create within the “Marks” folder, and the polygons within the appropriate stage folders inside the “Triangles” folder.
- 5) Create placemarks for the 3 Marks given above. Dot icon; size 0.5; no label. Use the polygon tool to connect the dots. Select “Outlined” only for the Area
- 6) Use the ruler tool to measure the distance between two of your marks (they should all be roughly equidistant).
- 7) Clear your ruler, and now measure half the distance between two of the marks. Do not clear this measure. Add a placemark at this halfway point.
- 8) Repeat above step for the other two sides of the triangle. You may have to reset the ruler tool for each placemark – simply deselect and select the ruler in the tool bar above to do this.
- 9) Draw a polygon connecting the 3 midpoints. Color – orange; filled; no label. (**Note:** As with the placemarks, you may want to zoom into the map to about 2.0 km. Eye alt. to make sure the placement is accurate.)
- 10) Place this triangle in Stage 1 folder.
- 11) Repeat this process for Stage 2 and Stage 3 triangles. Make sure to place your placemarks in the “Marks” folder and the triangles in the appropriate folders.
- 12) Stage 4?
- 13) Check your folders’ contents: all marks should be in the marks folder and all triangles should be in the appropriate Stage folders. By selecting or deselecting these folders you should be able to view your triangle transform through the stages.
- 14) Submit your file as instructed.

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Questions:

1. Let the side length of a Stage 1 triangle = 1. Write a ratio comparing the lengths of the largest triangle's side to the Stage 1 triangle's side.
2. Let the side length of a Stage 2 triangle = 1. Write a ratio comparing the lengths of the largest triangle's side to the Stage 2 triangle's side.
3. Let the side length of a Stage 3 triangle = 1. Write a ratio comparing the lengths of the largest triangle's side to the Stage 3 triangle's side.
4. Let the side length of a Stage 4 triangle = 1. Write a ratio comparing the lengths of the largest triangle's side to the Stage 4 triangle's side.
5. At what stage do you think the ratio comparing the lengths of the largest triangle's side to the smaller triangle's side would be greater than 100:1?
6. Try to write a rule that will predict the ratio in any step. Let n = the Stage number.
7. Write a fraction of the largest triangle that is **not** shaded in Stage 1.
8. Write a fraction of the largest triangle that is **not** shaded in Stage 2.
9. Write a fraction of the largest triangle that is **not** shaded in Stage 3.
10. Write a fraction of the largest triangle that is **not** shaded in Stage 4.
11. Write a fraction of the largest triangle that is **not** shaded in Stage 6.
12. Try to write a rule that will predict the fraction of the triangle that is not shaded at any stage.
13. How does the Sierpinski triangle show self-similarity at any stage?