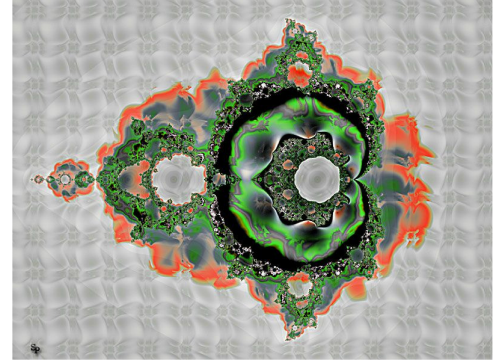
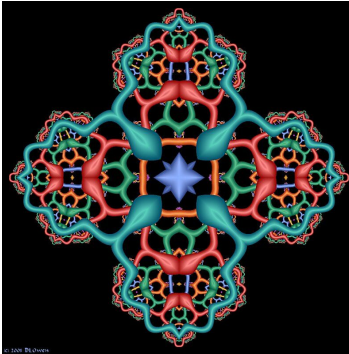
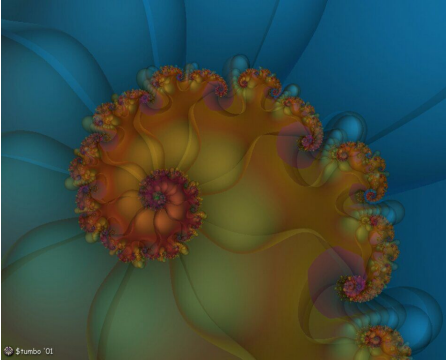


# Fractals

## Web-Quest

You will use the Internet to learn about one of the newest branches of Mathematics called Fractals. Below are some pictures of Fractals.



This Web-Quest is Due \_\_\_\_\_  
at the beginning of class. If you have any questions please ask  
Mr. Reed or for assistance.

Click here to continue:

You will find information on the History of Fractals by doing a "[Google](#)" Search and typing in the phrase "History of Fractals"

Remember every link in the Google search may not be useful to you. Please be very careful with Wikipedia as this source can be modified and changed by others on the Internet. Scan the link and if you do not see information that will help you go back to the Google search page and go to the next link.

Use the links about length/distance measurement to fill in your chart you have made.

Be sure to write down the links that you used to fill in the chart. You must use at least three different sources to retrieve and verify your data.

To do this web-quest please set up a blank sheet of notebook paper labeled in the following manner, with the following questions answered.

## Fractals

1. When were fractals first discovered in general? \_\_\_\_\_
2. Who is considered the first mathematician who considered fractals as "Self-Similarity"?  
\_\_\_\_\_
3. Name three mathematicians who have fractals which bare their name.  
\_\_\_\_\_
4. Where can fractals be found? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Name three items in Nature that are considered to have Fractal Properties.  
\_\_\_\_\_
6. Fractals have been the main focus of the study of \_\_\_\_\_ ?
7. Who connected fractals with Algebra 1 and Binomial Expansion?  
\_\_\_\_\_

Web-Sites Used to retrieve and verify the information above:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

[Click here to continue:](#)

You will find information on Pascal's Triangle by doing a "[Google](#)" Search and typing in the phrase "Pascal's Triangle" You will then have to "[Google](#)" the fractal name for the picture you will be creating.

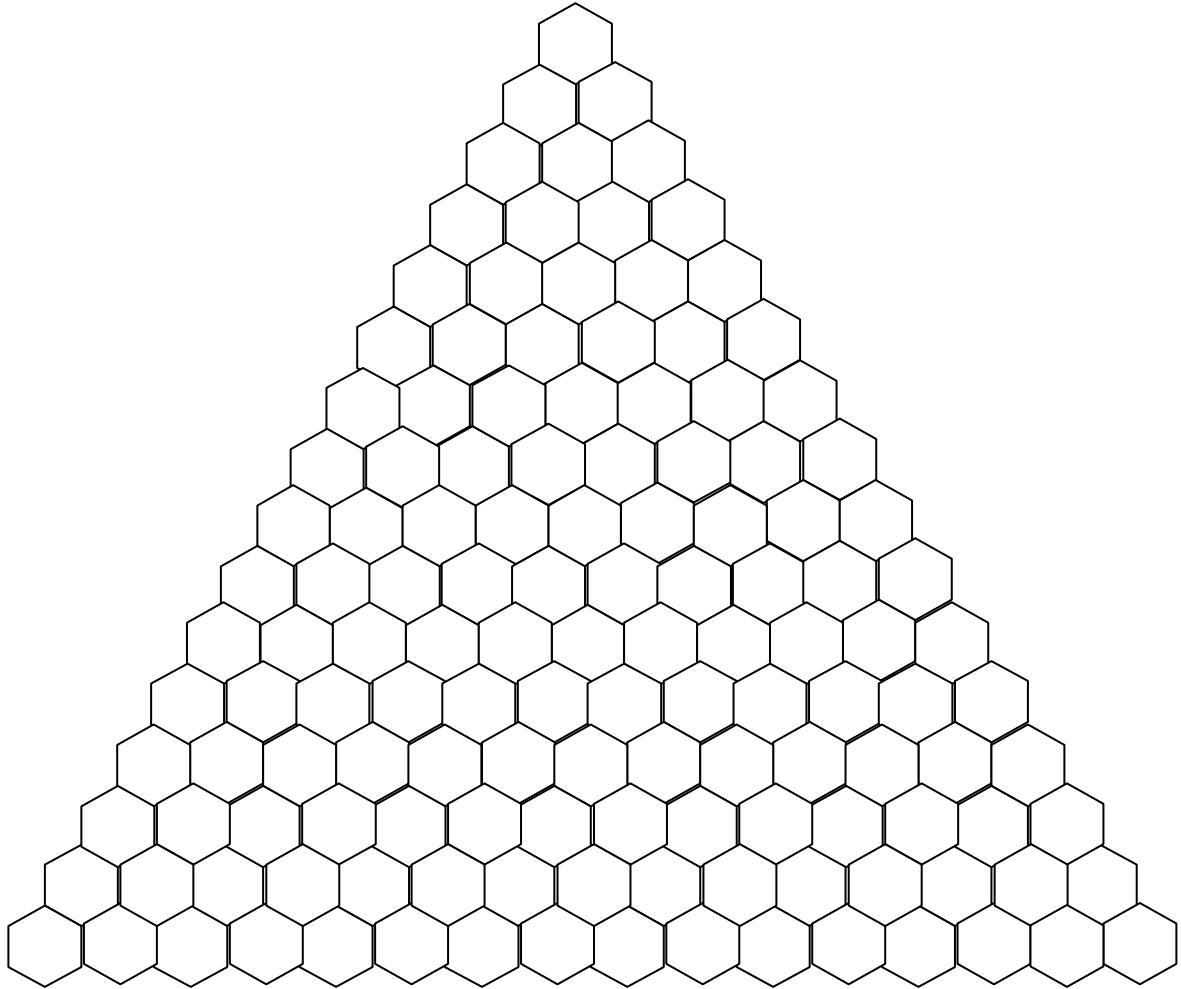
Remember every link in the Google search may not be useful to you. Please be very careful with Wikipedia as this source can be modified and changed by others on the Internet. Scan the link and if you do not see information that will help you go back to the Google search page and go to the next link.

Use the links to fill in the chart and answer the questions below you will make for Customary and Non-Customary Units of Length/Distance Measurement.

Be sure to write down the links that you used to fill in the chart and to answer the questions. You must use at least three different sources to retrieve and verify your data. You may want to go back to some of the sources that you used to fill in the first chart to help you with this chart.

# Pascal's Triangle and Fractals

Fill in the missing numbers in Pascal's Triangle



Now color in the odd numbers with one color and color in the even numbers with a different color.

1. What do you notice happening when everything is colored in? \_\_\_\_\_

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2. What Specific Fractal is directly connected to Pascal's Triangle and what you colored above?

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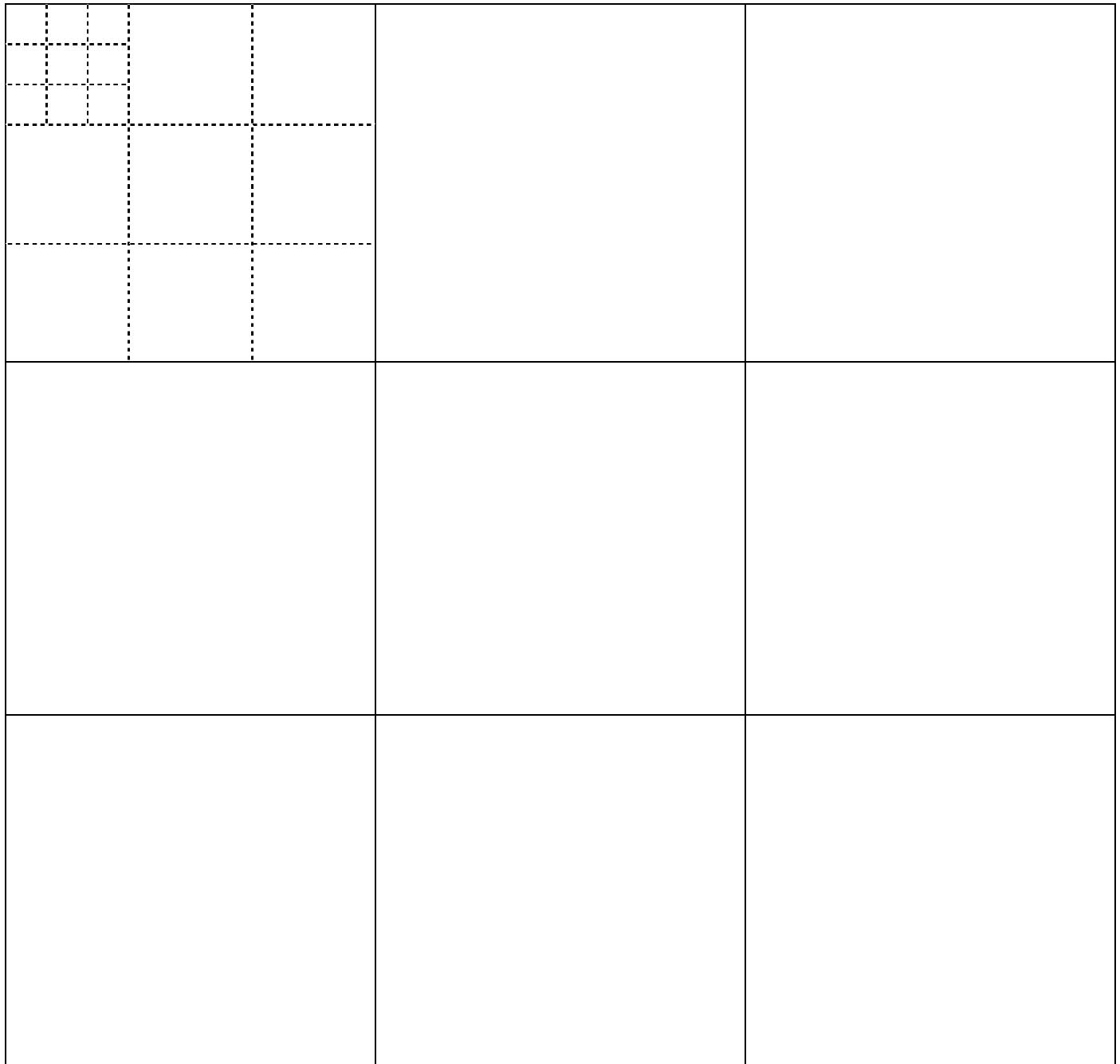
3. What is another name for the colored in Fractal above? \_\_\_\_\_
4. In what year was it credited for being discovered? \_\_\_\_\_
5. What game can be used to create the colored in figure above? \_\_\_\_\_
6. Explain the rules for the game. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Web-Sites Used to retrieve and verify the information above:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

[Click here to continue:](#)

You are going to create your own version of Sierpinski's work below. Color in the middle square of the  $3 \times 3$  grid below. Next draw a  $3 \times 3$  grid in every box you have not colored in on the original figure below the first one is done for you in the upper left hand corner of the original figure with dotted lines. Next color in the middle boxes of each of the  $3 \times 3$  grids you just drew in. Next draw a  $3 \times 3$  grid in every box you have not colored in on the  $3 \times 3$  grids you have just drawn in figure below the first one is done for you in the upper left hand corner of the original figure with dotted lines. Continue this process as far as you can.



Please create another fractal called the Koch Snowflake. You will have to do a "[Google](#)" Search by typing in the phrase "Koch Snowflake" to know how to make the drawing.

Remember every link in the Google search may not be useful to you. Please be very careful with Wikipedia as this source can be modified and changed by others on the Internet. Scan the link and if you do not see information that will help you go back to the Google search page and go to the next link.

Use the links to fill in the chart and answer the questions below you will make for Estimating Length/Distance Measurements.

Be sure to write down the links that you used to fill in the chart and to answer the questions. You must use at least three different sources to retrieve and verify your data. You may want to go back to some of the sources that you used to fill in the first chart to help you with this chart.

Click here to continue:

# Koch Snowflake

Make the drawing here:

1. Describe how to create the Koch Snowflake. \_\_\_\_\_

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2. When did Helge von Koch first develop his snowflake? \_\_\_\_\_

3. Give the formula that could be used to find the area of the snowflake.

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4. What are the uses of Koch's work with fractals? \_\_\_\_\_

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Web-Sites Used to retrieve and verify the information above:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

## Scoring of this Web-Quest

This web-Quest will be worth 60 points broken down as follows:

20 Points for the History of Fractals

20 Points Pascal's and Sierpinski's Triangles

10 Points Koch Snowflake

10 Points for Reflections Worksheet that will be handed to you when you turn in the web-quest

On any day you will lose 2 points for every time you are on a website that is not part of this web-quest or are off task and messing around.