THE KOCH SNOWFLAKE

DRAWING SNOWFLAKES

We can draw a certain snowflake by following these steps.

Step 1: Draw a large equilateral triangle with each side having length 1.

Step 2: Divide one side into three equal parts and remove the middle section.

Step 3: Replace the missing section with a tent whose sides are the same length as the remaining parts.

Step 4: Do this to all the remaining sides and find the perimeter and area of the resulting figure.

Step 5: Repeat steps 2–4 one more time.

THE PERIMETER OF THE KOCH SNOWFLAKE

Question: What is the perimeter of the snowflake we get from repeating steps 2–4 once?

Question: What is the perimeter of the snowflake we get from repeating steps 2–4 twice?

Question: What is the perimeter of the snowflake we get from repeating steps 2–4 three times?

Question: There is a pattern here. What is the pattern?

Question: What is the perimeter of the snowflake we get from repeating steps 2–4 $\mathbf{n}$ times?

The **Koch Snowflake** is the result of repeating steps 2–4 **an infinite number of times**!

Question: What do you think the perimeter of the Koch snowflake is?

THE AREA OF THE KOCH SNOWFLAKE

Question: What is the area of the snowflake we get from repeating steps 2–4 once?

Question: What is the area of the snowflake we get from repeating steps 2–4 twice?

Question: What is the area of the snowflake we get from repeating steps 2–4 three times?

Question: There is a pattern here. What is the pattern?

Remember, the **Koch snowflake** is the result of repeating steps 2–4 infinitely often. Do you think that the area of the Koch snowflake is finite or infinite?