

Fractals for kids

General information			
Respective blueprint	Fractals for kids		
Description	<p>A fractal is a geometric object that can be divided into parts, each of which is similar to the original object.</p> <p>Students will create an example of a fractal by themselves.</p>		
Learning objectives	<ul style="list-style-type: none"> • learn about fractals • recognise fractals in nature • recognise fractals in art • draw some fractals 		
Related curricular subjects	art, mathematics, biology		
Duration	45 min		
Level of difficulty	Basic	Medium	Advanced
	✓		
Inclusivity guidelines			
How to integrate students with SLD	<p>Tell the students to cut an equilateral triangle from the template.</p> <p>Give the student a finished coloured example of a fractal, based on which he will create his own fractal.</p> <p>Use simple language and write in facts.</p> <p>Explain acronyms and difficult words.</p>		

	Print on matt paper (not gloss paper) and on one side only to avoid having to turn pages.
How to integrate students who work faster	additional difficult task: Koch snowflake

Step-by-step description of the lesson

Step 1: Introduction

Estimated time: 10 min

- As an introduction, show students a few fractals from **nature**, for example, broccoli, fern, the inside of a kiwi, sunflower or honey crystals.
- Discuss where else in nature we find similar shapes.
- A fractal is a geometric figure that can be broken down into smaller parts so that each of them is, at least approximately, a reduced copy of the whole. It is said that such a character is similar to itself. The term was coined by Benoit Mandelbrot in 1975 and comes from the Latin word fractus, which means broken. In addition to being broken, it is a characteristic of fractals that the same shape is constantly repeated. If a part of the fractal is enlarged, it will look like the whole fractal.
- Any fractal has a fine structure at arbitrarily low magnification, and it is similar to itself.
- Fractals are all around us. Fractals are encountered in **art**, for example, in the creation of fantastic fractal images, usually computer ones.
- Fractals have found a special use in **cinematography** in the creation of special effects.

Step 2: Make fractals

Estimated time: 25 min

Distribute pieces of paper to the students to draw a simple fractal.

- The teacher shows how to draw an equilateral triangle
- Students draw an equilateral triangle
- Find the midpoint of each of the three sides of the triangle and mark it with a dot
- Connect those points to form a new triangle.
- Continue with the process of finding the midpoint of each new triangle to make more triangles

Step 3: Final step

Estimated time: 10 min

Students show their work. They comment on each other's drawings.

Assessment activities

Activity 1: Evaluation sheet

Students fill out the evaluation sheet.

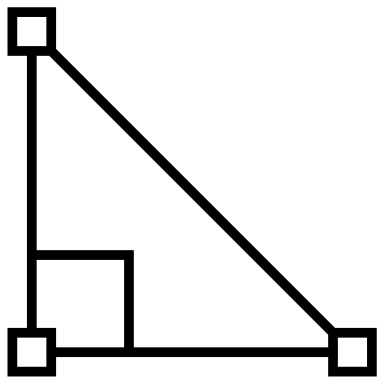
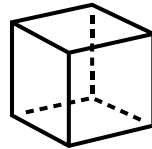
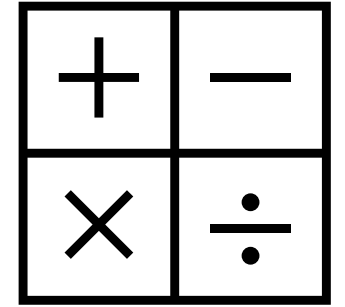
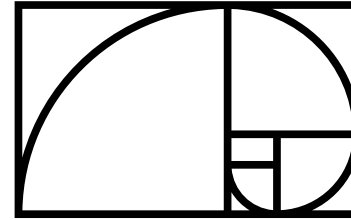
Attachments

- [evaluation sheet](#)
- [presentation](#)
- [an example of a Koch`s snowflake](#)
- [equilateral triangle template](#)
- [a finished coloured example](#) of a fractal (a picture of the finished task)

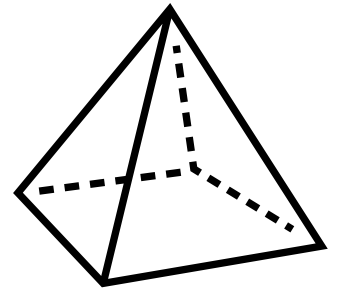
References:

<https://www.meteorologiaenred.com/bs/fraktale.html>

<https://anicatrickovic.weebly.com/zanimljivosti/fraktali>



Fractales for kids



INTRODUCTION

- A fractal is a geometric object that can be divided into parts, each of which is similar to the original object.
- Fractals exist everywhere.
- Examples of fractals found in nature are broccoli, fern, the inside of a kiwi, sunflower or honey crystals.

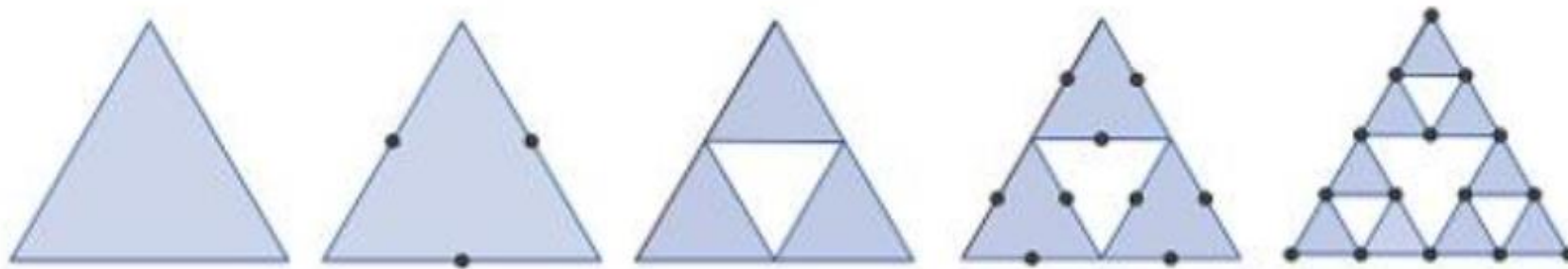


MATERIALS NEEDED:

- paper
- a ruler
- a pencil
- wooden crayons
- a pair of compasses

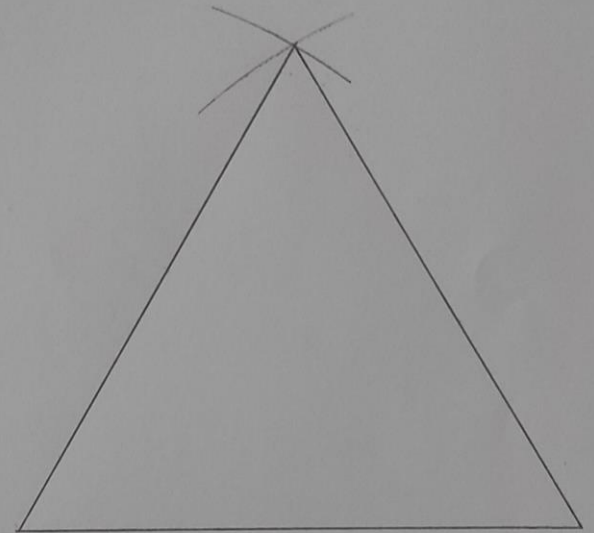


STEPS:



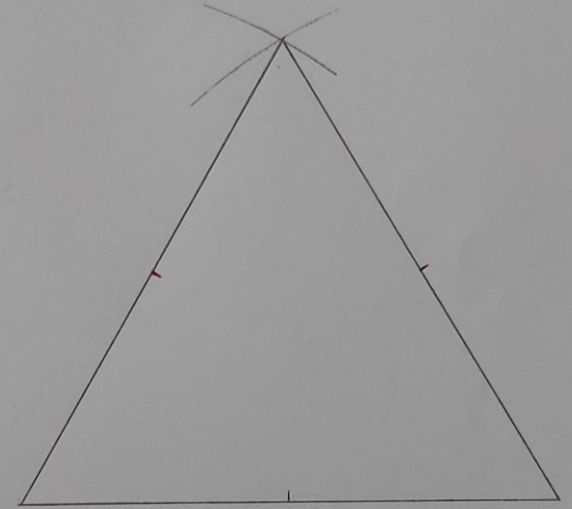
STEP 1:

- Draw an equilateral triangle.



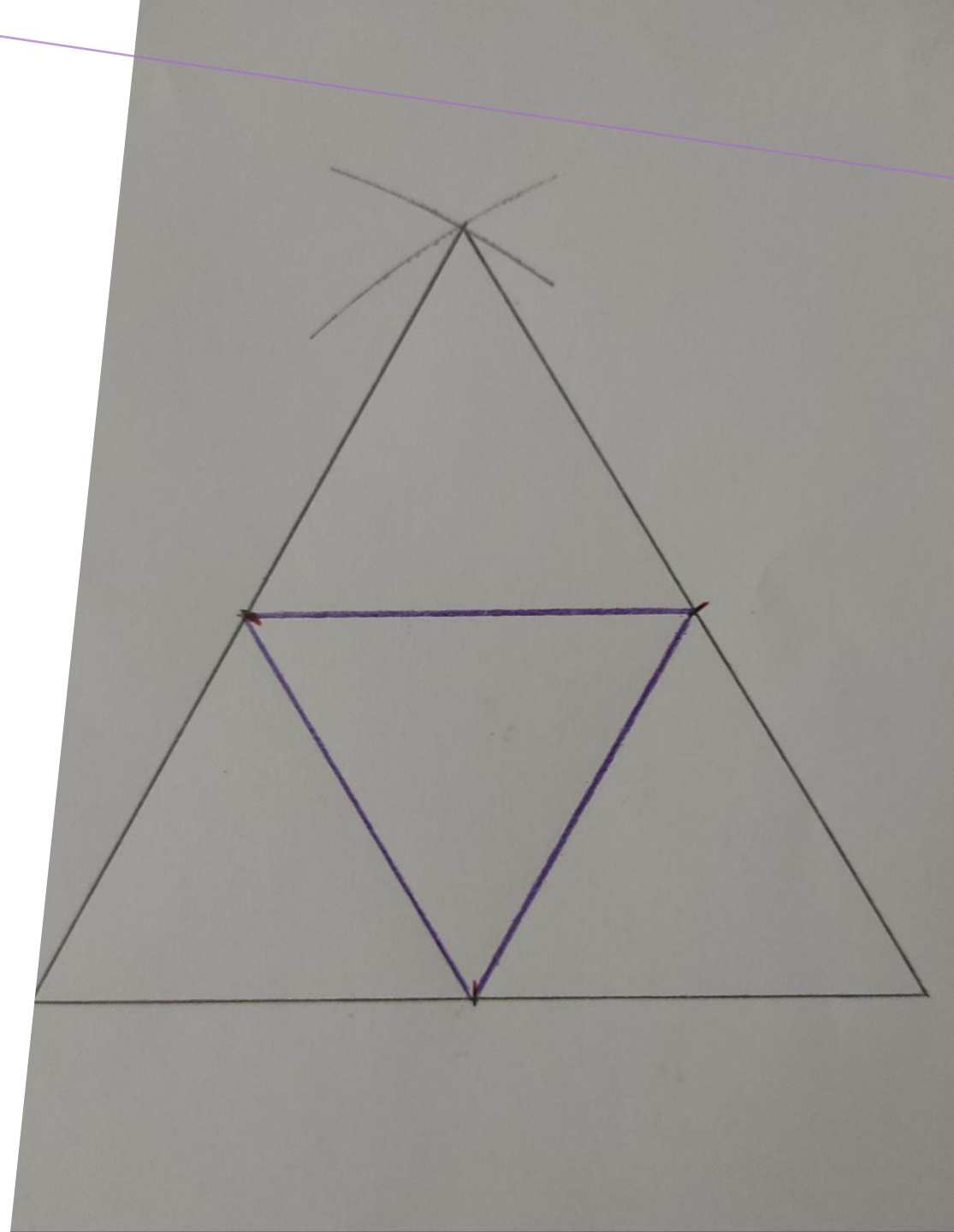
STEP 2:

- Find the midpoints of the line segments of the triangle.



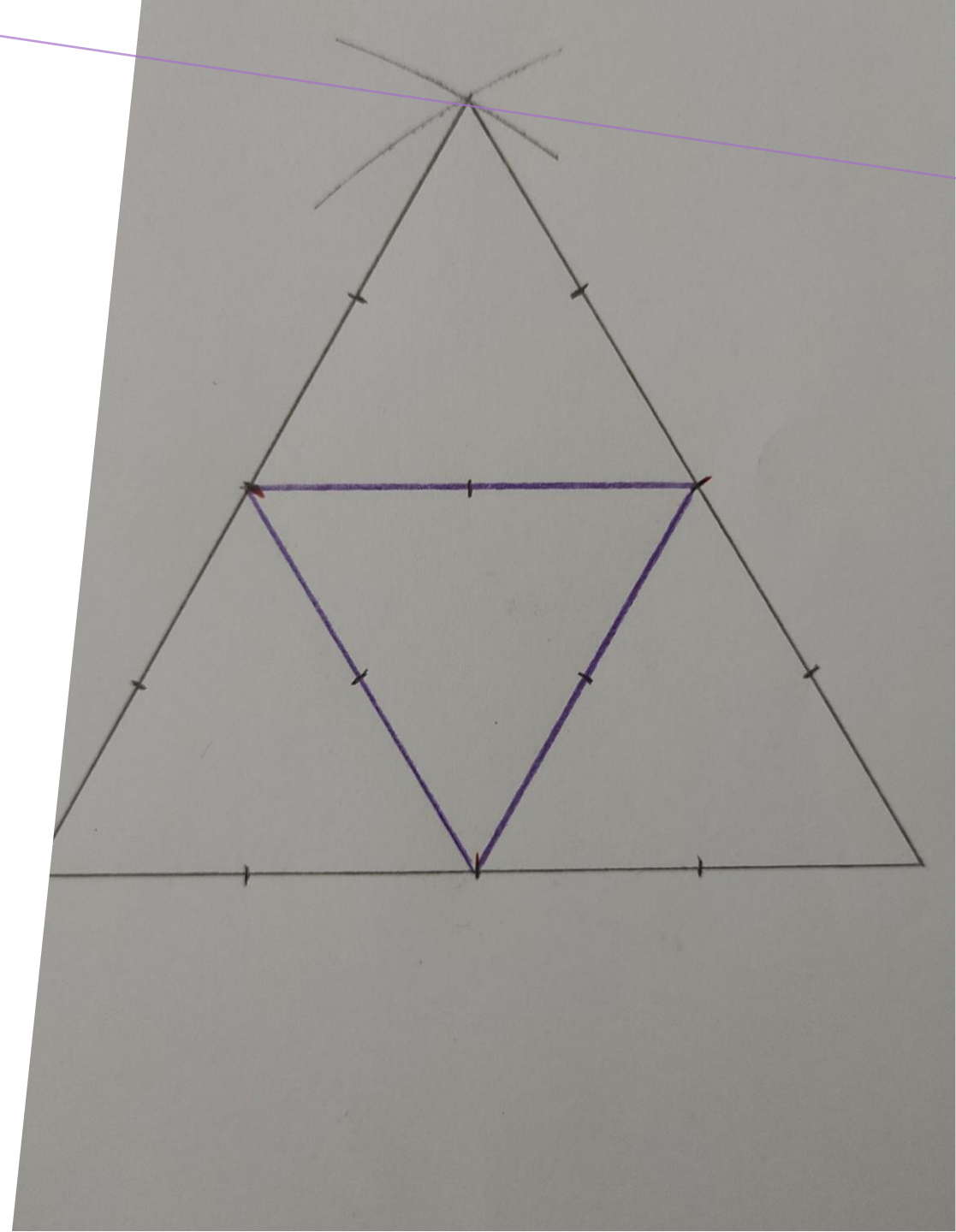
STEP 3:

- Connect the midpoints of the line segments into a new triangle.



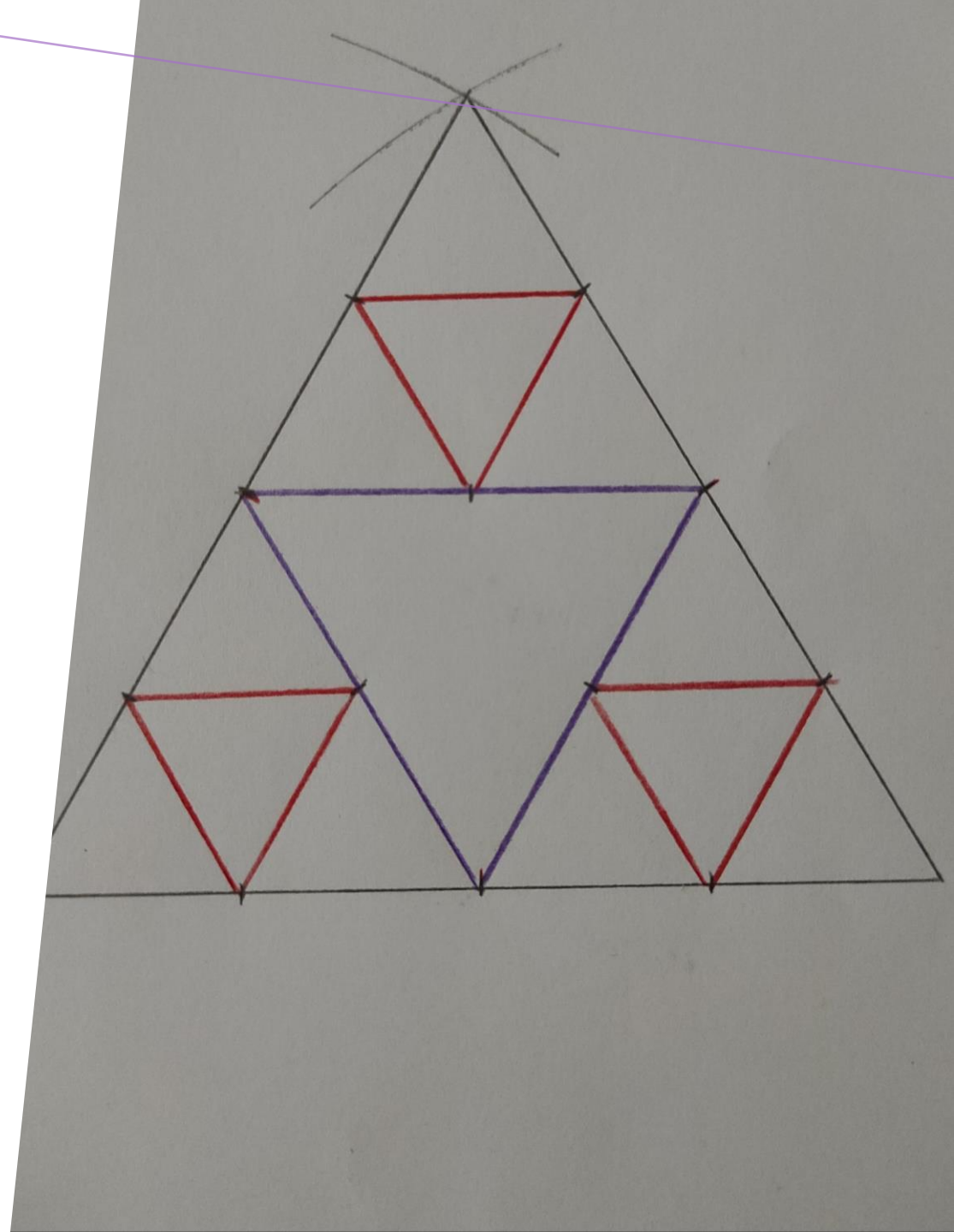
STEP 4:

- In the resulting triangles, find the midpoints of the line segments.



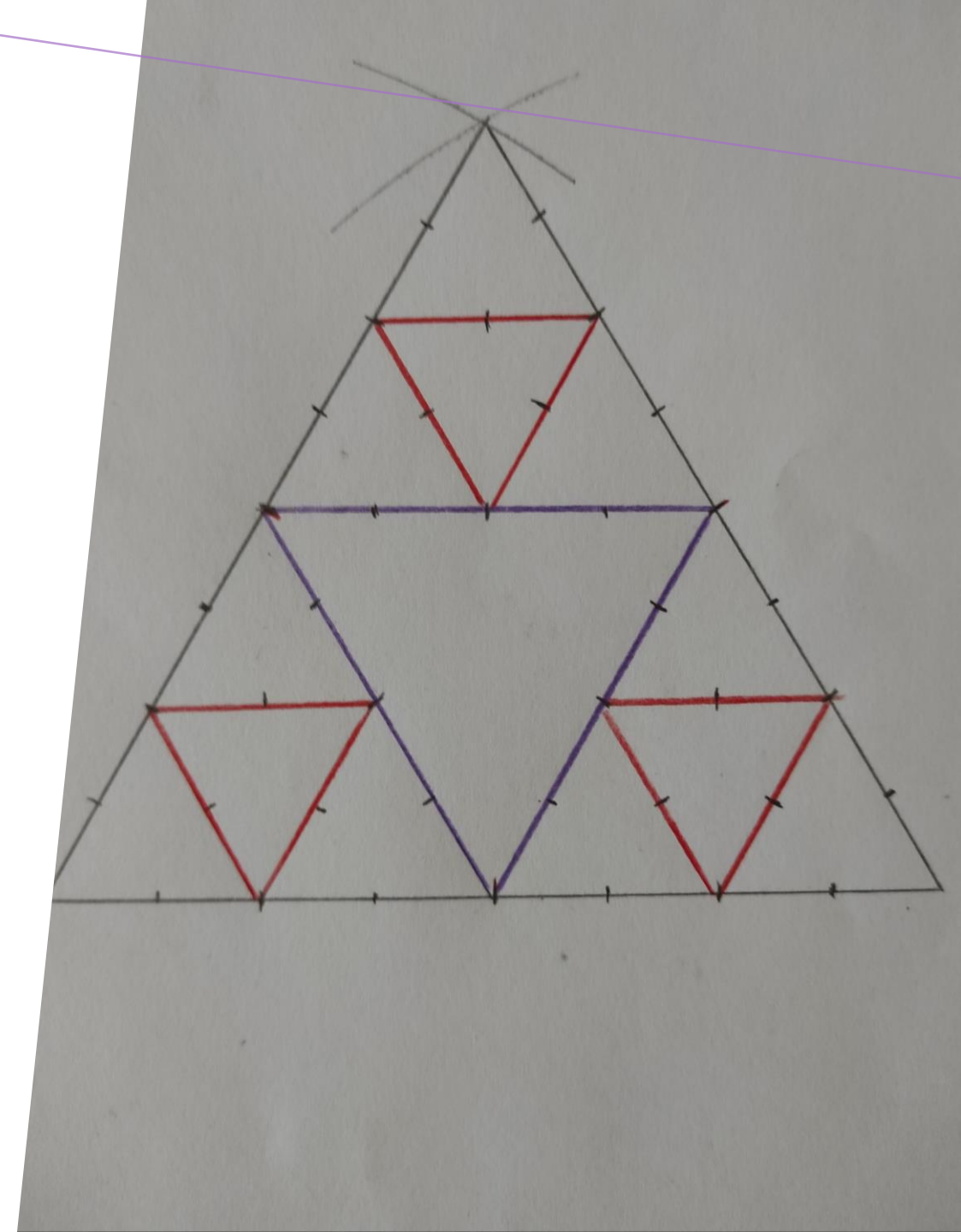
STEP 5:

- Connect all the midpoints of all the triangles into the new triangles.



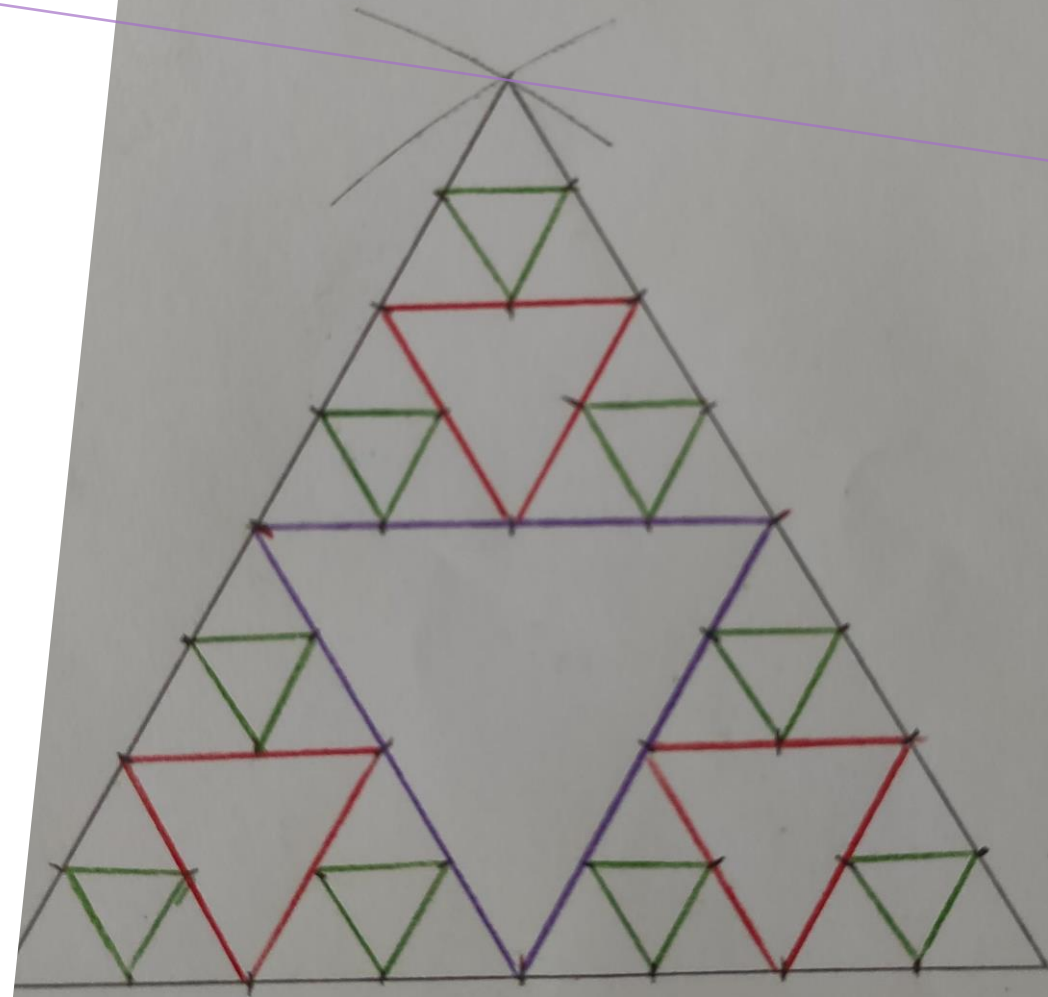
STEP 6:

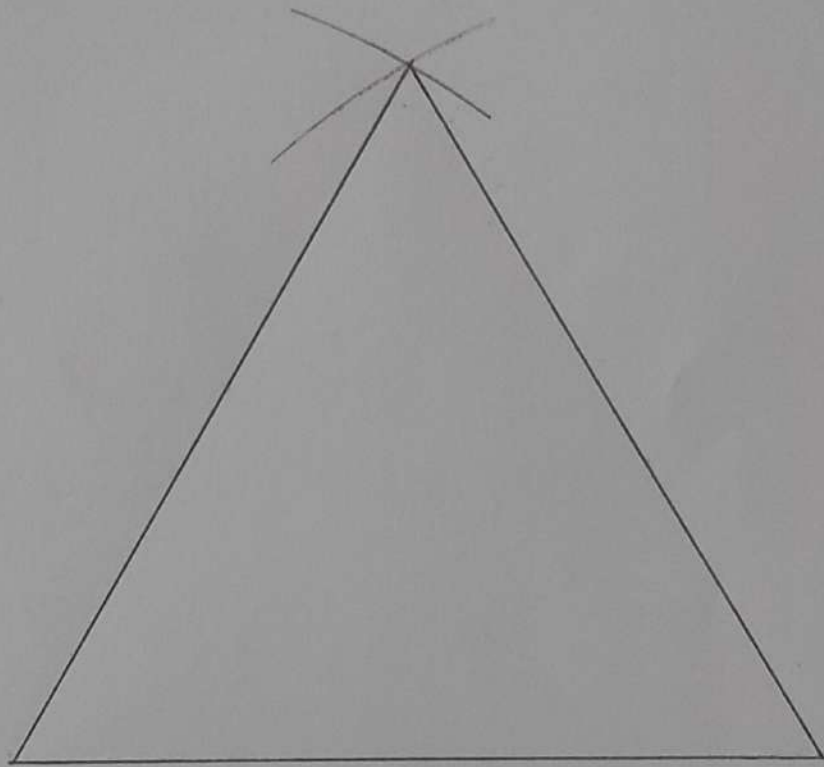
- In the resulting triangles, find the midpoints of all the line segments.



STEP 7:

- Connect all the midpoints of all the triangles into the new triangles.


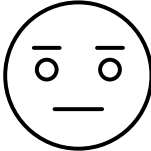
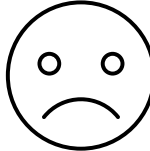

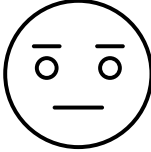


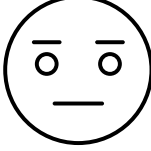


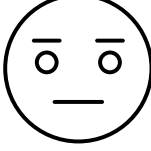





SELF – ASSESSMENT

NAME:

DATE:

I followed directions			
I did my best and had a positive attitude			
I completed my work			
I liked the activities			

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