

**GUYANA
MINISTRY OF EDUCATION
NATIONAL GRADE NINE ASSESSMENT
2014**

MATHEMATICS

PROJECTS

PROJECT 1

String Art is mathematically patterned art that enables the creation of geometric patterns and eye-catching designs.

Follow the instructions and create an attractive art piece.

Three patterns are displayed for this project. You are required to create one (1) pattern of your choice. (Choice of pattern may not be confined to examples given)

Materials Needed

- A piece of plywood or board measuring 305 mm x 305 mm
- Small headless nails (2.54 cm)
- Hammer
- String – coloured thread, embroidery thread, straw or any other suitable string (at least two colours)
- Scissors

Instructions

1. Draw or sketch your design on paper. Determine a suitable distance between nail holes.
2. Prepare a smooth finishing to your board and have a black background.
3. Place the paper pattern on the finished face of the board and secure with tape.
4. Hammer small nails through all the holes.
5. Remove the paper pattern from the board.

6. Use coloured thread to join the nails as shown on the samples.
7. Tie the end of your first string on the nail corresponding to the first number of the sequence:

Spiral

1 – 2, 2 – 3, 3 – 4, 4 – 5, 5 – 6, etc

Circle

(i) 2 – 43, 43 – 45, 45 – 3, 3 – 4, 4 – 47, 47 – 49, 49 – 5, etc.

(ii) 41 – 55, 55 – 69, 69 – 15, 15 – 29, 29 – 30, 30 – 16, 16 – 71,
71 – 56, 56 – 42, 42 – 43, 43 – 57, 57 – 73, 73 – 17, 17 – 31, etc

8. Complete the sequence until the pattern is observed and give it a name.
9. Write a detailed report on the process followed to complete your project.

Report

Your report must include responses to the following questions:

1. What is the distance used between nail holes? Explain how this distance was arrived at. (Hint: consider the circumference of a circle)
2. State how many nails were used and the length of the string required.
3. What mathematical concepts can be deduced or observed from your pattern? Explain how these concepts are related to your pattern.
4. State your opinion on the nature of this project.

25 MARKS

PROJECT 2

An aqua-culturist wants an **Equilateral Triangular- Based Pond** of depth 100 cm to rear fishes.

Follow the instructions to complete your project.

Materials

- Scissors
- Cardboard
- Ruler or measuring tape
- Paste, glue or any other paste

Instructions

1. Using cardboard and a suitable scale, make a net of the pond.
2. Make a model of the pond using the net drawn.

The actual pond is made of concrete. Concrete blocks of dimension 40 cm by 20 cm are used to construct the rectangular sides.

- 3 Calculate the number of blocks required to construct the rectangular sides of the actual pond.
4. If a fish requires a space of one (1) m³, how many fishes will the pond accommodate?

Report

Your report must include:

1. Description of the steps followed to make the model including the scale used.
2. The mathematical concepts involved and how they were applied to the building of the pond.
3. (i) A diagram of your model pond.
(ii) A sketch of what the actual pond will be then the blocks are laid or a fish selected.
(iii) A description or picture of a fish that can be accommodated in the pond.

4. How beneficial will these skills acquired from doing this project, enhance your ability to learn **other** mathematical concepts.

25 MARKS