

Use Pencil Code to create algorithms for creating polygons → in axes of symmetry.

Which of the following outcomes from the Digital Technologies context of the new 7-8 Technology Mandatory syllabus does the planned lesson address? Please circle all those apply from the list below:

- designs, communicates and evaluates innovative ideas and creative solutions to authentic problems or opportunities (TE4-1DP)
- plans and manages the production of designed solutions (TE4-2DP)
- designs algorithms for digital solutions and implements them in a general-purpose programming language (TE4-4DP)
- explains how data is represented in digital systems and transmitted in networks (TE4-7DI)
- explains how people in technology related professions contribute to society now and into the future (TE4-10TS)

NSW Syllabus Outcome(s): *Does the lesson involve concepts or outcomes from the new 7-8 Technology Mandatory syllabus that are not listed above or that are from another Key Learning Area (for example, English or the Creative Arts)? If so, what concepts and outcomes are these?*

MA4-1WM

MA4-2WM

ACMMG 181.

Introduction: *How will you get the students motivated, curious and ready to learn?*

showing demos of mandala type patterns that are computer generated → to achieve these firstly need to understand & apply concepts of repetition, symmetry. Patterns that are developed by students will be used to apply in a project such as laser engraving to woodwork project or sewing project.

Metalanguage: *What are the key concepts or procedures that you want students to understand as a result of this lesson?*

- loops, repetition
- symmetry - axes of symmetry
- algorithms
- polygons

Please turn page over

Teaching Activities: *What strategies will you use to teach the content and skills? How long will you spend on each of those strategies and with the content? How would you address different levels or prior knowledge?*

- refresh prior knowledge of polygons
  - angles
  - names of
  - axes of symmetry (10 mins)
  - angle sum of polygons
- Explain activity via demonstration (show harder mandala / snowflake).
  - students to create <sup>specific number</sup> polygons (given prior experience with Pencil Code).
  - add in axes of symmetry
  - Instruct students to create polygons with a specific number of axes of symmetry
- create a pattern using one or more of these polygons that creates a whole new shape, with axes of symmetry. (similar to examples shown at start of lesson)
  - students use PencilCode functions "Control" to create a loop/repetition.

Lesson Closure: *How will you bring the lesson to a conclusion?*

- share work + peer assess
- students save their work

Assessment: *How will you know whether the students achieved what you wanted them to achieve?*

Teacher observation during lesson (product analysis)

Peer analyses after uploading work

Teacher Analysis of uploaded work.

Resources: *What materials do you need for this lesson? Have you used ideas from elsewhere?*

Devices / Pencil Code / Internet.

Protractor / Ruler / Pencil (to plan shapes).