Patterns

Purpose:
The purpose of this activity is to engage students in identifying the similarities and differences of solid objects and using these attributes to produce a repeating pattern.

Achievement Objectives:
NA1-6: Create and continue sequential patterns.

Description of mathematics:
In readiness for this problem, the students should have familiarity with each of the following components of mathematics. The problem may be solved with different combinations of these components.

- recognising similar shapes
- recognising similar objects
- using materials to represent a problem
- making a pattern
- explaining a pattern
- repeating a pattern

This activity may be carried out with guidance, or by allowing the student to follow their own method of solution. The approach should be chosen in sympathy with students’ skills and depth of understanding.

Activity:

Arrange these counters in a repeating pattern. Describe your pattern and say what would come next if you had more counters.

Note to teacher: Students should be provided with 12 counters, buttons or other small objects. The 12 items should be four lots of three different shapes and colours.
The visual approach
The student is able to arrange objects in a repeating pattern.

Prompts from the teacher could be:

1. Look at the objects you have been given.
2. Can you group matching ones together?
3. What different shapes and colours do you have to make a pattern?
4. Make a pattern with some of your shapes.
5. Does your pattern repeat?
6. What would you need to add to repeat your pattern again?

T: Tell me about your pattern.
S: I am going pink square, green triangle, blue circle
T: Is this repeating?
S: Yes.
T: So what would your next counter be?
S: ... umm ... pink square to start ... no ... no, I've got that ... it's a green triangle next.
The conceptual approach
The student is able to arrange objects in a repeating pattern. The pattern need not be immediately obvious and might include one or more sub patterns.

Prompts from the teacher could be:

1. Look at the objects you have been given.
2. Make a pattern with some of your shapes.
3. Does your pattern repeat?
4. What would you need to add to repeat your pattern again?

T: Tell me about your pattern.
S: I am going 1, 2, 3.
T: Is this repeating?
S: Yes. I have 1, 2, 3, 1, 2... and then it would be 3 but I have run out of circles.
T: So what would your next counter be?
S: I need two more blue circles then I can use my pink square.
T: So I can see three patterns here. You have told me about repeating 1, 2, 3, 1, 2, 3. What other patterns have you got?
S: Pink, green, blue... Well pink, green, green, blue, blue, blue then that goes round again. And then the same thing for square, triangle, circle.