

# Perimeter of Polygons

By CL Tam

## RATIONALE OF THE DESIGN

NCS students' needs/characteristics:

NCS students in general are weak in arithmetic operations (not likely to compute complex expressions correctly). But they are ready to participate in exploratory activities. According to teachers' experience, NCS students have difficulties (which may be related to language barrier) in memorising the definition of perimeter and all related formulae. If such situation could not be improved, the learning of further related concepts (like area and volume) will also be affected.

Considering the diversity of students' prior knowledge, it is suggested that all examples used in teaching should be adjusted so that

- Computation complexity will be reduced.
- Students may discover the formulae themselves so that their memory for the formulae will be more natural and may last longer.

## LEARNING TARGETS

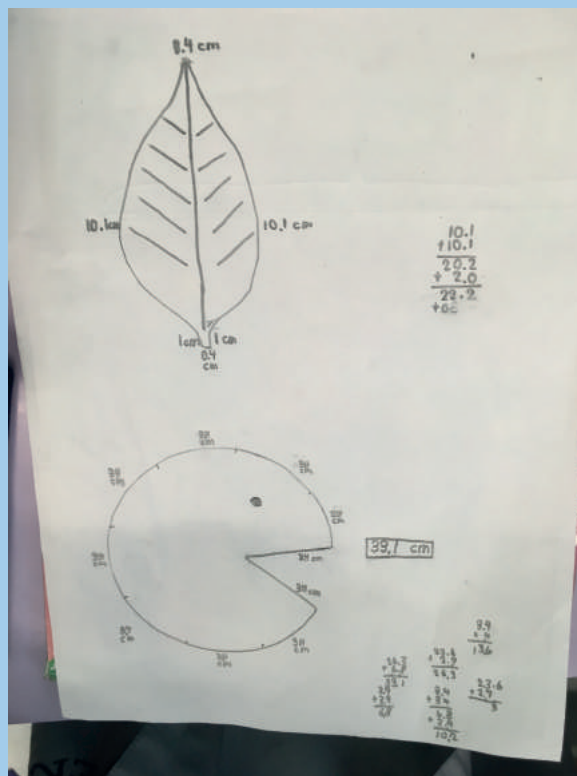
1. Understand the meaning of perimeter via hands-on activities
2. Grasp the meaning of perimeter using a visualisation approach
  - Only closed shapes have perimeter
  - Only the length of the boundary will be counted
3. Grasp the formulae of perimeter of squares and rectangles while re-consolidating the properties of squares (all sides equal in length) and properties of rectangles (opposite sides equal in length)
4. Perimeter of polygons could be found by adding all sides or by finding the perimeter of rectangles with equal perimeter

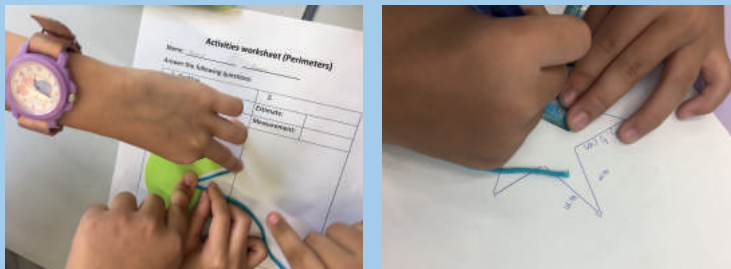
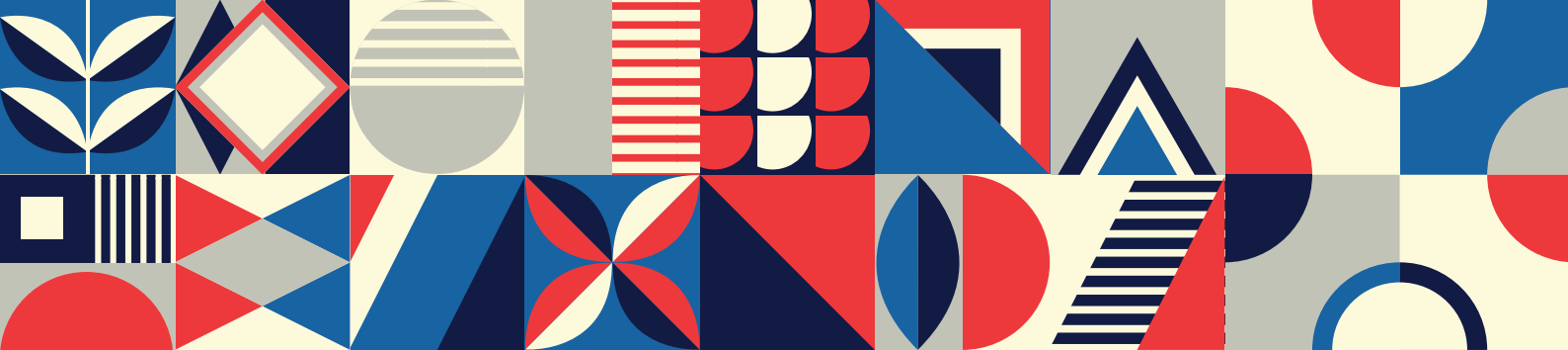
## LEARNING AND TEACHING STRATEGIES

Let students have real measuring experience concerning perimeter. Paper figures are prepared for students to copy to worksheets and measure their real perimeter. We want students to be aware of the connection between perimeter and the real world. Students would be better prepared to discover the formulae of perimeter of different figures that they are going to learn.

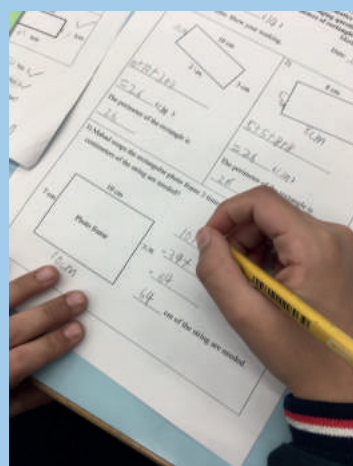
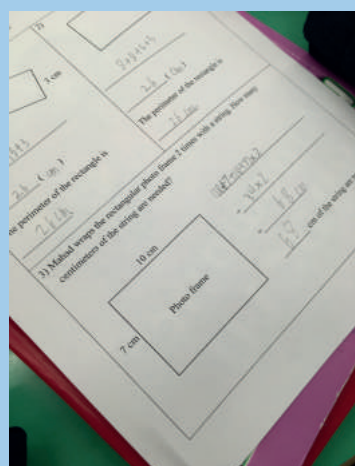
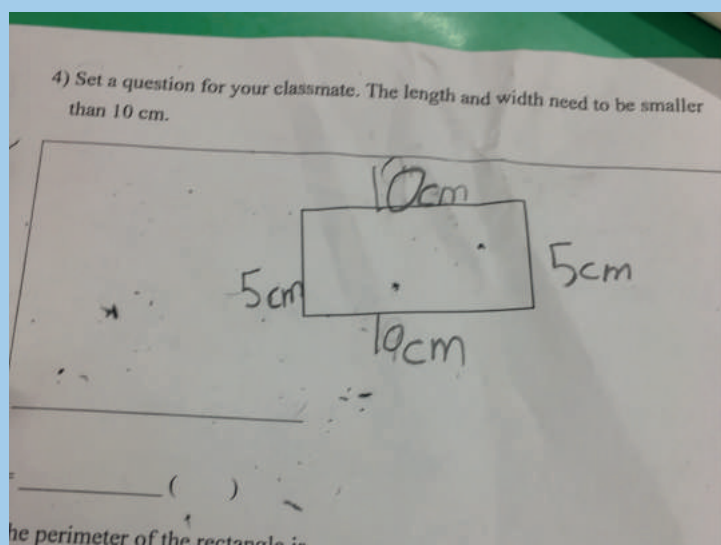
## STUDENTS WORK

Students were engaged in the activities and it was observed that some students could also develop their own ways in solving the problems.





NCS students were able to apply the concept to find the perimeter of simple figures even without knowing the formulae. In learning the formulae of perimeter of squares and rectangles, students were able to identify the length of the missing sides by measurement first and then by applying the properties of related figures.



Some NCS students' arithmetic computation ability is weak. Class exercise is designed to lower the learning gap by choosing simpler numbers for the sides of the figures. Most students are then able to grasp new concepts without being affected by their relatively weaker prior skills in computation.

Knowing NCS students' weakness in multiplication, they are allowed to find the perimeter of squares by addition instead of multiplication. They are asked to figure out any faster methods that could be used so that some of them are prompted to discover the formulae by themselves.

## ASSESSMENT TOOLS

A more encouraging approach could be used when assessing NCS students' computational steps and answers. If students could use addition to find the perimeter of squares or rectangles, teachers could give them full marks. Teachers could tell students that there are many ways to get the answers instead of asking students to memorise some standard formulae.