Congruence and Similarity — Similar Figures

Mathematics Secondary 1

Level 1: School-based Whole-class Teaching

Background and Notes

The design of the learning and teaching plan reflects the actual circumstances of the particular school at the time of implementation. As it is developed and tailor-made to meet the specific cognitive and affective needs of students, all learning and teaching resources are for reference only.

When adapting the materials, curriculum, instructional and assessment modifications can be made in accordance with the diverse needs and abilities, learning styles and aspirations of students, professional competence of teachers, and gifted education development of the schools.

Teachers are strongly recommended to read the introduction, theoretical background and summary of the resource package to have a better understanding of the principles of Gifted Education and strategies for implementation.

This unit includes 1 lesson plan and 3 worksheets.

With reference to our resources, educators can design suitable learning activities and implement the elements of Gifted Education, based on students' needs and interests, and teaching experience, so as to unfold students' potentials to the fullest.

Topic —— Congruence and Similarity: Similar Figures

Subject: Mathematics
Grade: Secondary 1
No. of Lessons (Learning Time): 2 Consecutive Lessons (80 minutes)

Prior Knowledge	Same shape of figures (in general speaking)
Learning Objectives	- Students should be able to acquire Mathematical language related to congruence and similarity - Students should be able to identify the corresponding sides of figures by different transformation - Students should be able to know the meaning of Similar Figures: same shape and corresponding sides are proportional - Students should be able to develop collaboration skills through working with others
Intended Learning Outcomes	- Students are able to answer challenging questions - Students are able to show their creative problem-solving skills in completing the activities - Students are willing to demonstrate and show their work to their classmates - Students show motivation and are highly engaged in learning - Students show commitment when doing the learning tasks
Learning & Teaching Strategies	Questioning, Pair Discussion, Group Activity, Presentation
Operation Mode of Gifted Education	Level 1: School-based Whole-class Teaching
Core Elements of Gifted Education	Higher-order Thinking Skills	Creativity	Personal-social Competence

Lessons 1 & 2

Pre-lesson Tasks

Students finish the Self-directed Learning Worksheet before the lessons. Students are required to:
1. find out the meanings of some important terms.
2. insert a figure in a MS Word document and follow the instructions of Question 3, to find out the effect of making changes of the shape / size of the figure.

Procedure

Learning Focus (Time)	Activity / Content	Learning & Teaching Strategies	Elements of Gifted Education	Learning & Teaching Resources
Students' sharing of their findings (10 minutes)	Teacher asks students what the meaning of same shape is. Students share their findings in their pre-lesson task with their neighbors. They need to make judgement and compromises during the discussion.	Questioning Pair Discussion		Self-directed Learning Worksheet
	Students share their results with the whole class. Other students give comments and feedback.			
Finding whether the pieces of paper are similar or not (35 minutes)	Each group of students is given a set of A6, A4, F4 and A2 paper. Students, in groups, can use any methods to check whether these pieces of paper are having same shape or not.	Group Activity Presentation		Activity Worksheet Sets of A6, A4, F4 and A2 paper
	Students share their methods with classmates and provide evidence.			
Generalization on the new knowledge – from same shape to similar figures (25 minutes)	Each group of students is given a set of polygons. Students, in groups, find out other criteria of similarity using the set of polygons.	Group Activity Presentation		Activity Worksheet Sets of Polygons
	Students consider the properties of quadrilaterals.			
	Students suggest the definition of similar figures.			

Extended Learning Activity

Finish the Extension Worksheet. More daily-life examples are given to students for further investigation.