re(Solve) MATHS BY INQUIRY Trapezium Pieces

Summary of learning goals

- To classify and name two-dimensional (2D) shapes (particularly quadrilaterals) based on their properties.

Australian Curriculum: Mathematics (Year 4)

ACMMG088: Compare and describe two-dimensional shapes that result from combining and splitting common shapes, with and without the use of digital technologies.

Summary of lessons

Who is this sequence for?

- For students who are familiar with common two-dimensional (2D) shapes. Students should be able to use the properties of a shape to identify and name quadrilaterals, including special groups of quadrilaterals.
- Students should be familiar with the specific shape properties of parallel lines, sides of equal length and right angles.
- Students must be able to recognise any three-sided polygon as a triangle and any five-sided polygon as a pentagon.

Lesson 1: Trapezium Pieces

Students look at the different shapes that can be formed by cutting a trapezium in two with one straight line. Students are asked to classify and name the shapes that are made, and to justify their classifications based on the definitions and properties of shapes.

Australian Academy of Science

Reflection on this sequence

Rationale

Shapes are named according to their properties. Often students can name shapes based on recognition but are unable to accurately describe their properties. It is important that students define shapes in terms of their specific properties. For example, a rectangle is defined as a quadrilateral that has four right angles. This means that a square is a special type of rectangle. It also means a quadrilateral with four right angles is a rectangle regardless of its orientation.

Students should be presented with typical and non-typical versions of shapes. They should also be challenged to reason why shapes are not part of a specific shape family. This task presents students with typical and non-typical forms of shapes and asks them to use the properties of the shapes to name them.

reSolve mathematics is purposeful

- This task builds students' understanding of geometry. They are asked to reason mathematically about properties and attributes so as to name shapes.

reSolve tasks are inclusive and challenging

- This task has a low floor and a high ceiling. Students can access the task by simply dividing a common shape into two parts with a straight line. Simple reasoning can be used to name and describe shapes.
- Key questions about the conditions under which certain shapes are made are provided to challenge students' thinking and to promote deeper inquiry.

reSolve classrooms have a knowledge-building culture

- Students are challenged to justify that a name given to a shape is correct. Collectively, the class builds an accurate definition for shapes based on the properties that are exhibited.