

ATTRIBUTE TRAINS: Sequence Overview

Summary of learning goals

The purpose of this sequence is to build students' ability to observe the similarity and differences of objects based on attributes. The sequence begins by looking at the attributes of colour and shape and then introduces a third attribute of size. Students are asked to determine what an object might look like when one or two of its attributes are changed.

Australian Curriculum: Mathematics (Foundation)

ACMNA005: Sort and classify familiar objects and explain the basis for these classifications. Copy, continue and create patterns with objects and drawings.

Summary of lessons

Who is this Sequence for?

This sequence is designed for Foundation students. Students will have used the attributes of objects to create patterns and have experience sorting and classifying objects into groups based on their attributes. Student should also have experience identifying how someone else may have sorted a collection.

We value your feedback after these lessons via <link to be advised>

Lesson 1: Attribute Train

This task asks students to use a set of attribute cards to create an attribute train. The cards use the attributes of colour and shape. One shape is chosen as the start of the train and each subsequent card added must change just one attribute at a time. Students use their cards to make the longest train that they can. Three additional challenges are then presented to the students.

Lesson 2: Train Challenge

This resource extends on the first task in the sequence by adding the additional attribute of size. The game ‘Train Challenge’ has students play against each other to create trains using three attributes. The lesson concludes by looking at a hypothetical game and considers the most strategic moves that can be made by each player.

Reflection on this sequence

Rationale

Identifying and exploring attributes of objects form an important part of mathematics. They allow us to name, describe, classify and measure the object. As such, it is important that students develop an accurate mathematical vocabulary related to the specific features of objects. The development of language and the identification of attributes is the focus of much of the content in early mathematics. In early algebra, students use the attributes of objects to sort and classify, to create patterns, and to identify how things are the same and how they are different. This sequence focuses students’ attention on attributes and asks them to use appropriate language to describe how shapes are the same and how they are different.

reSolve Mathematics is Purposeful

- Connections are made across algebra and geometry as students identify and apply generalisable attributes of shapes. Describing these attributes, specifically the name of some common shapes, their colour and size, develops students’ mathematical vocabulary.
- This sequence focuses on embedding the proficiencies of the Australian Curriculum: Mathematics, particularly problem solving and mathematical reasoning as students use logical thinking to complete the attribute trains.

reSolve Tasks are Challenging Yet Accessible

- Access and challenge is created through the openness of each question, allowing students to answer at a level appropriate to their understanding. The multiplicity of possible answers presents an opportunity to challenge students as they search for different solutions to the tasks.
- Challenge is offered in the *Attribute Train Game* as students are encouraged to think strategically and anticipate the moves of their opponent, informing them as to which shape they may play.

reSolve Classrooms Have a Knowledge Building Culture

- Throughout the sequence students work collaboratively to create attribute trains. This provides the opportunity to enhance learning through active exploration of a variety of perspectives. As students describe the attributes of shapes, there is the opportunity to learn from others’ use of language and to critique and refine one-another’s language use.
- Completing challenges in Lesson 2 requires students to take risks and allows them to learn from the mistakes they make in a secure and encouraging environment.