re(Solve) MATHS BY INQUIRY

# FIBONACCI MILES: Sequence Overview

## Summary of learning goals

Students deepen their understanding of ratios as the multiplicative comparison of two numbers. Students apply this understanding to explore relationships between neighbouring numbers in the Fibonacci sequence. They generate the golden ratio.

## Australian Curriculum: Mathematics (Year 8)

**ACMNA188:** Solve a range of problems involving rates and ratios, with and without digital technologies.

## Summary of lessons

### Who is this Sequence for?

This sequence is for students who are familiar with calculating ratios between numbers. Students should be able to identify and explain patterns in number sequences.

### Lesson 1: Fibonacci Miles

Students are introduced to a trick for quick conversion between miles and kilometres using the Fibonacci sequence and are challenged to explain why the trick works. They investigate using their knowledge of ratio and discover that the miles/kilometres conversion rate is close to the golden ratio.

We value your feedback after these lessons via our website.

# Reflection on this sequence

**Rationale**

The golden ratio is usually discussed in school mathematics in terms of art or nature. In this sequence, it is presented simply as a number. Students derive the golden ratio by observing that the ratio between consecutive numbers approaches a constant as the sequence continues, and then identify other patterns of numbers with a similar ratio between consecutive numbers.

**reSolve Mathematics is Purposeful**

- Introduces students to an elegant rule of thumb they can use in daily life
- Identifying mathematical patterns in real-world number sequences

**reSolve Tasks are Inclusive and Challenging**

- This task has a low floor and high ceiling allowing access and challenge for all

**reSolve Classrooms Have a Knowledge Building Culture**

- Class explorations and discussions are central to building an understanding of ratios as a multiplicative relationship between two measures