







Lesson Plan



Lessons 1 - 2

Pre-lesson Tasks

1. Finish Pre-lesson Worksheet and learn about the use of ratio in daily life.
2. Students are arranged into groups of 3 to 4 students by teachers, matching students' Mathematical ability to the 3 sets of lesson worksheet [Set 1 – Easy, Set 2 – Medium, Set 3 – Hard]. Students can be seated according to this grouping at the beginning of the lesson.

Procedure

| Learning Focus (Time) | Activity / Content | Learning & Teaching Strategies | Elements of GE | Learning & Teaching Resources |
|---|---|--------------------------------|---|---|
| Introduction (10 minutes) | <ol style="list-style-type: none"> 1. Teacher reviews Pre-lesson Worksheet and introduces the tasks in the lesson. 2. Teacher asks students to present their answers on the Pre-lesson Worksheet. | | | Pre-lesson Worksheet |
| Fibonacci Sequence in Nature (15 minutes) | <ol style="list-style-type: none"> 1. Lesson Worksheet Sets 1, 2, 3 are of different levels and are distributed to groups according to their Mathematical ability. 2. Students study the scenario in Task 1 on the worksheets to write down the sequence. Teacher may provide hints to students if necessary. | Ability Grouping |   | Lesson Worksheet |
| Fibonacci Sequence and Golden Ratio (10 minutes) | <ol style="list-style-type: none"> 1. Students investigate the ratio of successive terms in Fibonacci sequence by doing Task 2 and 3. 2. Teacher may provide extra materials to groups that finish earlier. | Ability Grouping |   | Lesson Worksheet Lesson Worksheet – Hint and Extra Materials |
| Student Presentation (15 minutes) | Three groups of students present their findings in Task 1, 2 and 3. | Presentation |   | Lesson Worksheet Lesson Worksheet – Hint and Extra Materials |

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| Exact Value of Golden Ratio (20 minutes) | Students work in groups on Task 4 to find out the exact value of Golden Ratio using the quadratic formula or geometric construction. | Ability Grouping |   | Lesson Worksheet Rulers and pairs of compasses |
| Summary (5 minutes) | Teacher gives a summary about the relation between Fibonacci sequence and Golden Ratio. | | | |

Extended Learning Activities

- Investigate on the use of Golden Ratio in design and architecture by doing Task 5 on the Lesson Worksheet. Students measure the lengths and check whether Golden Ratios exist in the logo or building.
- Finish the Extension Worksheet.