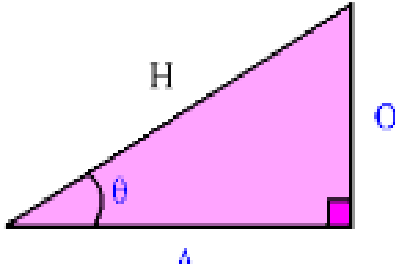


Goals

This fortnight we are going to:

- Review ratios, unit circle, exact values, radians, arc length and area of sectors
- Use algebraic methods and graphing software to identify the key features of trigonometric functions
- Develop mathematical models using the trigonometric functions
- Graphs of trigonometric functions and modelling



Theoretical Components

Resources:

PDF: Trigonometry Pages 1 - 12

Textbook references:

11 Math Methods Chapter 6

Cambridge 3 Unit: Chapters 4 and 14

YouTube Videos: links found in the pdf

Knowledge Checklist:

- 3 trig ratios and reciprocal ratios
- exact value triangles
- unit circle
- sin, cos, tan within the unit circle
- radians
- conversion between degrees and radians
- complementary angles
- boundary values
- signs in different quadrants
- arc length and sector area
- Pythagorean identities
- graphs of trigonometric functions
- trigonometric modelling

Video: Ferris Wheel – Trigonometric Application

(Are you able to convert the degrees used to radians in this example?)

<https://www.youtube.com/watch?v=cIXSgjs1wgQ>

Practical Components

Chapter 6 of Maths Quest 11 Mathematical Methods (pdf – Google Classroom)

6A: 1 each from Q1 - 3, 2 of the word problems Q7 - 10

6B: 3 each from Q1-Q3, 4 each from Q6-Q7

6C: 4 each of Q1, 2, 6, 7, 8

6D: 4 each of Q4 - 8

6F: 3 from each of Q1, Q2, Q3, Q7, Q8 and Q10

6G: 3 from each of Q1, Q2, and Q5

Cambridge Mathematics 3 Unit

14B: 1 - 6, and Q12

You will need to borrow this book from Jacqueline or Jenny.

Assignment is due Monday Week 15 by 4pm.

Investigation

See the next page.

Assignment is due Monday Week 15 by 4pm.

Fun fact: A famous early application of trigonometry was in the building of pyramids by the Ancient Egyptians. The Rhind Mathematical Papyrus, written by the Egyptian scribe Ahmes (c. 1680–1620 BC), contains the following problem related to trigonometry: *If a pyramid is 250 cubits high and the side of its base 360 cubits long, what is its seked?*



Week 15 and 16 Investigation

Two circles of radii 2 cm and 3 cm respectively, touch externally at P . AB is a common tangent. Calculate, in cm^2 correct to two decimal places, the area of the region bounded by the tangent and the arcs AP and BP .

