



## Goals

This fortnight we are going to:

- Solve trigonometric equations using algebraic and graphing techniques
- Investigate further trigonometric modelling
- Investigate angle sum and difference

## Theoretical Components

Make notes on the following chapters and websites:

### Resources

PDF: Trigonometry Pages 13 –

Textbook references:

- 11 Maths Methods Chapter 6 - 6E Identities, 6H Solving trigonometric equations, 6I Applications

Cambridge 3 Unit: Chapters 4 and 14

YouTube Videos: links found in the pdf file

### Knowledge checklist:

- Solve simple trigonometric equations
- State general solutions
- Understand the representation of general solutions
- Find solutions in restricted domains
- Apply trigonometry to applications in context
- Solve trigonometric equations in context

### Video: Ferris Wheel – Trigonometric Applications

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

- <https://www.youtube.com/watch?app=desktop&v=cIXSqs1wgQ>
- [https://www.youtube.com/watch?app=desktop&v=\\_Kw4hLGMkm4](https://www.youtube.com/watch?app=desktop&v=_Kw4hLGMkm4)

## Practical Components

### Do the following questions:

Organise your solutions neatly in your exercise book.

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

- 6E: 1, 3, 5, 7, 9, 11
- 6H: 1a, c, 3a, c, 5a, c, 8a, b, i, 10
- 6I: any 5

Cambridge 3 Unit:

- 4F: 1, 4, 6, 11a, c, j, 12c, 13a, b
- 4G: Half of 4 and 9 (Attempt one column for each question - more if you like)
- 14D 1-5 (one column), 10a, 13a, 20

Pdf

Exercise 3.1 (see pages 21 – 22). Solutions to come.

## Investigation

Prepare a two-sided handwritten A4 summary sheet. This sheet will be submitted with your test paper – ensure your name is on the summary sheet.

### Other

**Fun fact:** Trigonometric identities are often used in the calculation of the digits of  $\pi$ . In 1961, the American mathematician Daniel Shanks and his team used the Machin-like formula

$$4 = 6 \arctan\left(\frac{1}{8}\right) + 2 \arctan\left(\frac{1}{57}\right) + \arctan\left(\frac{1}{239}\right)$$

to compute the first 100,000 digits of  $\pi$ , a world record at the time.