

Solving Trigonometric Equations Graphically

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____
 Date _____
 Class _____

1. Key Ideas

Not all trigonometric equations are easy to solve algebraically — especially when different trig functions are mixed together or when the equation involves transformations. In this lesson, you will learn how to use graphs to find approximate solutions, count the number of solutions in a given interval, and verify algebraic answers by visual inspection.

- How to set up a graphical solution for trig equations
- Why the intersection of two graphs gives the solutions to an equation

2. Success Criteria

By the end, you should be able to:

- How to set up a graphical solution for trig equations
- That periodic functions can have infinitely many solutions
- How domain restrictions limit the number of solutions

3. Key Terms

Trigonometric Ratio

The ratio of sides in a right-angled triangle (sin, cos, tan).

Radian

A unit of angle measure where one radian subtends an arc equal to the radius.

Sine Rule

A formula relating sides and angles in any triangle: $a/\sin A = b/\sin B = c/\sin C$.

Cosine Rule

A formula for finding sides or angles: $c^2 = a^2 + b^2 - 2ab \cos C$.

Period

The length of one complete cycle of a periodic function.

Amplitude

The maximum displacement from the centre line of a periodic function.

4. Activity: Build the Lesson Map

Use the lesson to complete the table. Keep answers brief but specific.

Prompt	Your answer
Main concept	
Important example	
Common mistake to avoid	
How this links to the next lesson	

5. Short Answer Questions

1. Explain this lesson goal in your own words: "How to set up a graphical solution for trig equations". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: "That periodic functions can have infinitely many solutions". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Solving Trigonometric Equations Graphically: "How domain restrictions limit the number of solutions".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Solving Trigonometric Equations Graphically but does not use evidence or reasoning.

Improve the answer by writing a stronger response that uses accurate terminology, a relevant example and a clear explanation.

7. Multiple Choice

1. What is the best first step when answering a question about Solving Trigonometric Equations Graphically?

- A. Identify the key concept being tested
- B. Write every fact from memory
- C. Ignore the command word
- D. Skip examples and evidence

2. Which answer would show stronger understanding of Solving Trigonometric Equations Graphically?

- A. An answer with accurate terms and reasoning
- B. A copied definition only
- C. A single-word response
- D. An answer with no example

3. What should you do if a question asks you to explain?

- A. Link the idea to a reason or cause
- B. List unrelated facts
- C. Only draw a diagram
- D. Write the shortest possible answer

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1

Prove that you can: How to set up a graphical solution for trig equations

BAND 3 **2 MARKS**

SUCCESS CRITERION 2

Prove that you can: That periodic functions can have infinitely many solutions

BAND 4 **3 MARKS**

SUCCESS CRITERION 3

Prove that you can: How domain restrictions limit the number of solutions

BAND 5 **4 MARKS**

One thing I still need help with:
