

Angles and Radian Measure

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

Why do mathematicians love radians? Because they make calculus and physics beautiful. A full rotation is not \$360\$ arbitrary chunks — it is 2π , the natural constant that appears in every circle, wave, and orbit. In this lesson, you will learn to think in radians and convert fluently between degrees and radians.

- The definition of a radian
- Why radians are the natural unit for circular measure

2. Success Criteria

By the end, you should be able to:

- The definition of a radian
- How to convert between degrees and radians
- Common angle equivalences (30° , 45° , 60° , 90° , etc.)

3. Key Terms

Radian

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

Degree

A unit of angle measure where a full rotation is 360° .

Coterminal Angle

Angles that share the same terminal side; differ by multiples of 2π .

Arc Length

The distance along a curve: $l = r\theta$ when θ is in radians.

Sector Area

The area of a pie-shaped region: $A = \frac{1}{2}r^2\theta$ when θ is in radians.

Reference Angle

The acute angle between the terminal side and the x-axis.

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: "The definition of a radian". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: "How to convert between degrees and radians". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Angles and Radian Measure: "Common angle equivalences (30° , 45° , 60° , 90° , etc.)".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Angles and Radian Measure 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 Angles and Radian Measure?

- 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 Angles and Radian Measure?

- 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: The definition of a radian

BAND 3

2 MARKS

SUCCESS CRITERION 2

Prove that you can: How to convert between degrees and radians

BAND 4

3 MARKS

SUCCESS CRITERION 3

Prove that you can: Common angle equivalences (30° , 45° , 60° , 90° , etc.)

BAND 5

4 MARKS

One thing I still need help with:
