

Arc Length and Area of Sectors

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

When a pizza chef cuts a slice, they are creating a sector — a wedge-shaped piece of a circle. But how much crust is on the curved edge? And what is the area of the topping? In this lesson, you will learn the elegant formulas that answer both questions, and discover why radians make them beautifully simple.

- The formulas for arc length and sector area in radians
- Why the radian formulas are simpler than the degree formulas

2. Success Criteria

By the end, you should be able to:

- The formulas for arc length and sector area in radians
- How to convert degree angles to radians before using the formulas
- The relationship between arc length, radius, and angle

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: "The formulas for arc length and sector area in radians". Use one specific example from the lesson.

BAND 3 **2 MARKS**

2. Apply this idea to a new example: "How to convert degree angles to radians before using the formulas". Show your reasoning clearly.

BAND 4 **3 MARKS**

3. Analyse why this idea matters for understanding Arc Length and Area of Sectors: "The relationship between arc length, radius, and angle".

BAND 5 **4 MARKS**

6. Extend: Apply the Idea

BAND 5/6

5 MARKS

A student gives a memorised answer about Arc Length and Area of Sectors 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 Arc Length and Area of Sectors?

- 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 Arc Length and Area of Sectors?

- 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 formulas for arc length and sector area in radians

BAND 3 **2 MARKS**

SUCCESS CRITERION 2

Prove that you can: How to convert degree angles to radians before using the formulas

BAND 4 **3 MARKS**

SUCCESS CRITERION 3

Prove that you can: The relationship between arc length, radius, and angle

BAND 5 **4 MARKS**

One thing I still need help with:
