

# Nat 5 Applications of Mathematics

## - Area: Methodology and key points

This learning guide focuses on the "Area" section from practice exercises in this app. These examples, along with the marking schemes from the 2024 National 5 Applications of Mathematics exam papers, provide a solid foundation for understanding how to approach area problems and excel in your NAT 5 Applications of Mathematics course.

### **Mastering area calculations involves understanding the formulas for basic shapes and applying them strategically to more complex figures.**

The first three levels in the topic progressively introduce the formulas for rectangles, triangles, and circles. It's crucial to not only memorize the formulas, but to understand what each variable represents and how to apply them correctly. For example, remember that the 'r' in the circle area formula ( $\pi r^2$ ) represents the radius, not the diameter. Always double-check if the question provides the diameter and requires you to calculate the radius before plugging the value into the formula.

**When faced with composite shapes, the key is to break them down into familiar basic shapes.** The Level 4 and 5 examples in the app illustrate this perfectly. Whether it's a rectangle with a semi-circle on top or a square with an inscribed circle, the approach remains the same: calculate the area of each individual shape and then either add or subtract them, as needed, to find the desired area. Drawing a diagram can help visualize this process, particularly for complex shapes.

**Pay close attention to units!** Area is always measured in square units, such as square meters ( $m^2$ ) or square centimeters ( $cm^2$ ). The marking schemes in the 2024 National 5 Applications of Mathematics exam papers emphasize the importance of providing answers with the correct units. Failure to do so can result in losing marks, even if the calculation is correct.

**Remember to show your working.** The general marking principles for National 5 Applications of Mathematics stress that full marks are awarded only when the solution includes appropriate working. This applies even if the answer is correct. Clearly showing each step of your calculation demonstrates your understanding of the process and allows markers to award partial marks even if an error occurs in the final calculation.



Question

Working

Answer

1

Calculate the area of a rectangle with length 8m and width 4m

2

Find the area of a triangle with base 10cm and height 6cm

3

Calculate the area of a circle with radius 7cm (use  $\pi = 3.14$ )

4

Find the area of a shape made up of a rectangle (5m  $\times$  3m) with a semicircle (radius 2.5m) on top

5

Calculate the shaded area between a square of side 8cm and an inscribed circle

