



CALCULATING AREAS ON A GOLF COURSE

 9-11 years  20-30 minutes per station

Introduction

Greenkeepers use maths on the golf course in many ways and area measurement is probably the most important. A greenkeeper should be able to accurately calculate the size of an area. Once the size is calculated, the total amount of seed, fertilizer, or topdressing sand to be used can be calculated.

In this session pupils are going to calculate the area of different shapes. (Please note that pupils in the UK work in metric rather than imperial units.)

Pupil Learning Objectives

By the end of the session pupils will be able to

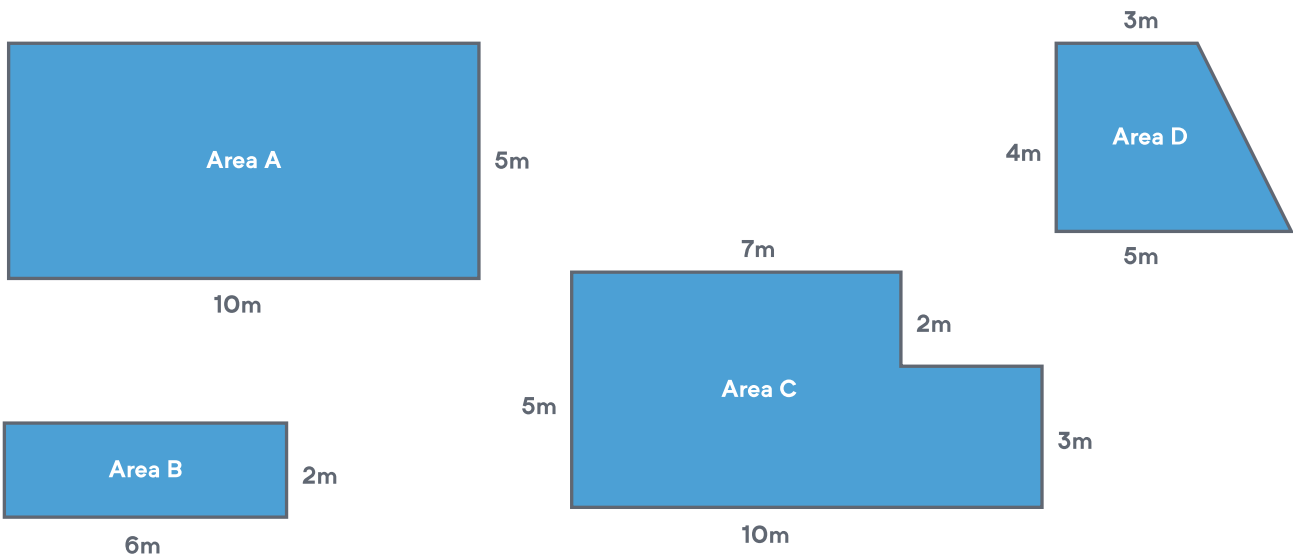
- » measure lengths using appropriate equipment and units
- » state the size of a square metre as 100cm x 100cm
- » be able to calculate the area of a rectangle
- » calculate the area of a non-uniform shape

What is needed for the session

Item	Who will provide it
Measuring tape	Golf course
Trundle wheels	School (if required)
Metre rules	Golf course
Pencil and clipboard for every pupil (not essential)	School
Calculators (optional)	School
Irrigation flags, pegs or spray paint to determine the corners of the area being measured	Golf course
Printed worksheet between 2 pupils	Golf course
Hi-visibility jackets for all pupils (not essential)	School

What the greenkeeper needs to do

Activity	Equipment	Questions to ask
<p>1. The day before the visit, mark out the shapes below using irrigation flags or an alternative. Leave plenty of room between the shapes. You can change the dimensions to suit your space, but make the dimensions whole metres so subsequent calculations are straightforward and can be done without a calculator. Measure the lengths of the sides and calculate the area of the shapes in m² so you have the answers ready.</p>	<p>» Irrigation flags or alternative</p>	



<p>2. Explain to the pupils why greenkeepers need calculate the area of shapes. This is so they can calculate how much fertilizer/water to use on an area.</p>	<p>Why would greenkeepers need to calculate the area of a shape?</p>
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Activity	Equipment	Questions to ask
3. Take the pupils to the shapes and ask the pupils what units we might use to measure the length of the sides of these shapes.	» shapes marked out	What units could we use to measure the length of the sides of these shapes? Which shape do you think is largest? Could you put them in order of size?
4. Ask pupils which equipment they could use to measure the length of the sides of these shapes. Check to see that the pupils know how to measure using a trundle wheel, metre ruler and a measuring tape. They will get the opportunity to use each one. Demonstrate how it is done.	» trundle wheels » metre ruler » measuring tape	How do we use a trundle wheel to measure distance?
5. Demonstrate how to measure the area of a rectangle by multiplying the length by the width. This can be done on a large area marked out on the grass. Ask the pupils what unit the area is measured in. (m ²)	» as above	What unit do we use for the area of a shape? One square metre = m ²
6. Give out the worksheets, one between 2, and ask the pupils to measure the length of the sides of shapes A and B and calculate their area. Check in on their answers and make sure that all pupils are confident to calculate the area of a rectangle.	» as above » worksheet	How many times should you check your measurements?
7. Show the pupils area C and D and ask them how they might measure the area of these shapes. They should know about breaking the shape into two; 2 rectangles for area C and a rectangle and triangle for area D. You may have to remind pupils how to measure the area of a triangle ($\frac{1}{2}$ base x height)	» as above » worksheet	How do you calculate the area of a compound shape? How do you calculate the area of a triangle?
8. Get the pupils to complete the worksheet	» as above » worksheet	Remind the pupils to ask you or the teacher questions if they get stuck

Key words

You may have to explain some of these words as pupils will not be familiar with them. Check that pupils know their meaning before using them too much.

centimetre

square metre

compound shape

rectangle

metre

area

hectare

triangle

Lesson extension activities

Get some pupils to use irrigation flags to mark out their own areas and then challenge other pairs to work out the area of their shape.

Support activities

Any pupils that find measuring difficult could pace out the lengths and give their answer in paces.

Information for the teacher

National Curriculum links

England

- » Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes
- » Calculate the area of triangles

Wales

- » Calculate the area of squares and rectangles

Scotland

- » I can explain how different methods can be used to find the perimeter and area of a simple 2D shape
- » I can find the area of compound 2D shapes

Northern Ireland

- » Calculate areas of squares, rectangles and right-angled triangles

Additional Resources that could be used to follow up the session

Click on the links below to access

- » [Area and perimeter – Access Maths](#)
- » [Area and perimeter – SMILE](#)
- » [Area and perimeter – Learning and skills Improvement Service \(for more able pupils\)](#)

Worksheet: Calculating areas on a golf course

Date Golf Course

Pupil Name

Please answer the questions below while participating in the session.

The area of a rectangle is calculated by multiplying its length (l) and width (w). length x width

One square metre is 100cm by 100cm. How many square centimetres are in one square metre?

What are the dimensions of the area A?

length m width m Total area of A m²

What are the dimensions of the area B?

length m width m Total area of A m²



What are the dimensions of area C?

You can draw a diagram here if needed

Total area of C m²

What are the dimensions of area D?

You can draw a diagram here if needed

Total area of C m²



Extension activity

A football pitch could be 70 metres wide by 100 metres long.

What is the area of one football pitch in m^2 ?

A hectare is a square 100m x 100m.

What is the area of a hectare in m^2 ?

A typical 18 hole golf course covers 70 hectares of land

How many football pitches would fit on a golf course?

Answers

There are 10,000 square centimetres in a square metre $100 \text{ cm} \times 100 \text{ cm} = 10,000$ square centimetres

A football pitch is $70 \text{ m} \times 100 \text{ m} = 7,000 \text{ m}^2$

The area of a hectare is $100 \text{ m} \times 100 \text{ m} = 10,000 \text{ m}^2$

The area of a golf course in m^2 is $10,000 \text{ m}^2 \times 70 = 700,000 \text{ m}^2$

The number of football pitches that would fit into a golf course is the area of the golf course ($700,000 \text{ m}^2$) divided by the area of a football pitch. ($7,000 \text{ m}^2$) = 100

Risk Assessment:

These are suggested risks, you will probably want to add some of your own.

School Name School Representative

Golf Club Name

Greenkeeper Name Date of Visit

What are the hazards?	Who/what is at risk?	What needs to be done to avoid accidents?	Who is to action?
There will be moving cars in the car park	Pupils	<ul style="list-style-type: none"> » Inform pupils that they must follow instructions when leaving the minibus » All pupils to wear high visibility jackets whilst on the golf club (if the school requires) 	Teacher Greenkeeper
Pupils might get lost from the rest of the group	Pupils	<ul style="list-style-type: none"> » All pupils to wear high visibility jackets whilst on the golf club (if the school requires) » Teacher to count pupils in every time they move between areas 	Teacher
Being hit by a golf ball	Pupils Teacher Greenkeeper	<ul style="list-style-type: none"> » Inform pupils that there are some areas of the golf course that may be dangerous, therefore they need to avoid » All pupils to wear high visibility jackets whilst on the golf club (if the school requires) 	Teacher Greenkeeper
There will be other adults around the course	Pupils	<ul style="list-style-type: none"> » Pupils to be told to report to the teacher if they have any concerns 	Teacher Greenkeeper

