GCSE TOPIC BOOKLET
AREA OF A TRAPEZIUM
1. a) Calculate the area of the trapezium. Give the units for your answer. [3]

b) Calculate the area of the trapezium. [2]
The diagram shows a sail. The top part of the sail is a triangle with perpendicular height $x$ metres. The bottom part of the sail is a trapezium with perpendicular height $x$ metres. The area of the triangle is $12 \text{ m}^2$.

Diagram not drawn to scale

Calculate the area of the trapezium. [4]
A company sponsoring a sports event intends to spray-paint its logo onto the pitch.

The logo is in the shape of a semicircle on top of a trapezium as shown below.

\( AB = 10 \text{ m}, \ CD = 16 \text{ m} \) and the height of the trapezium is 4 m.

\[ \text{Diagram not drawn to scale} \]

The company has bought enough paint to cover an area of 125 m\(^2\).

What percentage of this paint will be required to cover the area of the logo? \[ \text{[6]} \]
The dimensions of a playing field $ABCDEF$ are shown on the diagram below.

$ABCF$ is a rectangle and sides $AB$ and $ED$ are parallel.

Calculate the area of the playing field. [4]
The diagram represents the uniform cross-section of a girder. It consists of a rectangle of dimensions 6.4 cm by 8.7 cm, with a trapezium on each end. The two trapezia are congruent shapes with parallel sides of length 6.4 cm and 7.5 cm. The overall height of the girder is 13.5 cm.

Calculate the area of the cross-section of the girder.

[4]
A plot of land labelled $ABCD$ is shown below. $AB$ is parallel to $DC$ and $BC$ is perpendicular to $AB$. $AB = 100$ metres and $DC = 40$ metres.

![Diagram of plot of land]

*Diagram not drawn to scale*

The area of this plot of land is $3500\text{ m}^2$.

A cable is to be laid from point $B$ to point $C$.

Calculate the length of this cable.
7. The diagram shows a trapezium.

\[ \text{Diagram not drawn to scale} \]

(a) Show that the area of the trapezium is \((a^2 - 3a - 10)\) cm\(^2\).
You must show all your working. [4]

\[ \text{Working} \]

(b) The area of the trapezium is 30 cm\(^2\).
Use an algebraic method to calculate the height of the trapezium. [5]

\[ \text{Working} \]
8.

The area of the trapezium is equal to the area of the right-angled triangle.

[Diagram of a trapezium with dimensions: 6 cm, 5 cm, 10 cm] [Diagram of a right-angled triangle with dimensions: 10 cm, x cm]

*Diagrams not drawn to scale*

Calculate the value of $x$.  

[4 marks]
9.

You will be assessed on the quality of your written communication in this question.

Rhodri has a tile in the shape of a trapezium.

![Diagram of a trapezium with dimensions 26 cm, 12 cm, 20 cm, and 10 cm. Diagram not drawn to scale.]

Rhodri decides to cover the tile with gold leaf.

Gold leaf is bought as a book of sheets that can be cut to size without any waste.

Each sheet of gold leaf measures 2.7 cm by 4 cm.

A book of 5 sheets of gold leaf costs £15.50.

Calculate the cost of the gold leaf used to cover Rhodri's tile.

You must show all your working. [7]