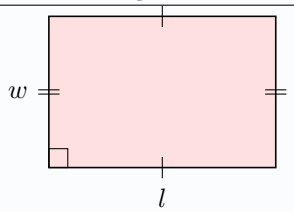
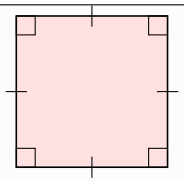
AREA FORMULAS

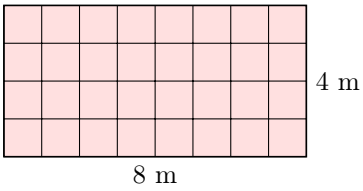
A AREA OF A RECTANGLE OR A SQUARE

Proposition Area Formulas

To find the area of a rectangle, multiply its **length** by its **width**.To find the area of a square, multiply the **side length** by itself.

Shape	Diagram	Area Formula
Rectangle		$A = l \times w$
Square		$A = s \times s$

Ex: Find the area of the rectangle:



Answer: This is a rectangle with length $l = 8$ m and width $w = 4$ m. Using the formula for the area of a rectangle:

$$\begin{aligned} A &= l \times w \\ &= 8 \times 4 \\ &= 32\,\text{m}^2 \end{aligned}$$

The area is 32 square meters (we read $32\,\text{m}^2$ as "32 square meters").

B AREA OF A TRIANGLE

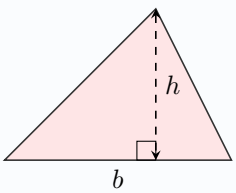
Proposition Area of a Triangle

The area of a triangle is found by multiplying the base by the height and dividing by 2:

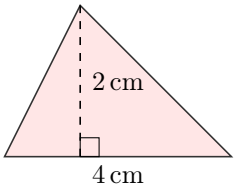
$$\text{Area of a triangle} = \frac{\text{base} \times \text{height}}{2}$$

$$A = \frac{b \times h}{2}$$

where b is the length of the base and h is the corresponding height.



Ex: Find the area of the triangle:



Answer:

$$\begin{aligned} A &= \frac{b \times h}{2} \\ &= \frac{4 \times 2}{2} \\ &= 4\,\text{cm}^2 \end{aligned}$$

So, the area of the triangle is $4\,\text{cm}^2$.

C AREA OF A PARALLELOGRAM

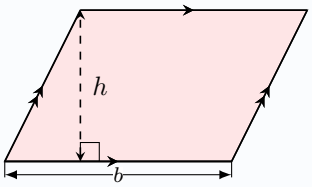
Proposition Area of a Parallelogram

The area of a parallelogram is found by multiplying the base by the height:

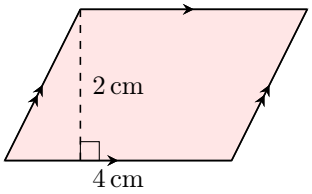
$$\text{Area of a parallelogram} = \text{base} \times \text{height}$$

$$A = b \times h,$$

where b is the base and h is the height.



Ex: Find the area of the parallelogram:



Answer:

$$\begin{aligned} A &= b \times h \\ &= 4 \times 2 \\ &= 8\,\text{cm}^2 \end{aligned}$$

So, the area of the parallelogram is $8\,\text{cm}^2$.

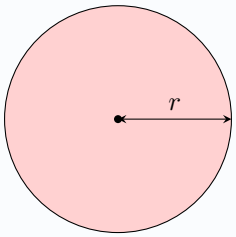
D AREA OF A CIRCLE

Proposition Area of a Circle

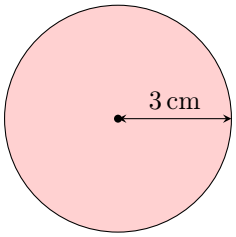
The area of a circle is found by multiplying pi by the radius squared:

$$\text{Area of a circle} = \pi \times \text{radius} \times \text{radius}$$

$$A = \pi r \times r = \pi r^2$$



Ex: Find the area of the circle:



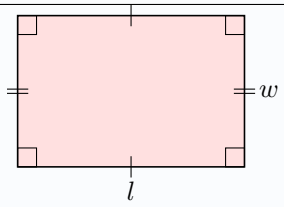
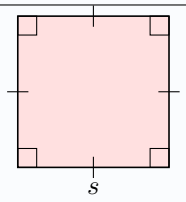
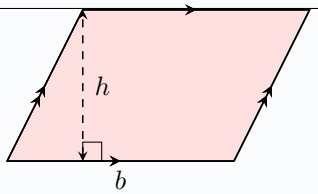
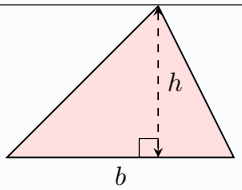
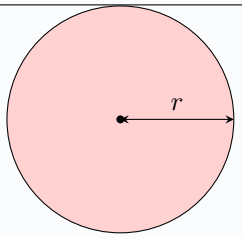
Answer:

$$\begin{aligned} A &= \pi \times r \times r \\ &= \pi \times 3 \times 3 \\ &= 9\pi \\ &\approx 28.3\,\text{cm}^2 \quad (\text{using } \pi \approx 3.14) \end{aligned}$$

E AREA FORMULAS

Proposition **Area Formulas**

Here are the area formulas for some common shapes.

Name	Shape	Area
Rectangle		$A = l \times w$
Square		$A = s \times s$ $= s^2$
Parallelogram		$A = b \times h$
Triangle		$A = \dfrac{b \times h}{2}$
Circle		$A = \pi \times r \times r$ $= \pi r^2$

F AREA OF COMPOSITE FIGURES

Definition Composite Figure

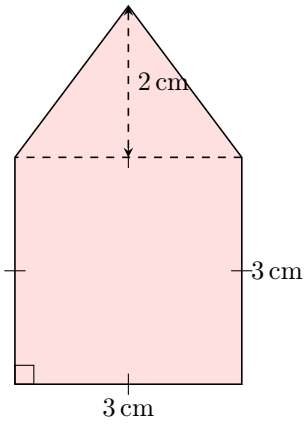
A **composite figure** is made up of two or more simple geometric shapes, like rectangles, triangles, or circles, combined together.

Method Finding the Area of a Composite Figure

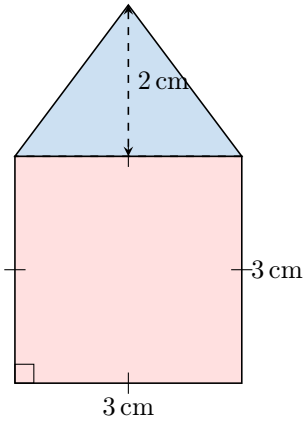
To find the area of a composite figure, follow these steps:

1. Divide the figure into simple, non-overlapping shapes, such as rectangles, triangles, or circles.
2. Find the area of each simpler shape using the appropriate formula.
3. Add the areas together to find the total area of the composite figure.

Ex: Find the area of the composite figure below, which is made up of a square and a triangle:



Answer:



$$
\begin{aligned}
A &= \text{Area of square} + \text{Area of triangle} \\
&= s \times s + \frac{b \times h}{2} \\
&= 3 \times 3 + \frac{3 \times 2}{2} \\
&= 9 + 3 \\
&= 12\,\text{cm}^2
\end{aligned}
$$