













**Geometric Shapes**

- Come in two forms:
  - 2D – "Plane Figures"
  - 3D – "Solids"

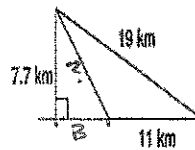
**Measurements**

- Perimeter • The distance it takes to 'walk' around the outside of the shape
- Area • The measure in units squared of the surface
  - 3D – Lateral VS Surface
  - "walls" → "walls + ceiling + floor"
- Volume • The amount of spaces INSIDE the figure in units cubed.

**Area Formulas**

 $A = \pi(\text{radius})^2$	 $A = \pi(\text{radius}_1)(\text{radius}_2)$	 $A = \frac{(\text{base})(\text{height})}{2}$	 $A = (\text{side})^2$
 $A = \frac{(\text{base}_1 + \text{base}_2)(\text{height})}{2}$	 $A = \frac{(\text{diagonal}_1)(\text{diagonal}_2)}{2}$	 $A = (\text{base})(\text{height})$	 $A = (\text{base})(\text{height})$
 $A = \frac{(\text{perimeter})(\text{apothem})}{2}$ <small>MUST BE EQUAL SIDE LENGTHS (Known as 'Regular Polygon')</small>	 $A = \frac{(\text{perimeter})(\text{apothem})}{2}$ <small>MUST BE EQUAL SIDE LENGTHS (Known as 'Regular Polygon')</small>	 $A = \frac{(\text{perimeter})(\text{apothem})}{2}$ <small>MUST BE EQUAL SIDE LENGTHS (Known as 'Regular Polygon')</small>	 $A = \frac{(\text{perimeter})(\text{apothem})}{2}$ <small>MUST BE EQUAL SIDE LENGTHS (Known as 'Regular Polygon')</small>

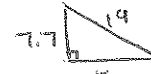
**Using Pythagorean Theorem**



$$A = \frac{11 \times 7.7}{2} = 42.35 \text{ km}^2$$

$$P = 10 + 19 + 11 = 40 \text{ km}$$

① the BIG TRIANGLE



$$x = \sqrt{19^2 - 7.7^2} = 17.3698$$

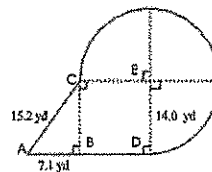
②  $x = B + 11$   
 $17.3698 = B + 11$   
 $B = 6.3698$

③ the wee triangle



$$10 = \sqrt{(7.7)^2 + B^2} = 10$$

**Try It – Find area and perimeter**



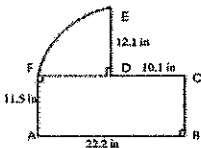
$$A = \frac{3}{4}(14^2\pi) + 14^2 + \left(\frac{7.1 \times 14}{2}\right) = 707.5141 \text{ yd}^2$$

$$P = \frac{3}{4}(14 \times 2 \times \pi) + 14 + 7.1 + 15.2 = 102.2734 \text{ yd}$$

**Compound Figures**

- These are figures that are made up of pieces of other shapes.
- In order to find area/perimeter, you have to consider each piece by itself.

**Example 1**



Area

$$A_1 = \frac{1}{4}(A_c) = \frac{1}{4}(12.1^2\pi) = 114.94$$

$$A_2 = 22.2 \times 11.5 = 255.3$$

$$\text{Area} = A_1 + A_2 = 370.29 \text{ in}^2$$

PERIMETER:

$$FE = \frac{1}{4}(C_c) = 19$$

$$P = 86.4 \text{ in}$$