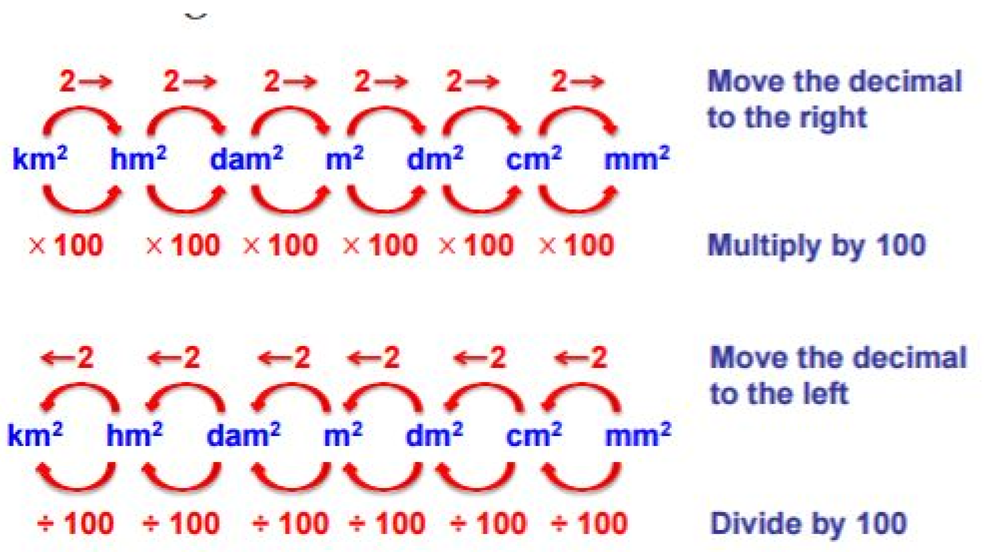
Two Dimensional Conversions
&
Area of Regular Polygons

The Metric System: 2 Dimensional Conversions



Example

Perform the following metric conversion.

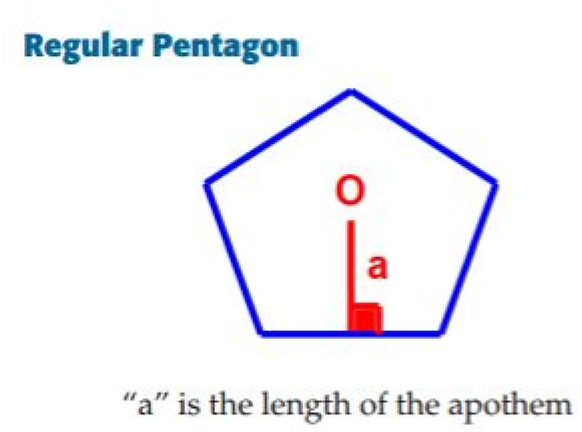
$$7135 cm^2 = \underline{?}\, dam^2$$

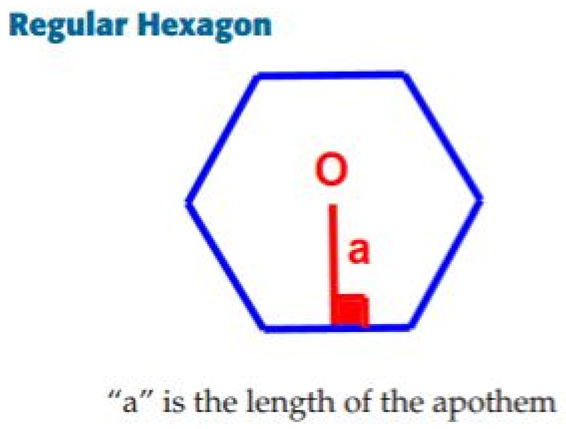
$$\begin{tikzcd}[column sep=small]
km^2 & hm^2 & dam^2 & m^2 \arrow[l, bend right, "2"'] & dm^2 \arrow[l, bend right, "2"'] & cm^2 \arrow[l, bend right, "2"'] & mm^2
\end{tikzcd}$$

$$7135.cm^2 = \underline{0.007135}\, dam^2$$

The Area of a Regular Polygon

Let’s do a quick recap of the ‘Apothem’





The Area of a Regular Polygon

In order to calculate the area of any of the above regular polygons, we will use the formula:

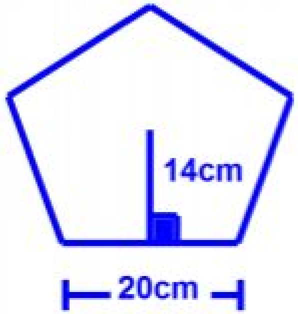
$$A = \frac{(P)(a)}{2}$$

"A" is the area of the regular polygon

"P" is the perimeter of the regular polygon

"a" is the apothem of the regular polygon

Example 1: Find the Area



$$A = \frac{(P)(a)}{2}$$

$$A = \frac{(100cm)(14cm)}{2}$$

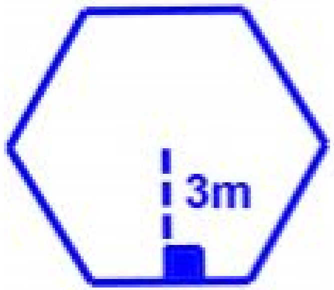
Note that (cm)(cm) = cm²

$$A = \frac{1400cm^2}{2}$$

$$A = 700cm^2$$

Example 2: Solve for X (Perimeter)

Let's try a different type of question where we are given the area of a regular polygon and we want to calculate the perimeter.



Area = $32.4cm^2$

Example 2: Continued

$$A = \frac{(P)(a)}{2}$$

$$\frac{32.4cm^2}{1} = \frac{(P)(3cm)}{2}$$

$$(2)(32.4cm^2) = (1)(P)(3cm)$$

$$64.8cm^2 = (3cm)(P)$$

$$\frac{64.8cm^2}{3cm} = \frac{(3cm)(P)}{3cm}$$

$$21.6cm = \frac{(\cancel{3cm})(P)}{\cancel{3cm}}$$

Remember that $\frac{cm^2}{cm} = cm$ **and that** $\frac{cm}{cm} = 1$

$$P = 21.6cm$$

Homework:

Math 3000: Pages 159 - 160 #1- 8

Assignment: MHS