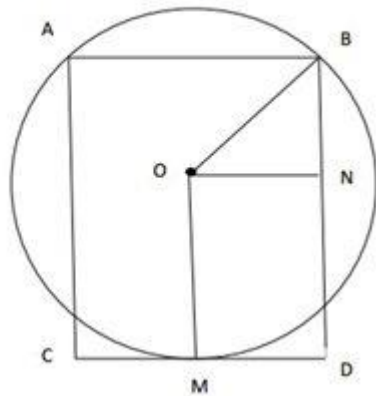


Challenge 3: Overlapping Shapes

Solution

Solution to Challenge 3, by Daniel Remo



Let $OM = OB = r$.

ONDM is a rectangle so $ON = MD = 4\text{cm}$.

$BN = BD - OM = 8 - r$.

BNO is a right angled triangle, so by Pythagoras,

$$\begin{aligned} ON^2 + BN^2 &= OB^2 \\ \Rightarrow 4^2 + (8-r)^2 &= r^2 \\ \Rightarrow 80 + r^2 - 16r &= r^2 \\ \Rightarrow 80 &= 16r \\ \Rightarrow r &= 5\text{ cm} \end{aligned}$$

"alternative solution".

By Fey Eddie

$$\begin{array}{l|l} d \times e = a \times b & a + b = \text{Diameter} \\ 4 \times 4 = a \times 8 & 2 + 8 = 10 \\ a = \frac{16}{8} & \text{Radius} = 5 \\ a = 2 & \end{array}$$