**M1T1 (extra) Notes: Exact Circles**

The only way for a calculation involving $\pi$ to remain exact is to not use an approximation. But how can we represent all the digits of $\pi$ if it goes on forever?

- Use the $\pi$ symbol itself and leave it in your answer

It's a little awkward, but it has definite uses.

* do all the math around the $\pi$ symbol. Leave the $\pi$ symbol (like a variable) in your answer

*Calculate the exact area (a) and circumference (b) of each circle:*

*1) radius = 8 inches*

a) $A = \pi r^2$

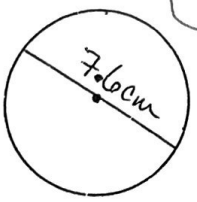
$A = 8^2 \pi$

$A = 64\pi \text{ in}^2$

b) $C = 2\pi \cdot 8$

$C = 16\pi \text{ in}$

*2)*




$r = 3.8$

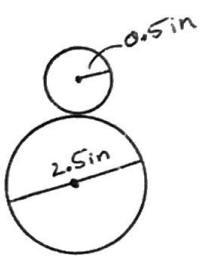
a) $A = 3.8^2 \pi$

$A = 14.44\pi \text{ cm}^2$

b) $C = 7.6\pi \text{ cm}$

*3) Composite Circumference Problem - way easier to just treat* $\pi$ as a variable at first

CALCULATE THE TOTAL CIRCUMFERENCE




sm o + Lg O

$2 \cdot \pi \cdot 0.5 + \pi \cdot 2.5$

$1\pi + 2.5\pi$

$3.5\pi$ → now solve

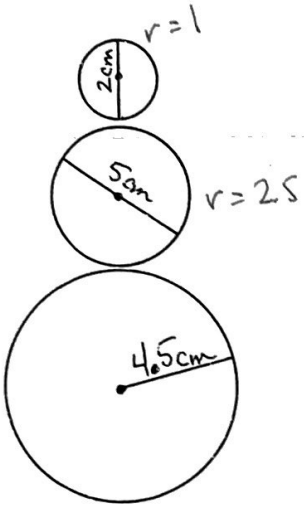
10.9955...

11.0 in ≈ C

**M1T1 (extra) Notes: Exact Circles**

4) *Composite Area Problem - treat* $\pi$ as a variable, then bring in approximation at end

CALCULATE THE TOTAL AREA




SMO + MdO + LgO

$\pi \cdot 1^2 + \pi \cdot 2.5^2 + \pi \cdot 4.5^2$

$1\pi + 6.25\pi + 20.25\pi$

$27.5\pi$

$86.393$

$A \approx 86.4\,cm^2$