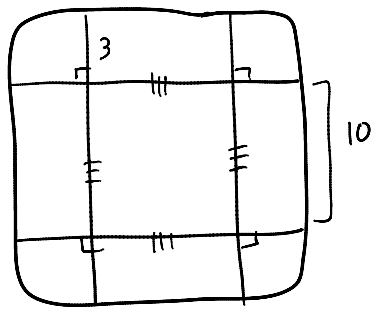
Sec 10.9

Pg 501 # 5, 9-11, 13, 16

#5 Find the perimeter of the following figures

a.

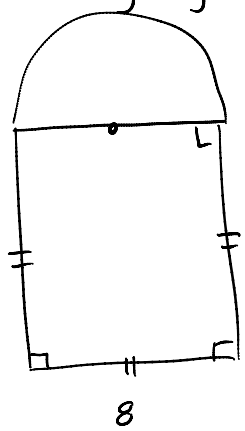


$C = 2\pi 3$

$C = 6\pi$

$\boxed{40 + 6\pi}$

b.

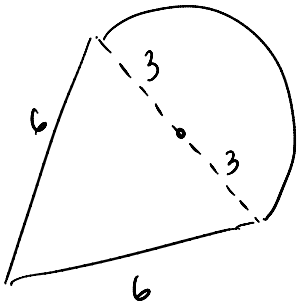


arc length $= \frac{1}{2} \cdot 8\pi = 4\pi$

$P = 8 + 8 + 8 + 4\pi$

$= \boxed{24 + 4\pi}$

c.

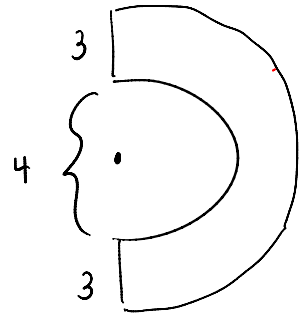


arclen $= \frac{1}{2} \cdot 6\pi = 3\pi$

$P = 6 + 6 + 3\pi$

$P = \boxed{12 + 3\pi}$

d.



a.L.(Big) $= \frac{1}{2} \cdot 10\pi = 5\pi$

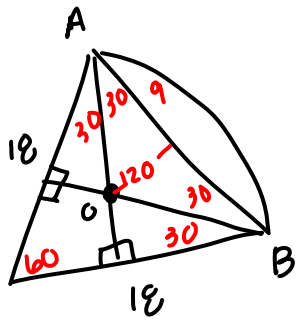
(small) $= \frac{1}{2} \cdot 4\pi = 2\pi$

$P = 3 + 3 + 2\pi + 5\pi$

$\boxed{P = 6 + 7\pi}$

#9 Given the arcs mounted on equilateral triangles as shown, find the length of each arc. $\overline{OA}$ is the radius

a.



$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{9}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$x = 3\sqrt{3}$

Radius $= 6\sqrt{3}$

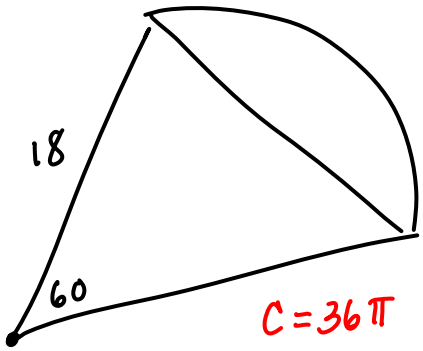
$C = 2\pi \cdot 6\sqrt{3}$

$C = 12\sqrt{3}\pi$

$A.L = \frac{12\sqrt{3}\pi}{3}$

$\boxed{A.L = 4\sqrt{3}\pi}$

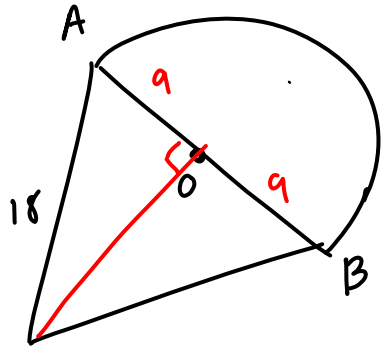
b.



$C = 36\pi$

A.L. $= \frac{1}{6} \cdot 36\pi = \boxed{6\pi}$

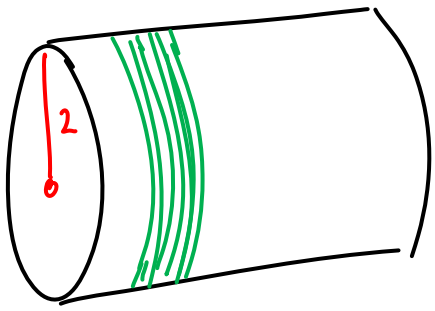
c.



$C = 18\pi$

$A.L = \boxed{9\pi}$ ← (half-semicircle)

#10 There are 100 turns of thread on a spool with a diameter of 4 cm. Find the length of the thread to the nearest cm

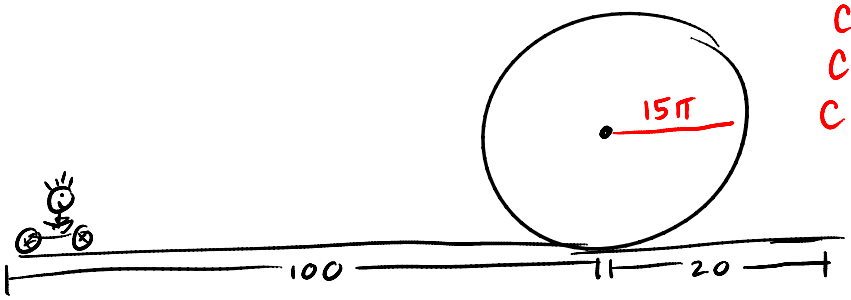


$C = 4\pi$

Thread $= 4\pi \cdot 100$

$= 400\pi \approx \boxed{1257\text{cm}}$

#11 Awful Kanaufil plans to ride his cycle on a single loop track. There is 100 m of straight track before the loop and 20 m after. The loop has a radius of 15m. To the nearest meter, what is the total length of the track he must ride?



$C = 2\pi r$

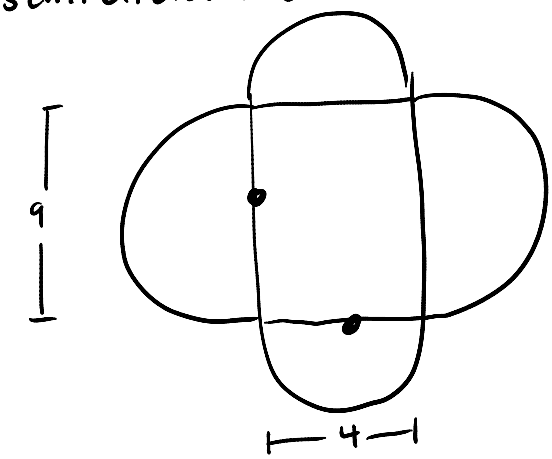
$C = 2\pi 15$

$C = 30\pi$

Track $= 100 + 20 + 30\pi$

$= \boxed{120 + 30\pi \approx 214\text{m}}$

#12 Find the outer perimeter of this figure, which is composed of semicircles mounted on the sides of a rectangle



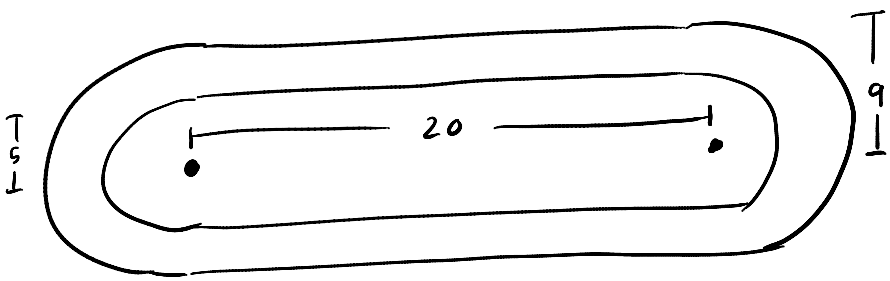
$C = 9\pi$

$C = 4\pi$

$P = 9\pi + 4\pi$

$\boxed{P = 13\pi}$

#13



Outside

$C = 18\pi$

$20 + 20 + 18\pi = \boxed{40 + 18\pi \approx 96.5}$

Inside

$C = 10\pi$

$\boxed{20 + 20 + 10\pi \approx 71.4}$

#16 A circular garbage can is wedged into a rectangular corner. The can has a diameter of 48 cm.

a. Find PA

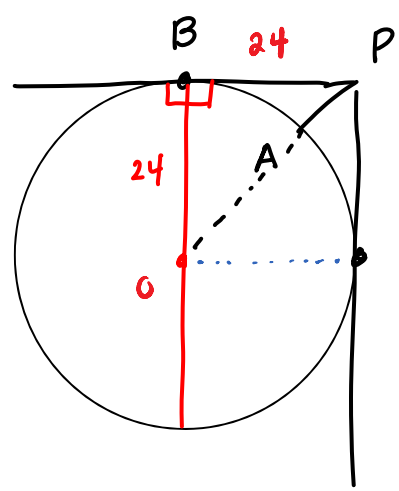
$24^2 + 24^2 = PO^2$

$1^2 + 1^2 = PO^2$

$24\sqrt{2} = PO$

$PA = PO - AO$

$= \boxed{(24\sqrt{2} - 24)\text{ cm}}$



b. Find the distance from the corner point to the point of contact of the can with the wall (PB) $\boxed{24\text{ cm}}$