#6   a. Find the length of $\overset{\frown}{AB}$ $\frac{1}{4} \cdot 12\pi = \boxed{3\pi}$

b. Find the perimeter of the SECTOR AOB

$6+6+3\pi = \boxed{12+3\pi}$

#7

12

50m

Find the perimeter

arc.length $= \frac{1}{2} \cdot 12\pi = 6\pi$

$P = 6\pi + 6\pi + 50 + 50$

$\boxed{P = 12\pi + 100 \approx 138m}$

#8

A
4π
O
10
B

a.) Find Circumference $C = 2\pi r$
$C = 2\pi 10$
$\boxed{C = 20\pi}$

b.) Find $m\overset{\frown}{AB}$

arc length $= \frac{m\overset{\frown}{AB}}{360} \cdot \pi d$

$360 \cdot 4\pi = \frac{m\overset{\frown}{AB}}{3\cancel{60}} \cdot 20\pi \cdot 3\cancel{60}$

$\frac{1440\pi}{20\pi} = \frac{m\overset{\frown}{AB} \cdot 2\cancel{0}\pi}{2\cancel{0}\pi}$

$\boxed{72 = m\overset{\frown}{AB}}$

#14 A belt wrapped tightly around circle O forms a right angle at P, a point outside the circle. Find the length of the belt if circle O has a radius of 6.

$C = 12\pi$

$A.L. = \dfrac{3}{4} \cdot 12\pi = 9\pi$

$BELT = 6 + 6 + 9\pi$

$= \boxed{12\pi}$
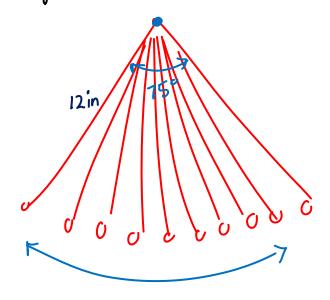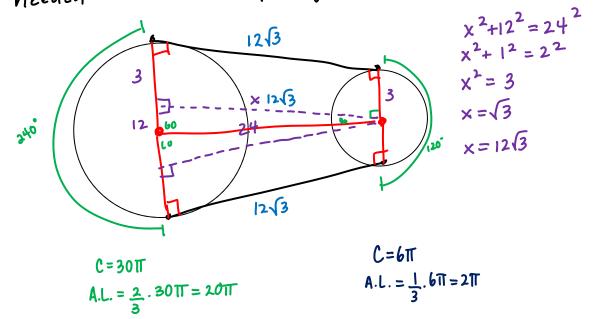
drawing not accurate :)

6   6

O

6   6

P

#15 Find the distance traveled in one back and forth swing by a pendulum that swings at a 75° angle

12in

75°

$C = 24\pi$

$\dfrac{75}{360} = \dfrac{5}{24}$

$A.L. = \dfrac{5}{24} \cdot 24\pi = 5\pi$

Back AND forth: $\boxed{10\pi}$

#17 Two pulleys are connected by a belt. The radii of the pulleys are 3 cm and 15 cm, and the distance between their centers is 24 cm. Find the total length of belt needed to connect the pulleys.

$x^2 + 12^2 = 24^2$
$x^2 + 1^2 = 2^2$
$x^2 = 3$
$x = \sqrt{3}$
$x = 12\sqrt{3}$

$C = 30\pi$
$A.L. = \dfrac{2}{3} \cdot 30\pi = 20\pi$

$C = 6\pi$
$A.L. = \dfrac{1}{3} \cdot 6\pi = 2\pi$

Total Length of Belt $= 12\sqrt{3} + 12\sqrt{3} + 2\pi + 20\pi$

$$\boxed{(24\sqrt{3} + 22\pi)\ cm}$$