

# SAT Circles

1

①  $A = \pi r^2$

(B)  $64\pi = \pi r^2 \Rightarrow 64 = r^2 \Rightarrow r = 8$

$C = 2\pi r$

$C = 2\pi(8) = \boxed{16\pi}$

⑦  $A(\Delta XOY) = 25$

$A(\Delta XOY) = \frac{1}{2} r^2$

(C)  $\frac{1}{2} r^2 = 25$

$r^2 = 50 \Rightarrow r = \sqrt{50}$

$A = \pi r^2 = \pi(\sqrt{50})^2 = 50\pi$

②  $d = 2r \Rightarrow r = \frac{1}{2} d$

(E)  $A = \pi r^2$  (Area of Circle)

$A = \pi \left(\frac{1}{2} d\right)^2 = \frac{1}{4} \pi d^2$

So,  $\pi d^2$  is four times area of circle.

⑧  $AB = 4, CD = 2BC, BC = 2AB$

$CD = 2(8) = 16, BC = 2(4) = 8$

③  $\frac{45}{360} = \frac{1}{8} \quad \frac{1}{8}(60) = 7.5$

(B)

$\frac{1}{2} \pi (2)^2 = 2\pi$

$\frac{1}{2} \pi (4)^2 = 8\pi$

$\frac{1}{2} \pi (8)^2 = 32\pi$

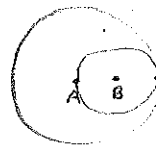
$\boxed{42\pi}$

④  $C = 1$

(A)  $C = 2\pi r$

$1 = 2\pi r \Rightarrow r = \frac{1}{2\pi}$

⑨



$72\pi = \pi r^2$

$72 = r^2$

$\sqrt{72} = r$

radius of  $\odot B$  is  $\frac{1}{2}(\sqrt{72})$

so  $A = \pi \left(\frac{\sqrt{72}}{2}\right)^2 = \frac{72}{4} \pi$

$\boxed{18\pi}$

⑤  $8 : 1 \quad \frac{8}{1} = \frac{360}{x} \Rightarrow 8x = 360$

$360 : x$

$\boxed{x=45}$

⑥



(A)

$OC = 10$

$A = \pi r^2$

$100\pi = \pi r^2 \Rightarrow 100 = r^2 \Rightarrow r = 10$

$AC^2 + AO^2 = OC^2$

$6^2 + AO^2 = 10^2$

$36 + AO^2 = 100 \Rightarrow AO^2 = 64 \Rightarrow AO = 8$

⑪ Suppose  $\odot$  w/  $d = 2$

$\pi(1)^2 = \pi$

Increase diameter of 2 by 50% is 3.

$\pi(1.5)^2 = 2.25\pi$

$\frac{2.25\pi}{\pi} \times 100\% = \boxed{225\%}$

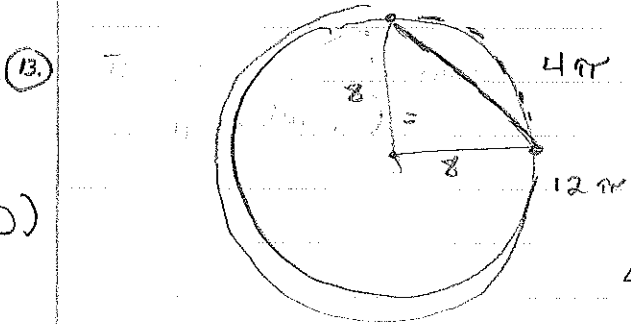
$OB = 10 = OA + AB$

$10 = 8 + AB \Rightarrow AB = 2$

# SAT Circles

(12)  $\frac{20^\circ}{360^\circ} = \frac{1}{18}$  of a total circle.

(B)  $\frac{1}{18} \pi (12)^2 = \frac{1}{18} (144\pi) = \boxed{8\pi}$

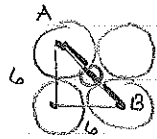


$$\begin{aligned} \frac{1}{4} (2\pi r) &= 4\pi \\ 2\pi r &= 16\pi \\ r &= 8 \end{aligned}$$

(D)

45-45-90 so hypotenuse is  $8\sqrt{2}$ .

(14)

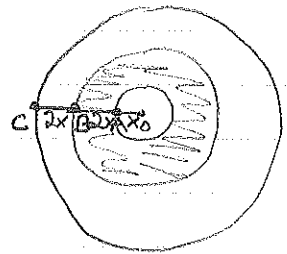


$$\begin{aligned} A &= \pi r^2 \\ 9\pi &= \pi r^2 \Rightarrow r = 3 \end{aligned}$$

(D)

Length of  $\overline{AB}$  = 2 radii =  $6\sqrt{2} - 6$

(15)



radius of  $\overline{OA} = x$   $\pi(x)^2 = \pi x^2$

radius of  $\overline{OB} = 3x$   $\pi(3x)^2 = 9\pi x^2$

radius of  $\overline{OC} = 5x$   $\pi(5x)^2 = 25\pi x^2$

(A)

P (16)  $\frac{9\pi x^2 - \pi x^2}{25\pi x^2} = \frac{8\pi x^2}{25\pi x^2} = \boxed{\frac{8}{25}}$