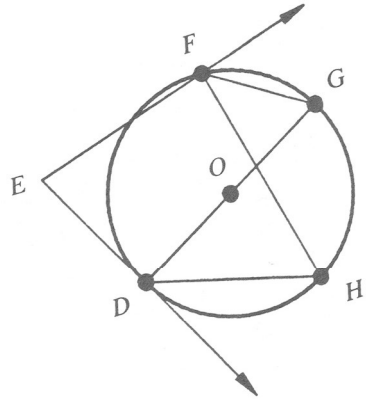
Practice Exercise 13

1. In the diagram, which line segment is a diameter?



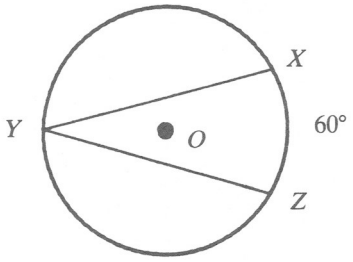
A. $\overline{DH}$
B. $\overline{DO}$
C. $\overline{DG}$
D. $\overline{DE}$
E. $\overline{FH}$

2. If a radius of a circle is doubled, what happens to the circumference of the new circle?

$C = 2\pi r$
$C = 2\pi(2r)$

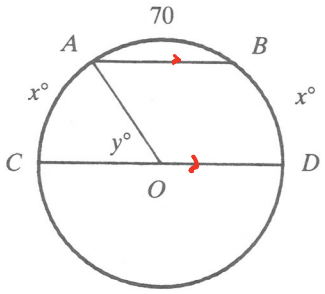
A. It remains the same.
B. It is halved.
C. It is doubled.
D. It equals π.
E. It equals 2π.

3. In the figure below, $\angle XYZ$ is inscribed in circle O and $m\overset{\frown}{XZ} = 60°$. What is the measure of $\angle XYZ$?



A. 20°
B. 30°
C. 60°
D. 120°
E. None of the above

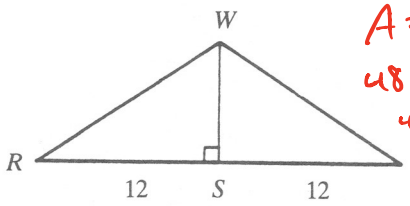
4. O is the center. $\overline{AB} \parallel \overline{CD}$. Find y.



$70 + 2x = 180$
$2x = 110$
$x = 55$
$y = x$

A. $24\frac{1}{2}°$
B. 55°
C. 60°
D. 110°
E. None of the above

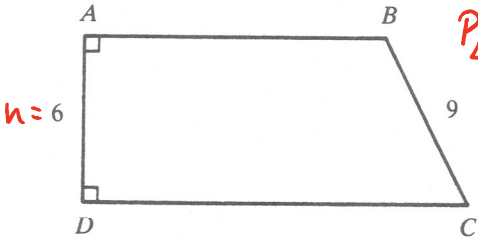
5. In the figure, points R, S, and T are on the same line, and $\overline{RS}$ and $\overline{ST}$ are each 12 units long. If the area of ΔRWT is 48 square units, how long is altitude $\overline{SW}$?



$A = \frac{1}{2}bh$
$48 = \frac{1}{2}(24)\cdot h$
$48 = 12\cdot h$
$4 = h$

A. 2
B. 4
C. 8
D. 12
E. 24

6. In the trapezoid shown, the perimeter equals 45, $BC = 9$, and $AD = 6$. Find the area.

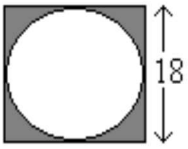


$P_{\square} = b_1 + b_2 + 9 + 6$
$45 = b_1 + b_2 + 15$
$30 = b_1 + b_2$

$A = h\cdot\frac{1}{2}(b_1 + b_2)$
$A = 6\left(\frac{1}{2}\right)(30)$
$A = 90$

A. $7\frac{1}{2}$
B. 18
C. 90
D. 180
E. $607\frac{1}{2}$

7. The figure below is a circle inscribed within a square. The area of the shaded region is:

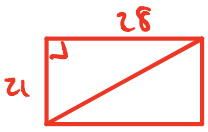


A. 243π
B. $381 - 24\pi$
C. 405π
D. $324 - 81\pi$
E. $18 - 9\pi$

$A_{shaded} = A_{\square} - A_{\odot}$
$= 18^2 - \pi(9)^2$

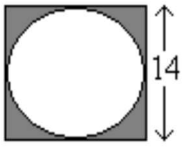
8. The length of the diagonal of a 21 by 28 rectangle is:

A. 49
B. $21\sqrt{3}$
C. 48
D. $28\sqrt{2}$
E. 35



$21^2 + 28^2 = d^2$
$441 + 784 = d^2$
$1225 = d^2$
$\pm 35 = d$

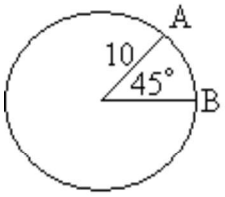
9. The figure below is a circle inscribed within a square. The shaded area is:



A. $196 - 49\pi$
B. 147π
C. $28 - 7\pi$
D. $49 - 7\pi$
E. $149 - 96\pi$

$A_{shaded} = A_{\square} - A_{\odot}$
$= 14^2 - \pi(7)^2$

10. In the circle below with radius equal 10, the length of arc AB is:



A. 2.5π
B. 5π
C. 25π
D. 10π
E. 100π

$C = 2\pi r$
$C = 2\pi(10)$
$C = 20\pi$

$\text{Arc} = \frac{45}{360}(20\pi)$
$= \frac{1}{8}(20\pi)$
$\text{Arc} = 2.5\pi$