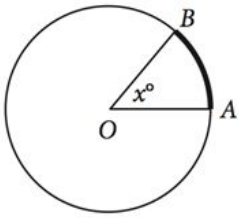
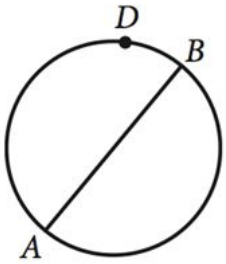
36



Note: Figure not drawn to scale.

In the figure above, the circle has center O and has radius 10. If the length of arc $\overset{\frown}{AB}$ (shown in bold) is between 5 and 6, what is one possible integer value of x ?

24



In the circle above, segment AB is a diameter. If the length of arc $\overset{\frown}{ADB}$ is 8π, what is the length of the radius of the circle?

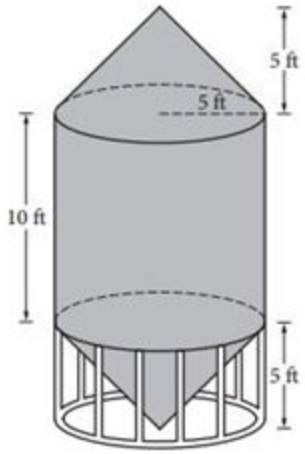
A) 2
B) 4
C) 8
D) 16

26

In the xy-plane, the line determined by the points $(2, k)$ and $(k, 32)$ passes through the origin. Which of the following could be the value of k ?

A) 0
B) 4
C) 8
D) 16

25



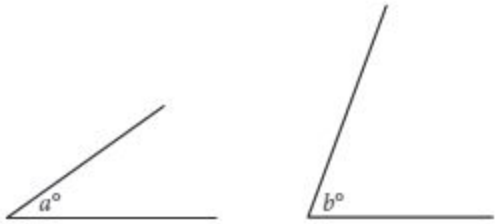
A grain silo is built from two right circular cones and a right circular cylinder with internal measurements represented by the figure above. Of the following, which is closest to the volume of the grain silo, in cubic feet?

A) 261.8
B) 785.4
C) 916.3
D) 1,047.2

20

In triangle ABC, the measure of $\angle B$ is $90°$, $BC = 16$, and $AC = 20$. Triangle DEF is similar to triangle ABC, where vertices D, E, and F correspond to vertices A, B, and C, respectively, and each side of triangle DEF is $\frac{1}{3}$ the length of the corresponding side of triangle ABC. What is the value of $\sin F$?

23

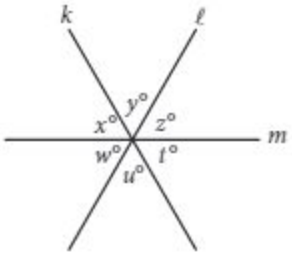


Note: Figures not drawn to scale.

The angles shown above are acute and $\sin(a°) = \cos(b°)$. If $a = 4k - 22$ and $b = 6k - 13$, what is the value of k ?

A) 4.5
B) 5.5
C) 12.5
D) 21.5

11



Note: Figure not drawn to scale.

In the figure above, lines k, ℓ, and m intersect at a point. If $x + y = u + w$, which of the following must be true?

I. $x = z$

II. $y = w$

III. $z = t$

A) I and II only

B) I and III only

C) II and III only

D) I, II, and III

19

In a right triangle, one angle measures $x°$, where $\sin x° = \frac{4}{5}$. What is $\cos(90° - x°)$?

24

Which of the following is an equation of a circle in the xy-plane with center $(0, 4)$ and a radius with endpoint $\left(\frac{4}{3}, 5\right)$?

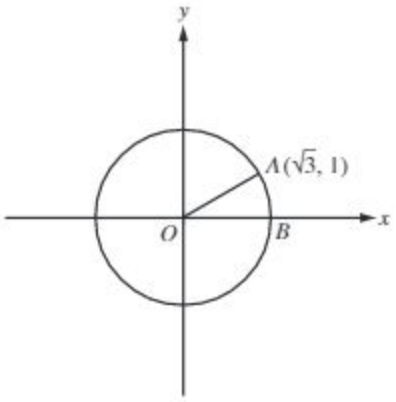
A) $x^2 + (y-4)^2 = \frac{25}{9}$

B) $x^2 + (y+4)^2 = \frac{25}{9}$

C) $x^2 + (y-4)^2 = \frac{5}{3}$

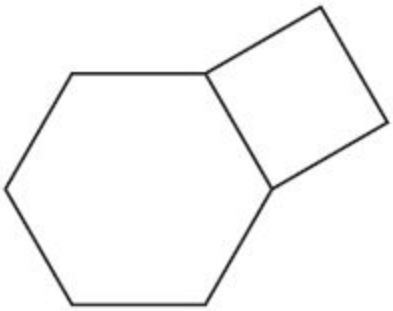
D) $x^2 + (y+4)^2 = \frac{3}{5}$

19



In the xy-plane above, O is the center of the circle, and the measure of $\angle AOB$ is $\frac{\pi}{a}$ radians. What is the value of a ?

30



The figure above shows a regular hexagon with sides of length a and a square with sides of length a. If the area of the hexagon is $384\sqrt{3}$ square inches, what is the area, in square inches, of the square?

A) 256

B) 192

C) $64\sqrt{3}$

D) $16\sqrt{3}$