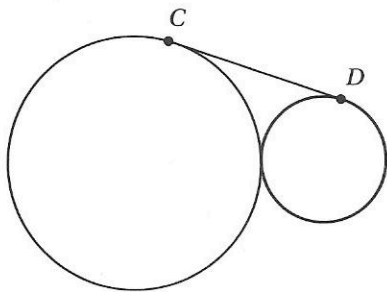# Exercise Set 2: Geometry (No Calculator)

1

A cereal company sells oatmeal in two sizes of cylindrical containers. The radius of the larger container is twice that of the smaller, and the height of the larger container is 50% greater than the smaller. If the smaller container holds 10 ounces of oatmeal, how many ounces can the larger container hold?

2

Note: Figure not drawn to scale.

In the figure above, $\overline{CD}$ is tangent to both circles, which are tangent to each other. If the smaller circle has a circumference of 4π and the larger circle has a circumference of 16π, what is the length of $\overline{CD}$?

3

What is the area, in square inches, of a circle with diameter $6\pi^2$ inches?

A) $9\pi^4$ B) $9\pi^5$ C) $36\pi^4$ D) $36\pi^5$

4

What is the length of the longest line segment that connects two vertices of a rectangular box that is 6 units wide, 4 units long, and 2 units tall?
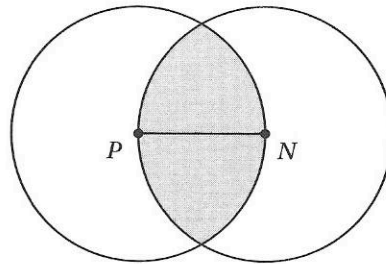
A) $\sqrt{12}$ B) $\sqrt{48}$ C) $\sqrt{56}$

D) $\sqrt{58}$

5

Which of the following equations represents a circle in the xy-plane that intersects the x-axis at $(3, 0)$ and $(9, 0)$?

A) $(x - 6)^2 + (y - 4)^2 = 25$

B) $(x - 3)^2 + (y - 9)^2 = 25$

C) $(x - 6)^2 + (y - 4)^2 = 36$

D) $(x - 3)^2 + (y - 9)^2 = 36$
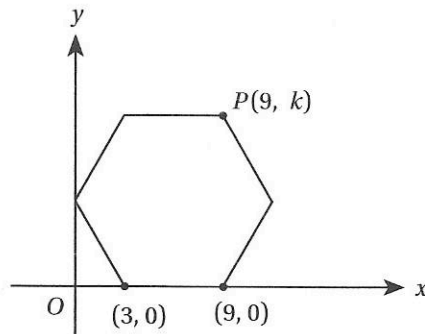
6

In the figure above, P and N are the centers of the circles and $PN = 6$. What is the area of the shaded region?

A) $18\pi - 9\sqrt{3}$ B) $24\pi - 9\sqrt{3}$

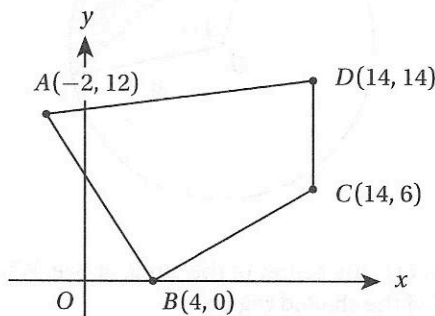C) $24\pi - 18\sqrt{3}$ D) $36\pi - 18\sqrt{3}$

7

The diagram above shows a hexagon with all sides congruent and all angles congruent. What is the value of k?

A) $6\sqrt{2}$ B) $6\sqrt{3}$ C) $12\sqrt{2}$ D) $12\sqrt{3}$

Exercise Set 2: Geometry (Calculator)

8

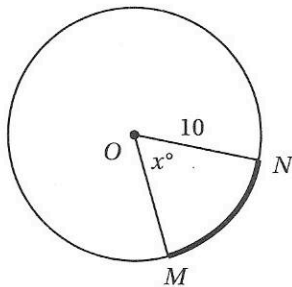What is the area, in square units, of the quadrilateral above?

9

What is the degree measure, to the nearest whole degree, of an angle that measures 5.6 radians?

10

In the figure above, arc $\overset{\frown}{MN}$ has a length of 11.5. To the nearest integer, what is the value of x?

11

The Great Pyramid in Giza, Egypt, has a height of 140 meters and a volume of 2.6 million cubic meters. If a scale model of the Great Pyramid is to be built that is 2 meters high, what will be the volume, in cubic meters, of this model?
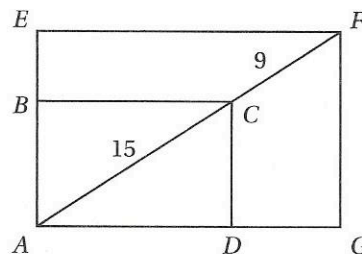
12

Which of the following equations defines a circle that is tangent to the y-axis?

A) $(x - 2)^2 + (y + 3)^2 = 2$

B) $(x - 2)^2 + (y + 3)^2 = 3$

C) $(x - 2)^2 + (y + 3)^2 = 4$

D) $(x - 2)^2 + (y + 3)^2 = 9$

Questions 13 and 14 refer to the diagram below.

The figure above shows two rectangles that share a common vertex, and $\overline{AF}$ is a line segment that passes through C.

13

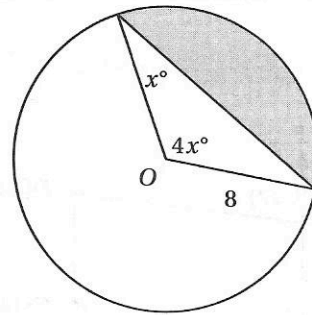What is the ratio of the area of rectangle $ABCD$ to the area of rectangle $AEFG$?

A) 3:5

B) 9:25

C) 5:8

D) 25:64

14

If $CD = 9$, what is the perimeter of rectangle $AEFG$?

A) 67.2

B) 72.6

C) 76.2

D) 78.6

15

Point O is the center of the circle above. What is the area of the shaded region?

A) $\dfrac{64\pi}{3} - 16\sqrt{3}$

B) $\dfrac{16\pi}{3} - 8\sqrt{3}$

C) $\dfrac{64\pi}{3} - 12\sqrt{3}$

D) $\dfrac{64\pi}{3} - 8\sqrt{3}$