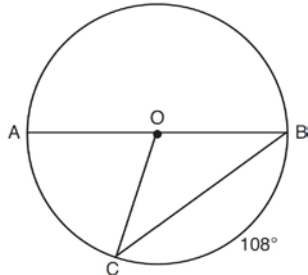


G.C.B.5: Sectors

- 1 In circle O , diameter \overline{AB} , chord \overline{BC} , and radius \overline{OC} are drawn, and the measure of arc BC is 108° .



Some students wrote these formulas to find the area of sector COB :

Amy $\frac{3}{10} \cdot \pi \cdot (BC)^2$

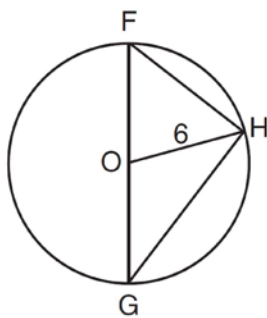
Beth $\frac{108}{360} \cdot \pi \cdot (OC)^2$

Carl $\frac{3}{10} \cdot \pi \cdot \left(\frac{1}{2} AB\right)^2$

Dex $\frac{108}{360} \cdot \pi \cdot \frac{1}{2} (AB)^2$

Which students wrote correct formulas?

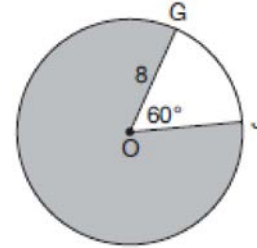
- 1) Amy and Dex 2) Beth and Carl 3) Carl and Amy 4) Dex and Beth
- 2 Triangle FGH is inscribed in circle O , the length of radius \overline{OH} is 6, and $\overline{FH} \cong \overline{OG}$.



What is the area of the sector formed by angle FOH ?

- 1) 2π 2) $\frac{3}{2}\pi$ 3) 6π 4) 24π

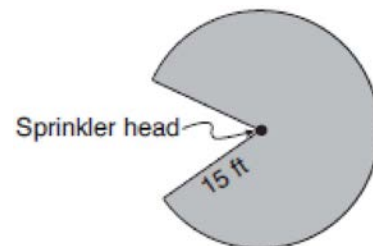
- 3 In the diagram below of circle O , $GO = 8$ and $m\angle GOJ = 60^\circ$.



What is the area, in terms of π , of the shaded region?

- 1) $\frac{4\pi}{3}$ 2) $\frac{20\pi}{3}$ 3) $\frac{32\pi}{3}$ 4) $\frac{160\pi}{3}$

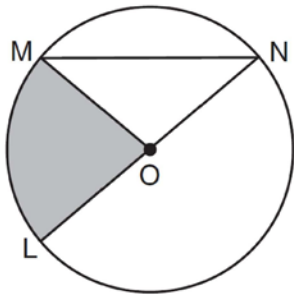
- 4 Cerise waters her lawn with a sprinkler that sprays water in a circular pattern at a distance of 15 feet from the sprinkler. The sprinkler head rotates through an angle of 300° , as shown by the shaded area in the accompanying diagram.



What is the area of the lawn, to the nearest square foot, that receives water from this sprinkler?

- 1) 79 2) 94 3) 589 4) 707

- 5 In the diagram below of circle O , the area of the shaded sector LOM is 2π cm².

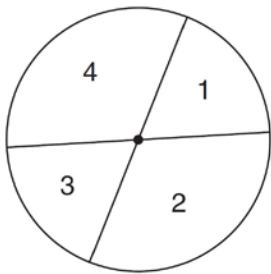


If the length of \overline{NL} is 6 cm, what is $m\angle N$?
1) 10° 2) 20° 3) 40° 4) 80°

- 6 In a circle with a diameter of 32, the area of a sector is $\frac{512\pi}{3}$. The measure of the angle of the sector, in radians, is
1) $\frac{\pi}{3}$ 2) $\frac{4\pi}{3}$ 3) $\frac{16\pi}{3}$ 4) $\frac{64\pi}{3}$

- 7 What is the area of a sector of a circle with a radius of 8 inches and formed by a central angle that measures 60° ?
1) $\frac{8\pi}{3}$ 2) $\frac{16\pi}{3}$ 3) $\frac{32\pi}{3}$ 4) $\frac{64\pi}{3}$

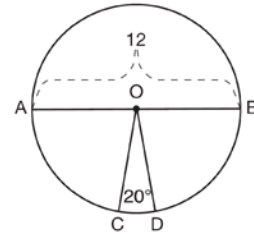
- 8 A dartboard is shown in the diagram below. The two lines intersect at the center of the circle, and the central angle in sector 2 measures $\frac{2\pi}{3}$.



If darts thrown at this board are equally likely to land anywhere on the board, what is the probability that a dart that hits the board will land in either sector 1 or sector 3?

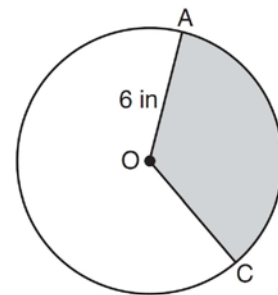
- 1) $\frac{1}{6}$ 2) $\frac{1}{3}$ 3) $\frac{1}{2}$ 4) $\frac{2}{3}$

- 9 In the diagram below of circle O , diameter \overline{AB} and radii \overline{OC} and \overline{OD} are drawn. The length of \overline{AB} is 12 and the measure of $\angle COD$ is 20 degrees.



If $\widehat{AC} \cong \widehat{BD}$, find the area of sector BOD in terms of π .

- 10 In the diagram below of circle O , the area of the shaded sector AOC is 12π in² and the length of \overline{OA} is 6 inches. Determine and state $m\angle AOC$.



- 11 Determine and state, in terms of π , the area of a sector that intercepts a 40° arc of a circle with a radius of 4.5.

G.C.B.5: Sectors

Answer Section

1 ANS: 2 REF: 081619geo

2 ANS: 3

$$\frac{60}{360} \cdot 6^2 \pi = 6\pi$$

REF: 081518geo

3 ANS: 4

$$\frac{300}{360} \cdot 8^2 \pi = \frac{160\pi}{3}$$

REF: 011721geo

4 ANS: 3

The area of the entire circle is $15^2 \pi = 225\pi$. The shaded area has an area of $225\pi \times \frac{300}{360} \approx 589$

REF: 060716b

5 ANS: 3

$$\frac{x}{360} \cdot 3^2 \pi = 2\pi \quad 180 - 80 = 100$$

$$x = 80 \quad \frac{180 - 100}{2} = 40$$

REF: 011612geo

6 ANS: 2

$$\frac{\frac{512\pi}{3}}{\left(\frac{32}{2}\right)^2 \pi} \cdot 2\pi = \frac{4\pi}{3}$$

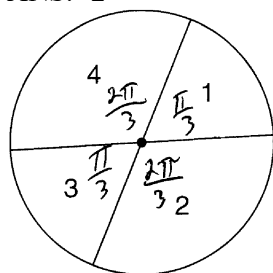
REF: 081723geo

7 ANS: 3

$$\frac{60}{360} \cdot 8^2 \pi = \frac{1}{6} \cdot 64\pi = \frac{32\pi}{3}$$

REF: 061624geo

8 ANS: 2



$$\frac{\frac{\pi}{3} + \frac{\pi}{3}}{2\pi} = \frac{\frac{2\pi}{3}}{2\pi} = \frac{1}{3}$$

REF: 011108a2

9 ANS:

$$\frac{\left(\frac{180-20}{2}\right)}{360} \times \pi(6)^2 = \frac{80}{360} \times 36\pi = 8\pi$$

REF: spr1410geo

10 ANS:

$$A = 6^2 \pi = 36\pi \quad 36\pi \cdot \frac{x}{360} = 12\pi$$

$$x = 360 \cdot \frac{12}{36}$$

$$x = 120$$

REF: 061529geo

11 ANS:

$$\frac{40}{360} \cdot \pi(4.5)^2 = 2.25\pi$$

REF: 061726geo