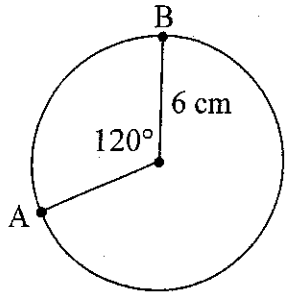
Arc Length-Sector Area

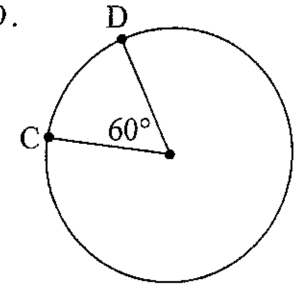
Review

1. Find the length of arc AB.



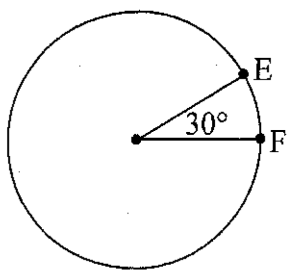
Arc: ____________________

2. The diameter is 24 cm. Find the length of arc CD.



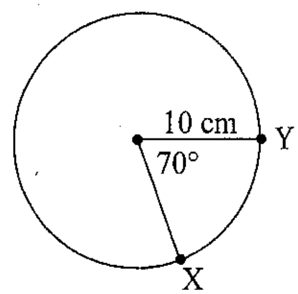
Arc: ____________________

3. The length of arc EF is 5π in. Find the length of the radius.



Radius: ____________________

4. Find the length of arc XY.



Arc: ____________________

5. A circle has an arc whose measure is 80° and whose length is 88π. What is the diameter of the circle?

6. A circle has a circumference whose length is 25π. Find the length of an arc whose central angle is 90°.

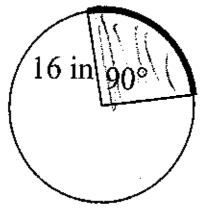
7. Find the measure of the central angle of an arc if its length is 14π and the radius is 18.

8. Calculate the sector area:

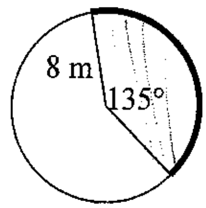
Arc Length-Sector Area

Review

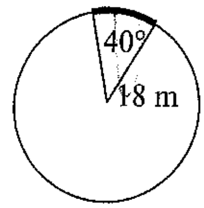
a.



b.



c.



9. The area of a circle is 225π square inches. Find the area of the sector whose central angle is 45°.

10. The central angle of a sector is 60° and the area of the circle is 144π. What is the area of the sector?

11. A circle has a radius of 12. Find the area of the sector whose central angle is 120°.

12. Find the radius of a circle which has a sector area of 9π whose central angle is 90°.

13. The central angle of a sector is 72° and the sector has an area of 5π. Find the radius.

14. Find the measure of the central angle of a sector if its area is 5π and the radius is 6.

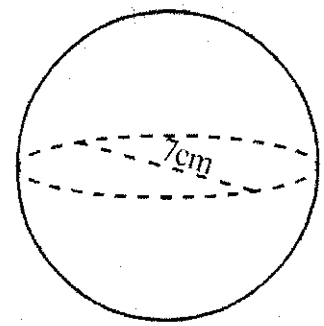
CCGPS Analytic Geometry

Name ______________________________

Quiz: Volumes of Circular Solids

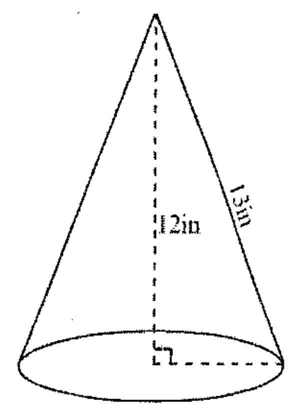
Use the information given and the appropriate formulas to find the volume of the figure. Round answers to one decimal place if needed. SHOW ALL WORK!

1. Find the volume of the sphere shown at right.

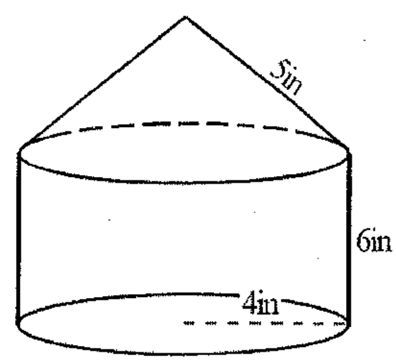


2. A sphere has a volume of 1800 cm^3. Approximate the length of its radius.

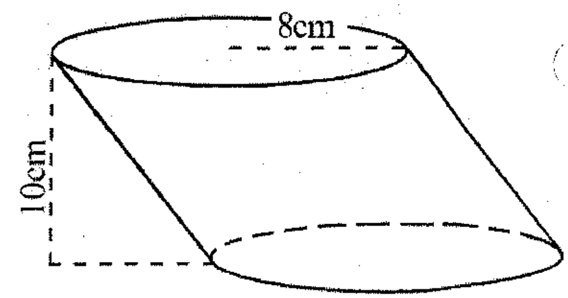
3. Find the volume of the cone shown at right.



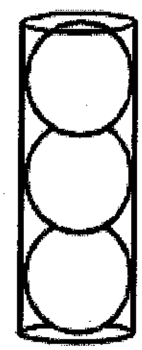
4. Find the volume of the composite figure shown at right.



5. Find the volume of the oblique cylinder shown right.



6. Three tennis balls are sold in a cylinder. Each ball has a 3 inch diameter. If the cylindrical container is made just large enough to hold three balls, what will be the the volume of the *remaining space* in the cylinder?



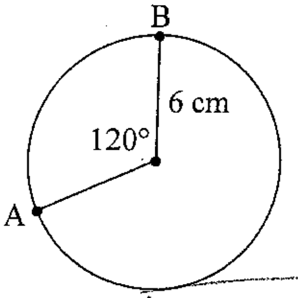
7. Ice cream is sold in a rectangular box that is 3 x 6 x 8 inches. How many cones can be filled (just to the rim) if each has a 1.5 inch radius and is 4 inches tall?

8. If the circumference of a fully inflated basketball is 56.6 inches, what is its volume?

Arc Length-Sector Area

Review

1. Find the length of arc AB.



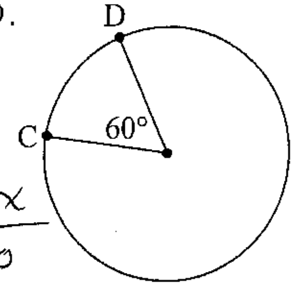
$\frac{2\pi(6)}{360} = \frac{x}{120}$

$x \approx 12.6$

Arc: $\boxed{12.6 \text{ cm}}$

2. The diameter is 24 cm. Find the length of arc CD.

$r = 12$ cm



$\frac{2\pi(12)}{360} = \frac{x}{60}$

Arc: $\boxed{12.6 \text{ cm}}$

$30^\circ \times \frac{\pi}{180} = \frac{\pi}{6}$ radians

3. The length of arc EF is 5π in. Find the length of the radius.

$\theta = \frac{s}{r}$

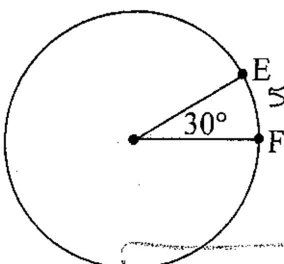
$\frac{\pi}{6} = \frac{5\pi}{r}$

$\frac{\pi}{6}(r) = 5\pi$

$r = 5\pi\left(\frac{6}{\pi}\right)$

$r = 30$

Find circumference first.



5π in

$\frac{C}{360} = \frac{5\pi}{30}$

$C \approx 188.4$

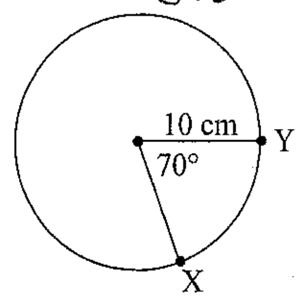
$188.4 = 2\pi r$

$r = 30$

Radius: $\boxed{30 \text{ inches}}$

4. Find the length of arc XY.

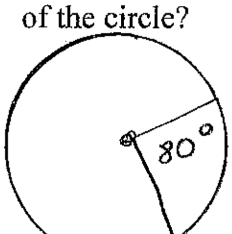
$\frac{2\pi(10)}{360} = \frac{x}{70}$



Arc: $\boxed{12.2 \text{ cm}}$

5. A circle has an arc whose measure is 80° and whose length is 88π. What is the diameter of the circle?

FIND CIRCUMFERENCE first



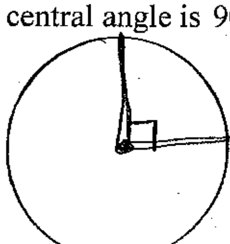
$\frac{C}{360} = \frac{88\pi}{80}$

$C \approx 1244.1$

$1244.1 = 2\pi r$

$r = 198 \therefore$ diameter $= \boxed{396}$

6. A circle has a circumference whose length is 25π. Find the length of an arc whose central angle is $90°$.



$C = 2\pi r$

$25\pi = 2\pi r$

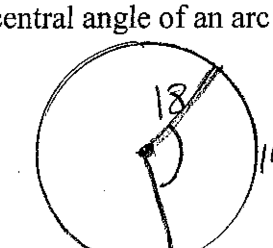
$r = 12.5$

6.25π

$\frac{25\pi}{360} = \frac{x}{90}$

$x \approx 19.6$ or 6.25π (a quarter circle)

7. Find the measure of the central angle of an arc if its length is 14π and the radius is 18.



$\frac{2\pi(18)}{360} = \frac{14\pi}{x}$

$\boxed{x = 140^\circ}$

8. Calculate the sector area:

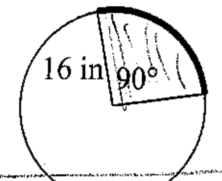
$\frac{\pi(18)^2}{360} = \frac{x}{140}$

$\boxed{A \approx 395.6}$

Arc Length-Sector Area

Review

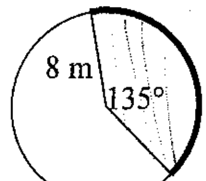
a.



$\frac{\pi(16)^2}{360} = \frac{x}{90}$

$\boxed{x \approx 201.1 \text{ in}^2}$

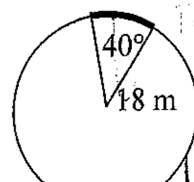
b.



$\frac{\pi(8)^2}{360} = \frac{x}{135}$

$\boxed{x \approx 75.4 \text{m}^2}$

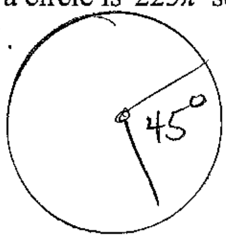
c.



$\frac{\pi(18)^2}{360} = \frac{x}{40}$

$\boxed{x \approx 113.1 \text{m}^2}$

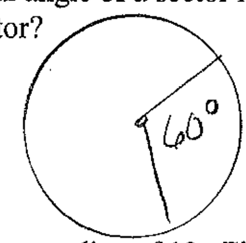
9. The area of a circle is 225π square inches. Find the area of the sector whose central angle is 45°.



$\frac{225\pi}{360} = \frac{x}{45}$

$x \approx 88.4 \text{ in}^2$ or $28.125\pi \text{ in}^2$

10. The central angle of a sector is 60° and the area of the circle is 144π. What is the area of the sector?



$\frac{144\pi}{360^\circ} = \frac{x}{60^\circ}$

$x \approx 75.4 \text{ units}^2$ or $24\pi \text{ units}^2$

11. A circle has a radius of 12. Find the area of the sector whose central angle is 120°.

$\frac{\pi(12)^2}{360} = \frac{x}{120}$ 150.1 units² or 48π units

12. Find the radius of a circle which has a sector area of 9π whose central angle is 90°.

FIND area of circle first

$\frac{A}{360} = \frac{9\pi}{90}$ $A \approx 113.1$ units² or 36π

$36\pi = \pi r^2$

$36 = r^2$

$\boxed{r = 6}$

13. The central angle of a sector is 72° and the sector has an area of 5π. Find the radius.

FIND AREA OF CIRCLE FIRST

$\frac{A}{360} = \frac{5\pi}{72}$ $A \approx 78.6$ units² or 25π units²

$A = \pi r^2$

$25\pi = \pi r^2$

$25 = r^2$

$\boxed{r = 5}$

14. Find the measure of the central angle of a sector if its area is 5π and the radius is 6.

$\frac{\pi(6)^2}{360} = \frac{5\pi}{x}$

$\boxed{x = 50^\circ}$

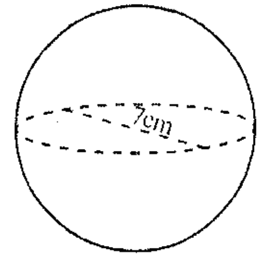
Review

CCGPS Analytic Geometry Name ______________________________

[redacted] Volumes of Circular Solids

Use the information given and the appropriate formulas to find the volume of the figure. Round answers to one decimal place if needed. SHOW ALL WORK!

1. Find the volume of the sphere shown at right.



$r = 3.5\text{ cm}$

$V = \frac{4}{3}\pi(3.5)^3$

$V \approx 179.6\text{ cm}^3$

2. A sphere has a volume of 1800 cm^3. Approximate the length of its radius.

$V = \frac{4}{3}\pi r^3$

$1800 = \frac{4}{3}\pi r^3$

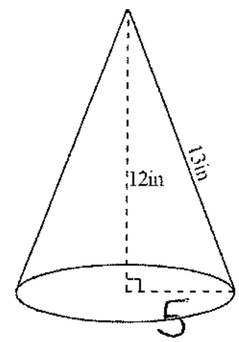
$1800\left(\frac{3}{4}\right) = \pi r^3$

$1350 = \pi r^3$

$429.71... = r^3$

$7.5 \approx r$

3. Find the volume of the cone shown at right.



$a^2 + b^2 = c^2$

$a^2 + 12^2 = 13^2$

$a^2 + 144 = 169$

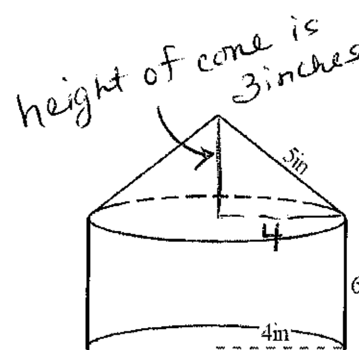
$a^2 = 25$

$a = 5$

$V = \frac{\pi(5)^2(12)}{3}$

$V \approx 314.2\text{ in}^3$

4. Find the volume of the composite figure shown at right.



$a^2 + 4^2 = 5^2$

$a^2 + 16 = 25$

$a^2 = 9$

$a = 3$

Volume of Cylinder + Volume of cone

$V = \pi(4)^2(6) + \frac{\pi(4)^2(3)}{3}$

$V = 96\pi + 16\pi$

$V = 112\pi$

$V \approx 351.9\text{ cm}^3$

CCGPS Analytic Geometry Name ______________________

Quiz: Volumes of Circular Solids

Use the information given and the appropriate formulas to find the volume of the figure. Round answers to one decimal place if needed. SHOW ALL WORK!

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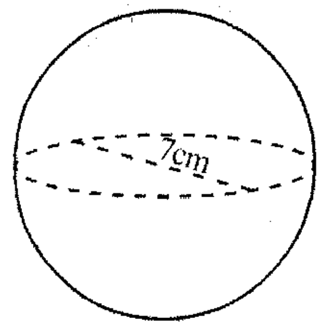
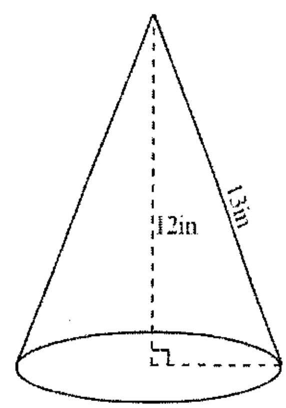


2. A sphere has a volume of 1800 cm^3. Approximate the length of its radius.

3. Find the volume of the cone shown at right.



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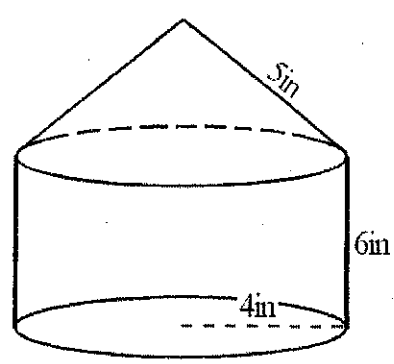
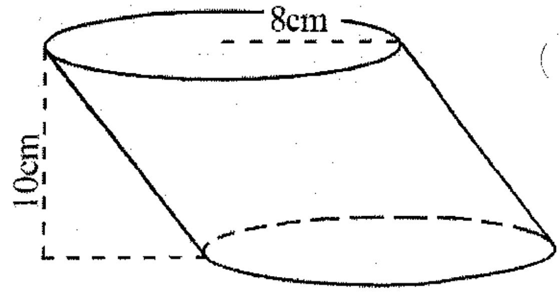


5. Find the volume of the oblique cylinder shown right.

$V = \pi(8)^2(10)$

$\boxed{V = 2010.6 \text{ cm}^3}$



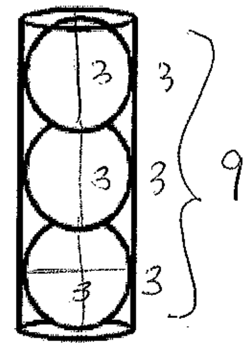
6. Three tennis balls are sold in a cylinder. Each ball has a 3 inch diameter. If the cylindrical container is made just large enough to hold three balls, what will be the the volume of the *remaining space* in the cylinder?

Volume of cylinder − Volume of 3 balls

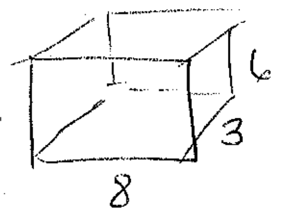
$V = \pi(1.5)^2(9) \quad - \quad 3\left[\frac{4}{3}\pi(1.5)^3\right]$

$V \approx 63.6 \quad - \quad 42.4$

$\boxed{V \approx 21.2 \text{ } \cancel{cm} \text{ in}^3 \text{ empty space}}$



7. Ice cream is sold in a rectangular box that is 3 x 6 x 8 inches. How many cones can be filled (just to the rim) if each has a 1.5 inch radius and is 4 inches tall?



$V = 8 \times 3 \times 6$

$V = 144 \text{ in}^3$

There are 144 cubic inches of ice cream.

Volume of one cone

$V = \frac{\pi(1.5)^2(4)}{3}$

$V \approx 9.4$

If each cone can hold 9.4 in^3 ice cream, then $\frac{144 \text{ in}^3}{9.4 \text{ in}^3} \approx \boxed{15 \text{ cones}}$

8. If the circumference of a fully inflated basketball is 56.6 inches, what is its volume?

$C = 2\pi r$ work backwards to find the radius

$56.6 = 2\pi r$

$\frac{56.6}{2\pi} = r$

$r \approx 9.0$ inches

$V = \frac{4}{3}\pi(9.0)^3$

$\boxed{V \approx 3053.6 \text{ in}^3}$