

CCGPS Geometry

Use properties of angles to solve the following.

1. Find the following measures:

$\angle HIE = 131^\circ$

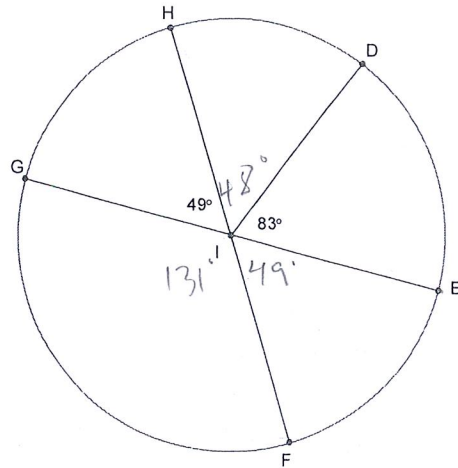
$\widehat{FDG} = 180 + 49 = 229^\circ$

$\widehat{HD} = 48^\circ$

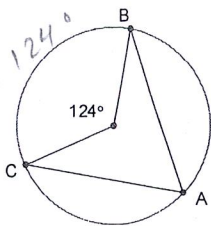
$\angle FIE = 49^\circ$

$\widehat{EDG} = 180^\circ$

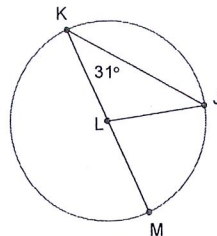
$\widehat{HEG} = 360 - 49 = 311^\circ$



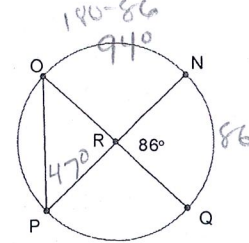
2. $m\angle BAC = \frac{124}{2} = 62^\circ$



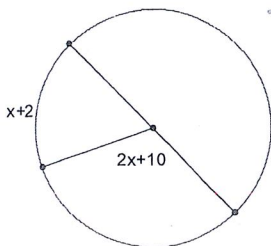
3. $m\widehat{JM} = \frac{31 \times 2}{1} = 62^\circ$



4. $m\angle OPN = \frac{94}{2} = 47^\circ$

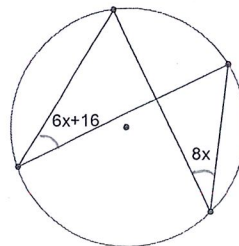


5. Find x. $x + 2 + 2x + 10 = 180$



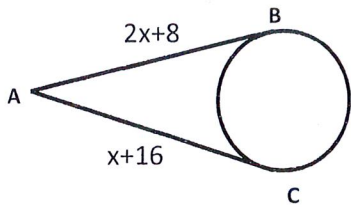
$3x + 12 = 180$
 $3x = 168$
 $x = 56$

6. Find x.



$6x + 16 = 8x$
 $16 = 2x$
 $8 = x$

7. Find x.

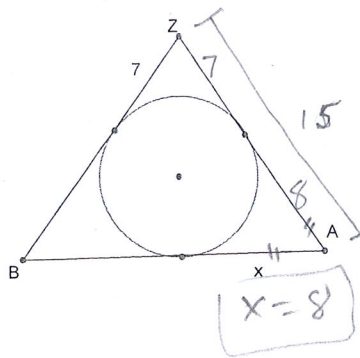


$$2x+8 = x+16$$

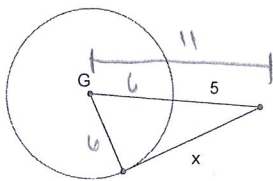
$$x+8 = 16$$

$$x = 8$$

8. If ZA = 15, Find x.



9. The radius of Circle G is 6cm. Find x.



$$x^2 + 6^2 = 11^2$$

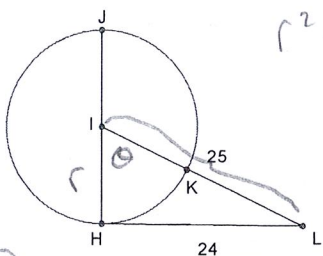
$$x^2 + 36 = 121$$

$$x^2 = 85$$

$$x = \sqrt{85}$$

15. Find the length of the diameter \overline{JH}

Find the length of the segment \overline{KL}



$$r^2 + 24^2 = 25^2$$

$$r^2 = 49$$

$$r = 7$$

$$\overline{JH} = 7 \cdot 2 = 14$$

$$\overline{KL} = 25 - 7 = 18$$

Find the measure of \widehat{KH} (Use trig)

$$\widehat{KH} = \angle HIK$$

$$\sin \theta = \frac{24}{25}$$

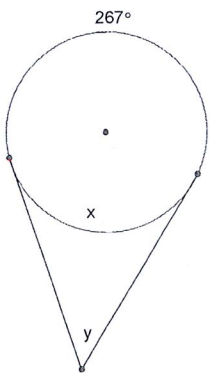
$$\sin^{-1}\left(\frac{24}{25}\right) = \theta$$

$$73.7^\circ \approx \theta$$

$$\text{So } \widehat{KL} = 73.7^\circ$$

Assume that lines that appear to be tangent are tangent.

17. Find x & y.



$$x = 360 - 267 = 93^\circ$$

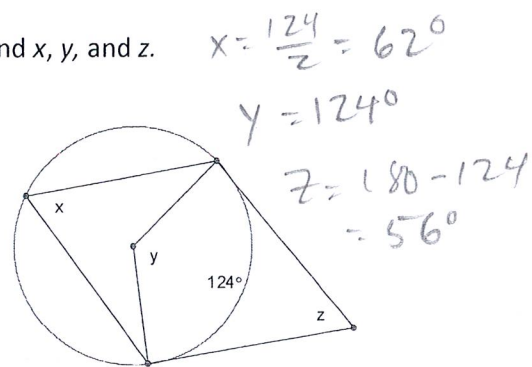
$$y = 180 - 93$$

$$\text{or}$$

$$267 - 93$$

$$y = 87^\circ$$

18. Find x, y, and z.



$$x = \frac{124}{2} = 62^\circ$$

$$y = 124^\circ$$

$$z = 180 - 124 = 56^\circ$$

19. Find the measures of the angles

$$\angle A = 180 - 121 = 59^\circ$$

$$\angle B = 2(28) - 4 = 52^\circ$$

$$\angle D = 4(28) + 16 = 128^\circ$$

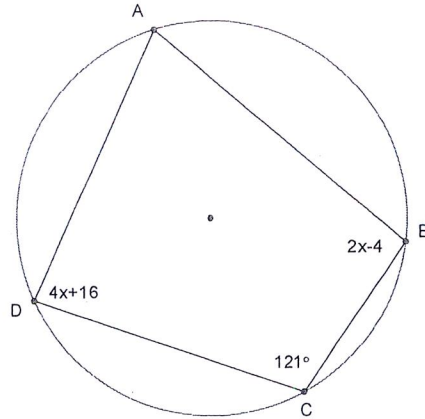
$$4x + 16 + 2x - 4 = 180$$

$$6x + 12 = 180$$

$$6x = 168$$

$$x = 28$$

Opp \angle s are supplementary



20. Given that a certain arc length is 8π , and its central angle is 80° , find the exact radius of the circle.

$$\frac{8\pi}{2\pi} = \frac{2\pi r \left(\frac{80}{360}\right)}{2\pi}$$

$$\frac{360}{80} \cdot 4 = r \left(\frac{80}{360}\right) \cdot \frac{360}{80}$$

$$18 = r$$

21. Given that the area of a circle is 81π , find the radius and use it to calculate the length of 115° arc from the same circle.

$$\frac{81\pi}{\pi} = \frac{\pi r^2}{\pi}$$

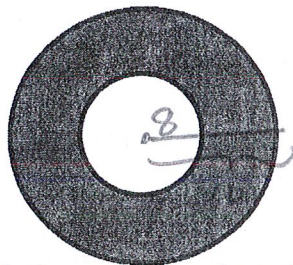
$$81 = r^2$$

$$9 = r$$

$$AL = \pi \left(9 \left(\frac{115}{360}\right)\right)$$

$$= \frac{23\pi}{4}$$

22. The circles are concentric. The radius of the smaller circle is 8cm. The radius of the bigger circle is 10. What's the exact area shaded?



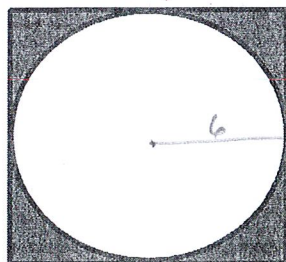
$$A_{\text{Big}} = 100\pi$$

$$A_{\text{small}} = 64\pi$$

$$A_{\text{shaded}} = 100\pi - 64\pi$$

$$= 36\pi$$

23. If the area of the square is 144, what's the area of the shaded region?

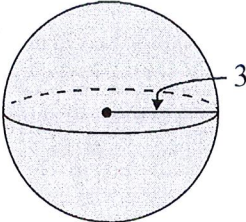
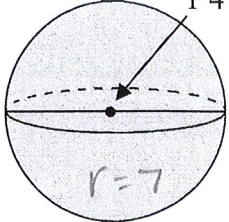


$$A_{\text{circle}} = \pi (6)^2 = 36\pi$$

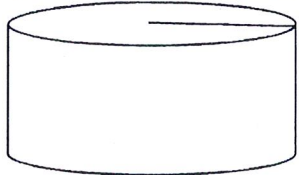
$$A_{\text{SHADE}} = 144 - 36\pi$$

Circles Review: Volume of Circular Solids, Pyramids & composite figures

Find the volume of each solid.

<p>1.</p>  <p>$V = \frac{4}{3}\pi (3)^3$ $= 36\pi$</p>	<p>2.</p>  <p>$V = \frac{4}{3}\pi (7)^3$ $= \frac{1372\pi}{3}$</p>
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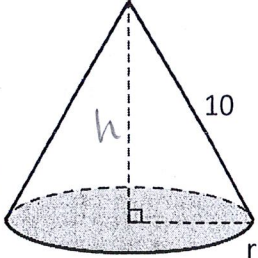
3.



$r = 8\text{ cm}$
 6 cm

$V = \pi (8)^2 (6)$
 $V = 384\pi \text{ cm}^3$

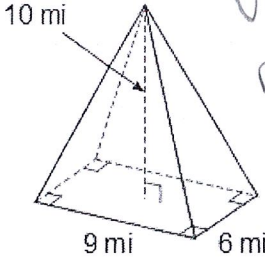
4.



$h^2 + 6^2 = 10^2$
 $h^2 = 64$
 $h = 8$

$V = \frac{1}{3}\pi (6)^2 (8)$
 $= 96\pi$

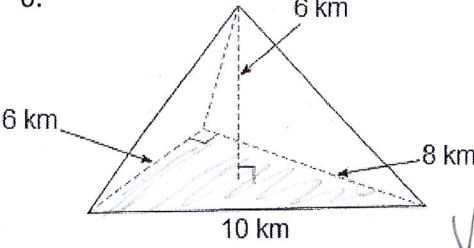
5.



10 mi
 9 mi 6 mi

$V = \frac{1}{3}Bh$
 $B = 6(9) = 54$
 $V = \frac{1}{3}(54)(10)$
 $V = 180 \text{ mi}^3$

6.



6 km
 6 km 10 km 8 km

$B = \frac{1}{2}(6)(8) = 24$
 $V = \frac{1}{3}(24)(6)$
 $= 48 \text{ km}^3$

7. Sand pouring onto the ground forms a cone. If the diameter of the cone is 8in, and the height is 4in, what's the volume of sand in the pile? $r = 4$ $h = 4$

$V = \frac{1}{3}\pi (4)^2 (4) = \frac{64\pi}{3} \approx 67.02 \text{ in}^3$

8. Find the volume of a paint can that is 8in tall and has a diameter of 6in. $r = 3$

$V = \pi (3)^2 (8) = 72\pi \approx 226.19 \text{ in}^3$

9. A certain cylinder has a density of .789g/cm³ and a mass of 245g. If the radius of the cylinder is 8cm, what's the height? Round to the nearest hundredth.

$.789 = \frac{245}{V}$
 $V = \frac{245}{.789} \approx 310.52$

$V = \pi r^2 h$
 $\frac{310.52}{\pi} = \frac{\pi (8)^2 h}{\pi}$
 $\frac{98.84}{64} = \frac{64h}{64}$
 $h = 1.54 \text{ cm}$

10. A sphere with a radius of 18cm has a density of .326g/cm³. What's its mass to the nearest hundredth?

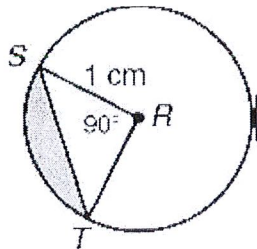
$$V = \frac{4}{3}\pi(18)^3 \approx 24429.02 \quad d = \frac{m}{V} \quad .326 = \frac{m}{24429.02} \rightarrow m = 7963.86 \text{ g}$$

11. A 14ft X 12ft garden has a population of 238 earthworms. What's the population density of the garden?

$$A = (14)(12) = 168 \text{ ft}^2 \quad PD = \frac{238}{168} \approx 1.42 \text{ worms/ft}^2$$

Find the area of the segment of the circle.:

12. Give exact answer

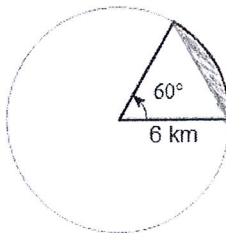


$$A_{\text{sect}} = \pi(1)^2 \left(\frac{90}{360}\right) = \frac{\pi}{4}$$

$$A_{\Delta} = \frac{1}{2}(1)(1) = \frac{1}{2}$$

$$A_{\text{SHADE}} = \frac{\pi}{4} - \frac{1}{2}$$

13. Round to the nearest hundredth



$$A_{\text{sect}} = \pi(6)^2 \left(\frac{60}{360}\right) = 6\pi \approx 18.85$$

$$A_{\Delta} = \frac{1}{2}(6)(6) \sin(60) \approx 15.59$$

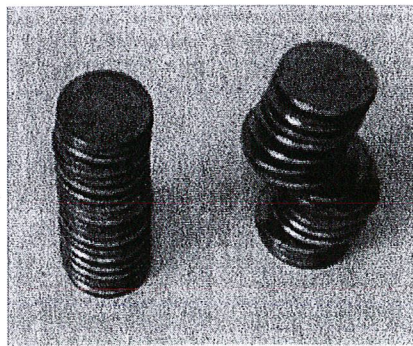
$$A_{\text{SHADE}} = 18.85 - 15.59 \approx 3.26 \text{ km}^2$$

14. Sally has a ball with a radius of 3in, and another with a radius of 9in. How many times more volume does the larger ball have than the smaller one?

there is a shortcut for this
if the radius is 3 times as long,
the volume is $3 \times 3 \times 3$ times as much.
It's 27 times larger!

15. Fill in the blanks to reflect what Cavalieri's principle says about the image below.

"The stacks of coins have the same volume
because the cross sections are have the same area and they
have the same height"



16. The cross section of a sphere is always a circle.
17. The cross section of a cone taken parallel to its base is a circle.
18. The cross section of a cylinder taken perpendicular to the base is a rectangle.

