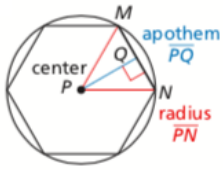
Geometry
Big Ideas Chapter 11 Study Guide - Circumference, Area, and Volume

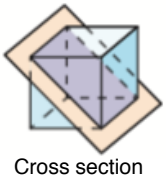
Definitions

Circumference: the distance around a circle.
Arc length: a portion of the circumference of a circle.
Radian: the length of the arc associated with the angle.
Sector: the region bounded by two radii of the circle and their intercepted arc.
Center of a regular polygon: the center of the circumscribed circle.
Apothem: the distance from the center to any side of a regular polygon.
Polyhedron: a solid that is bounded by polygons.
Face: one polygonal side of a polyhedron.



∠MPN is a central angle.

Edge: a segment where two faces intersect.
Vertex: on a polyhedron, it is the intersection of three or more edges.
Cross section: the intersection of a plane and a solid.
Similar solids: two solids of the same type with equal ratios of corresponding linear measures.


Cross section

Chord of a sphere: a segment whose endpoints are on the sphere.
Great circle: the intersection of a plane through a sphere and its center.

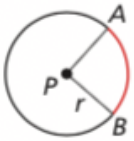
- **Cavalieri's Principle**: If two solids have the same height and the same cross-sectional area at every level, then they have the same volume.

Formulas - Planar figures

Circumference of a circle: $C = \pi d = 2\pi r$

Area of a circle: $A = \pi r^2$

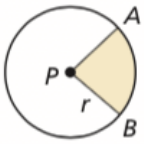
Arc length: arc length $\overset{\frown}{AB} = \left(\frac{m\overset{\frown}{AB}}{360^\circ}\right) 2\pi r$



Degree to radians: $\left(\frac{m\overset{\frown}{AB}}{360^\circ}\right) 2\pi = radians$

Radians to degrees: $\frac{360^\circ \cdot radians}{2\pi} = m\overset{\frown}{AB}$

Area of a sector: area of sector $APB = \frac{m\overset{\frown}{AB}}{360^\circ} \cdot \pi r^2$

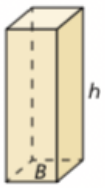


Area of a rhombus or kite: $A = \frac{d_1 d_2}{2}$

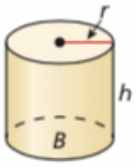
Area of a regular polygon: $A = \frac{1}{2}aP$

Formulas - Solids

Volume of a Prism: $V = Bh$
Volume of a Cylinder: $V = \pi r^2 h$
Volume of a Pyramid: $V = \frac{1}{3}Bh$
Lateral Area of a Cone: $L = \pi rl$
Total Surface Area of a Cone: $S = \pi r^2 + \pi rl$
Volume of a Cone: $V = \frac{1}{3}\pi r^2 h$
Surface Area of a Sphere: $S = 4\pi r^2$
Volume of a Sphere: $V = \frac{4}{3}\pi r^3$

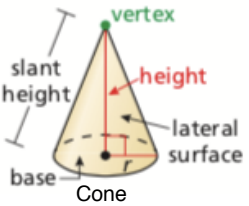


Prism



Cylinder

Pyramid



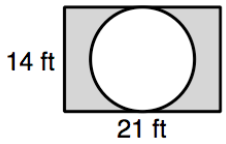
Cone

Sphere

Geometry
Big Ideas Chapter 11 Practice Problems
Show all work!!!

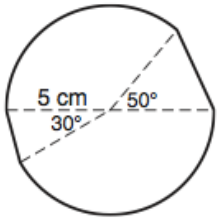
Name _____
Date _____ Period _____

1) What is the area of the shaded region to the nearest tenth of a foot?

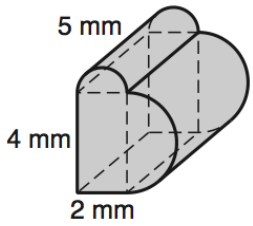


2) What is the area of a regular hexagon whose perimeter is 24 feet? Draw a diagram and solve. Leave the answer in reduced radical form.

3) Find the area of the figure.



4) Find the volume and surface area of the composite figure below.



5) Find the volume of a sphere with surface area 196π km square. Keep in terms of π.

6) A solid metal cylinder with radius 6 cm and height 18 cm is melted down and recast as a solid cone with radius 9 cm. Find the height of the cone.

7) Find the volume of a regular hexagonal pyramid with height 8 cm and base edges 6 cm.

8) A hemispheric bowl with radius 25 cm contains water whose depth is 10 cm. What is the area of the water's surface?