

Name

Key

Date

Period

Accelerated Geometry
Chapter 12 Review Sheet

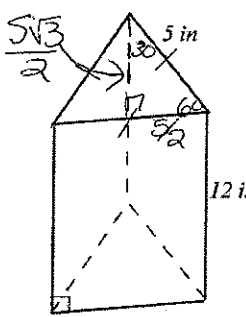
Fill in the blank.

- In a right prism all lateral edges are altitudes.
- Prisms and Pyramids are named by the shape of their bases.
- If a sphere has a radius of 5, its great circle has a diameter of 10.
- A rectangular prism is a cube if all edges are congruent.
- Volume is measured in Cubic units.
- The minimum number of ^{lateral} faces a prism can have is three.
- If two similar solids have perimeters in the ratio 2 to 3, then their areas are in the ratio 4 to 9 and their volumes are in the ratio 8 to 27.
- The formula $V = Bh$ is true of the following three-dimensional figures: prisms and Cylinders.
- The formula for volumes of both cones and regular pyramids are given by: $V = \frac{1}{3}Bh$.
- Total area (or surface area) is found by summing lateral area and base area.

Fill in the chart with the formulas for each figure.

	Lateral Area	Surface Area	Volume
Prism	$LA = Ph$	$SA = LA + 2B$	$V = Bh$
Cylinder	$LA = Ch$	$SA = LA + 2B$	$V = Bh$
Pyramid	$LA = \frac{1}{2}Pl$	$SA = LA + B$	$V = \frac{1}{3}Bh$
Cone	$LA = \frac{1}{2}Cl$	$SA = LA + B$	$V = \frac{1}{3}Bh$
Sphere		$A = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$

Find the lateral area, total area, and volume of each of the following figures. Show all formulas and work, and label your answer with the appropriate units.

11. 

$$P = 5 \times 3 = 15$$

$$LA = Ph = (15)(12) = 180 \text{ in}^2$$

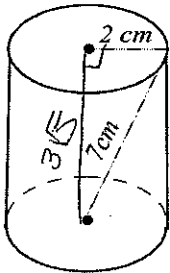
$$B = \frac{1}{2}bh = \frac{1}{2}(5)\left(\frac{5\sqrt{3}}{2}\right) = \frac{25\sqrt{3}}{4} \text{ in}^2$$

$$SA = LA + 2B = 180 + \frac{25\sqrt{3}}{2} = \frac{360 + 25\sqrt{3}}{2} \text{ in}^2$$

$$V = Bh = \left(\frac{25\sqrt{3}}{4}\right)(12) = 75\sqrt{3} \text{ in}^3$$

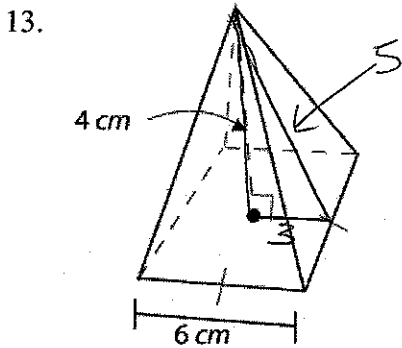
$LA = 180 \text{ in}^2$ $TA = \frac{360 + 25\sqrt{3}}{2} \text{ in}^2$ $V = 75\sqrt{3} \text{ in}^3$

12.
 $2^2 + x^2 = 7^2$
 $4 + x^2 = 49$
 $x^2 = 45$
 $x = \sqrt{45}$
 $x = 3\sqrt{5}$



$LA = Ch = (4\pi)(3\sqrt{5}) = 12\pi\sqrt{5} \text{ cm}^2$
 $TA = LA + 2B = (12\pi\sqrt{5}) + (8\pi) = 8\pi + 12\pi\sqrt{5} \text{ cm}^2$
 $V = Bh = (4\pi)(3\sqrt{5}) = 12\pi\sqrt{5} \text{ cm}^3$

$LA = 12\pi\sqrt{5} \text{ in}^2$ $TA = 8\pi + 12\pi\sqrt{5} \text{ cm}^2$ $V = 12\pi\sqrt{5} \text{ in}^3$

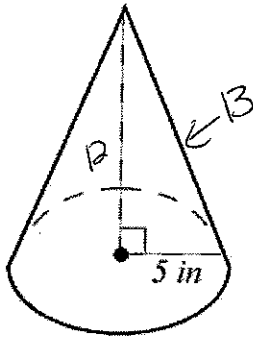


$LA = \frac{1}{2}Pl = \frac{1}{2}(24)(5) = 60 \text{ cm}^2$
 $TA = 60 + (36) = 96 \text{ cm}^2$
 $V = \frac{1}{3}Bh = \frac{1}{3}(36)(4) = 48 \text{ cm}^3$

$LA = 60 \text{ cm}^2$ $TA = 96 \text{ cm}^2$ $V = 48 \text{ cm}^3$

Find the lateral area, total area, and volume of each of the following figures. Show all formulas and work, and label your answer with the appropriate units.

14.



Height: 12 in

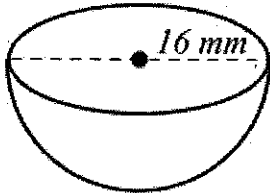
$$LA = \frac{1}{2} Cl = \frac{1}{2} (10\pi)(13) = 65\pi \text{ in}^2$$

$$TA = LA + B = 65\pi + 25\pi =$$

$$V = \frac{1}{3} Bh = \frac{1}{3} (25\pi)(12) = 100\pi \text{ in}^3$$

LA = $65\pi \text{ in}^2$ TA = $90\pi \text{ in}^2$ V = $100\pi \text{ in}^3$

15.



$$V = \frac{1}{2} \left[\frac{4}{3} \pi r^3 \right] = \frac{1}{2} \left(\frac{4}{3} (512\pi) \right) = \frac{2048\pi}{6} = \frac{1024\pi}{3} \text{ in}^3$$

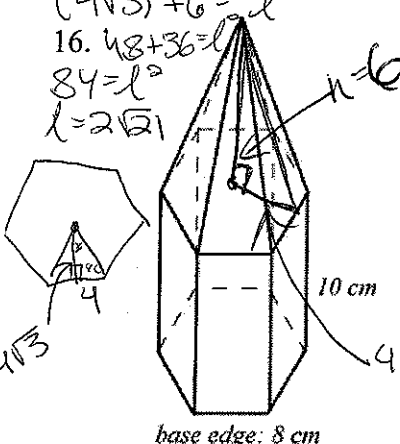
$$B = 64\pi$$

$$LA = \frac{1}{2} (4\pi r^2) = \frac{1}{2} (256\pi) = 128\pi \text{ mm}^2$$

$$TA = 128\pi + 64\pi =$$

LA = $128\pi \text{ mm}^2$ TA = $192\pi \text{ mm}^2$ V = $\frac{1024\pi}{3} \text{ mm}^3$

16. $48 + 36 = l^2$
 $84 = l^2$
 $l = 2\sqrt{21}$



$$B = \frac{1}{2} P_0 = \frac{1}{2} (48)(4\sqrt{3}) = 96\sqrt{3} \text{ cm}^2$$

$$LA_{\text{prism}} = Ph = (48)(10) = 480 \text{ cm}^2$$

$$LA_{\text{pyr}} = \frac{1}{2} Pl = \frac{1}{2} (48)(2\sqrt{21}) = 48\sqrt{21} \text{ cm}^2$$

$$LA_{\text{comp}} = LA_{\text{prism}} + LA_{\text{pyr}} + B = 480 + 48\sqrt{21} + 96\sqrt{3} \text{ cm}^2$$

$$V_{\text{prism}} = Bh = (96\sqrt{3})(10) = 960\sqrt{3} \text{ cm}^3$$

$$V_{\text{pyr}} = \frac{1}{3} Bh = \frac{1}{3} (96\sqrt{3})(6) = 192\sqrt{3} \text{ cm}^3$$

$$V_{\text{comp}} = V_{\text{prism}} + V_{\text{pyr}} = 960\sqrt{3} + 192\sqrt{3} = 1152\sqrt{3} \text{ cm}^3$$

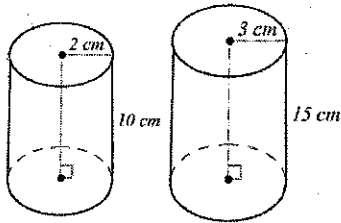
$$TA = 480 + 48\sqrt{21} + 96\sqrt{3} \text{ cm}^2 \quad V = 1152\sqrt{3} \text{ cm}^3$$

State whether the following solids are similar or not. Explain your reasoning.

17. A sphere with radius 15 ft and a sphere with radius 2 in.

Similar? yes Reason: all spheres are similar

18.



Similar? Yes Reason: Bases & heights both have $\frac{3}{2}$ scale factor

19. A regular right pentagonal prism with perimeter 25 and height 10 and another regular right pentagonal prism with perimeter 30 and height 16.

sides 6

sides 5

ratio sides: $\frac{5}{6}$

ratio heights: $\frac{5}{8}$

Similar? No Reason: Ratio heights \neq Scale factor bases

20. A cube with side 3 mm and a cube with side 23 mm.

Similar? Yes Reason: all cubes are similar

21. A regular square pyramid with base side of 4 cm, height of 6 cm and another regular square pyramid with base area of 64 cm^2 and a height of 12 cm.

side 8

$$4:8 = 6:12$$

Similar? Yes Reason: Scale factor bases & Scale factor heights 1:2

Solve the following. Please show any work and use the appropriate units in your answer.

22. Two similar rectangular prisms have base perimeters in the ratio 4:5. What is the ratio of their areas?

$$16:25$$

23. Two similar octagonal prisms have lateral edges in the ratio 2:3. What is the ratio of their perimeters?

$$2:3$$

24. Two similar cones have slant heights in the ratio 5:6. What is the ratio of their volumes?

$$125:216$$