

Chapters 11 and 12 Study Guide
Length, Area, Surface Area,
and Volume of Solids

Name: _____

Block: 1 2 3 4 5 6 7 8

SOL G.13

The student will use formulas for surface area and volume of three-dimensional objects to solve real-world problems.

SOL G.14

The student will use similar geometric objects in two- or three-dimensions to: a) compare ratios between side lengths, perimeters, areas, and volumes; b) determine how changes in one or more dimensions of an object affect area and/or volume of the object; c) determine how changes in area and/or volume of an object affect one or more dimensions of the object; and d) solve real-world problems about similar geometric objects.

Block / Date	Section and Objectives	Classwork and Homework
1	<u>11.1-11.5</u> <ul style="list-style-type: none"> Find areas of triangles, parallelograms, trapezoids, rhombuses, and kites Determine the perimeter and area for similar polygons Determine the circumference and arc length for a circle 	<ul style="list-style-type: none"> Pg 780 # 5 – 20 Pg 784 # 1 – 16 Ch. 11 Rvw worksheet Check answer key
2	<u>12.2-12.6</u> <ul style="list-style-type: none"> Determine the surface are of prisms, cylinders, pyramids, and cones Determine the volume of prisms, cylinders, pyramids, and cones 	<ul style="list-style-type: none"> Pg 916 # 2 – 24, 30 – 40 (evens only!!) Ch 12 Review Packet #1 Check answer key
3	Review	<ul style="list-style-type: none"> Ch 12 Review Packet #2 WS on Ratios for Polygons and 3-D Figures Check answer key
4	Test	

SOL Testing Dates:

May 19: Block 3

Eat A lunch

Room 6

May 20: Block 8

Eat A lunch

Room 121

May 22: Block 5

Bring a snack

Electronic Classroom

Helpful Hints

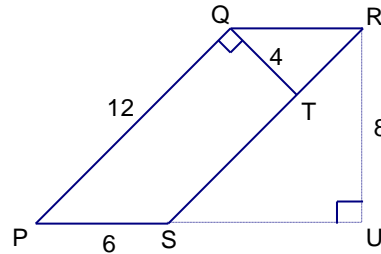
- Review your notes daily.
- Need extra practice? Do the odds in the back of the text and check your answers.
- Come to class with specific questions.
- Include all drawings and show the work that leads to your solution for all problems.
- For each problem: write formula, include substitution, and write answer. Include units.

Area Formulas

Square -	$A = s^2$	Trapezoid -	$A = \frac{1}{2}h(b_1 + b_2)$
Rectangle -	$A = bh$ or lw	Rhombus -	$A = \frac{1}{2}d_1d_2$
Parallelogram -	$A = bh$	Kite -	$A = \frac{1}{2}d_1d_2$
Triangle -	$A = \frac{1}{2}bh$		

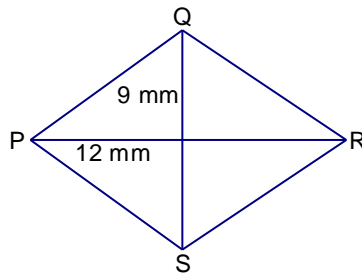
Examples:

1. Find the area of parallelogram PQRS.



2. The base of a triangle is twice its height. The area of the triangle is 36 square inches. Find the base and the height.

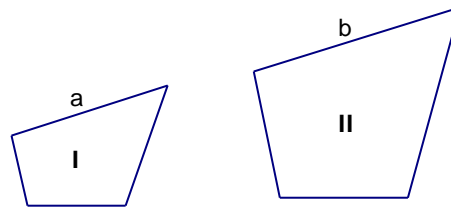
3. Find the area of the rhombus.



Similar Polygons

Ratio of corresponding sides (perimeter) is $a:b$

Ratio of area is $a^2:b^2$

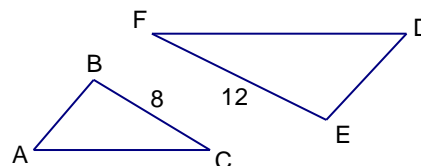


Polygon I ~ Polygon II

4. In the diagram, $\triangle ABC \sim \triangle DEF$. Find the indicated ratio.

a. ratio (ABC to DEF) of the perimeters

b. ratio (ABC to DEF) of the areas



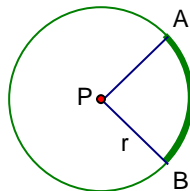
Circumference of a Circle - $C = 2\pi r$ or $C = \pi d$

5. Find the indicated measure.

- a. circumference of a circle with radius 9 inches b. radius of a circle with circumference 26 meters

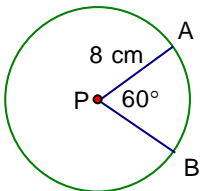
arc length –

$$\text{length or arc AB} = \frac{m\widehat{AB}}{360^\circ} \cdot 2\pi r$$

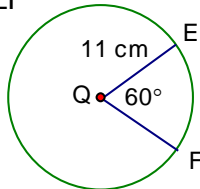


Find the length of each arc.

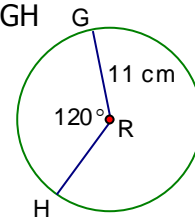
6. AB



7. EF



8. GH



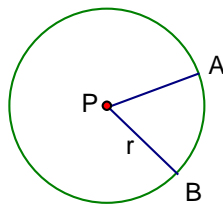
Area of a Circle - $A = \pi r^2$

9. Find the indicated measure.

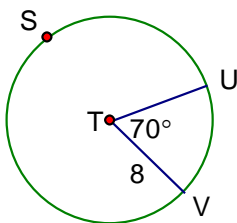
- a. area of a circle whose radius is 2.5 cm b. diameter of a circle whose area is 113.1 cm²

Area of a Sector –

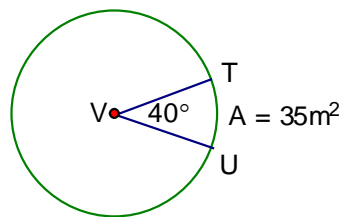
$$\text{area of sector APB} = \frac{m\widehat{AB}}{360^\circ} \cdot \pi r^2$$



10. Find the area of each sector



11. Find the area of circle V.



Geometry
Ch.11 Rvw

Name _____
Date _____ Pd _____

Areas

square:

rectangle:

parallelogram:

triangle:

trapezoid:

rhombus:

kite:

circle:

circumference (of a circle):

arc length:

sector:

****Round answers to two decimal places when necessary.**

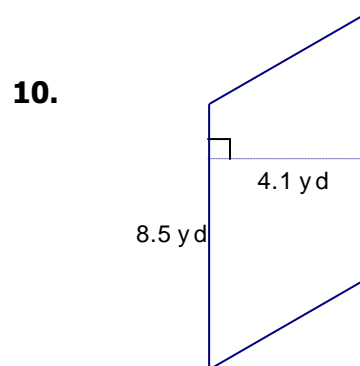
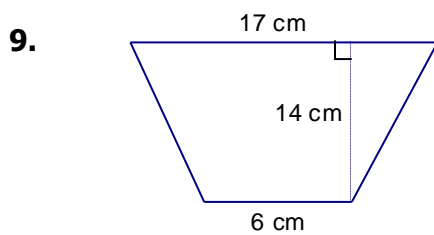
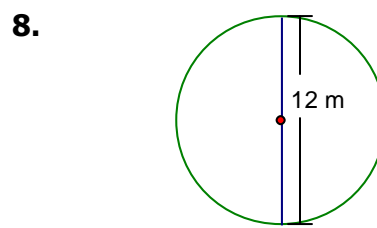
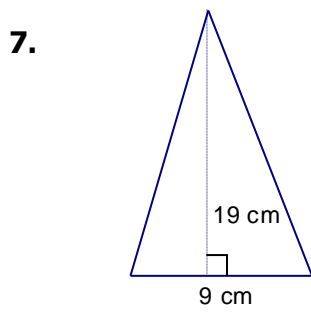
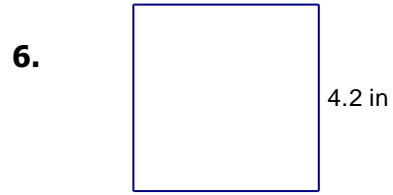
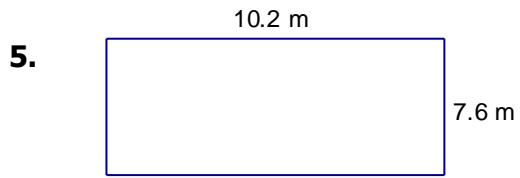
- 1.** Find the area of a square that is 8.5 in on a side.

- 2.** Find the area of a triangle that has a base of 4 cm and a height of 9 cm.

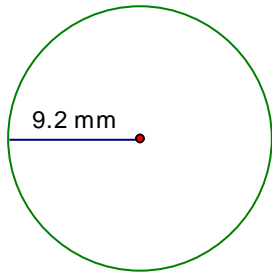
- 3.** Find the area of a circle that has a diameter of 10 yd.

- 4.** Find the area of a trapezoid that has bases of 55 cm and 22 cm and a height of 21 cm.

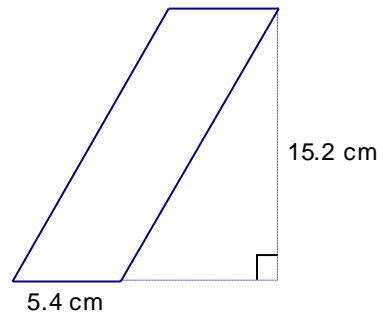
Find the area of each figure. Video solution for #5 and #8



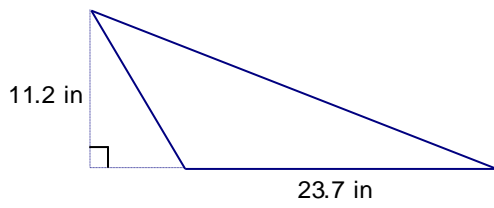
11.



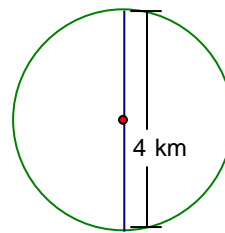
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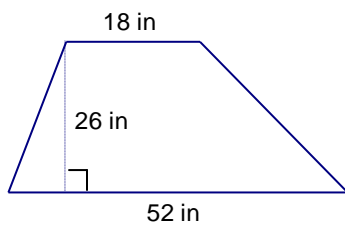
13.



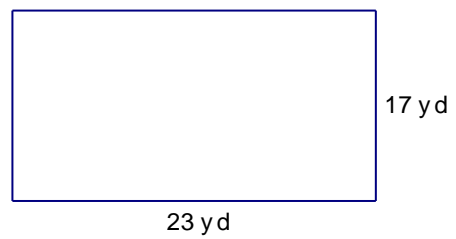
14.



15.



16.

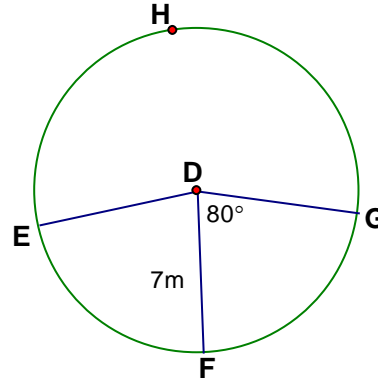


In circle D shown below, $\angle EDF \cong \angle FDG$. Find the indicated measure.

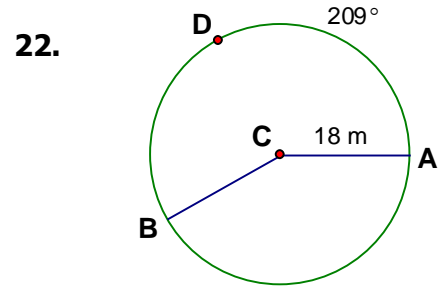
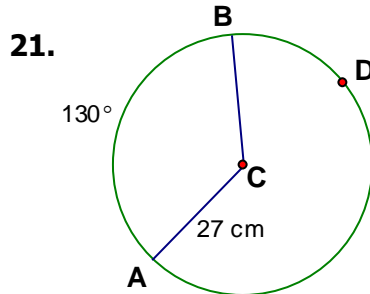
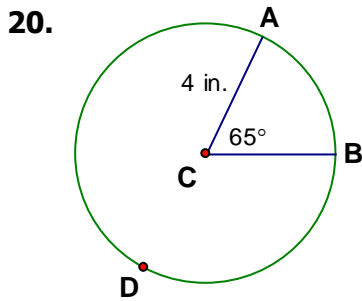
17. length of arc EFG

18. length of arc EHG

19. length of arc FEG



Find the area of **BOTH** the sectors formed by $\angle ACB$. #20 has a video solution (7:20)



Check your solutions:



Show **all** work!!!!

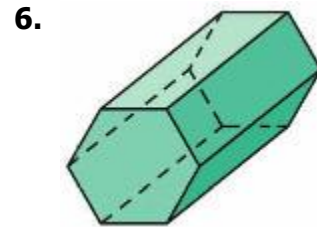
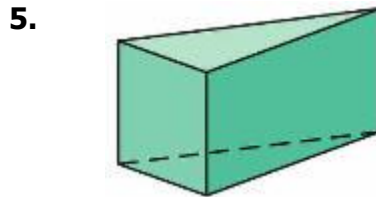
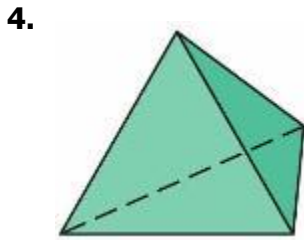
Use Euler's Theorem to find the value of n .

- 1.** Faces: n
Vertices: 8
Edges: 12

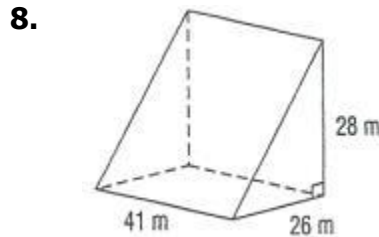
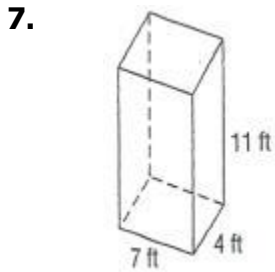
- 2.** Faces: 5
Vertices: 6
Edges: n

- 3.** Faces: 8
Vertices: n
Edges: 18

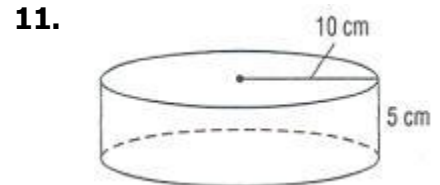
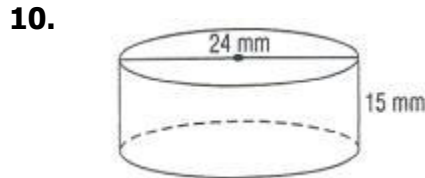
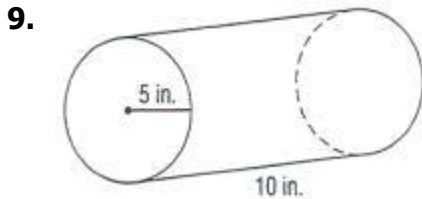
Find the number of faces, vertices, and edges of the polyhedron.



Find the surface area of the right prism. Round your answer to two decimal places.

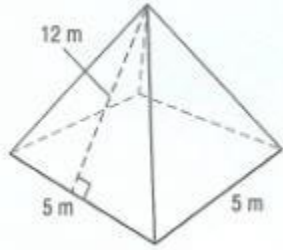


Find the surface area of the right cylinder. Round your answer to two decimal places.

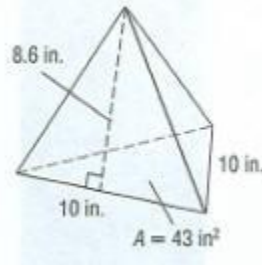


Find the surface area of the regular pyramid. Round your answer to two decimal places.

12.

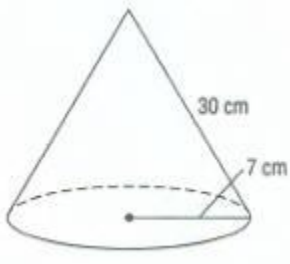


13.

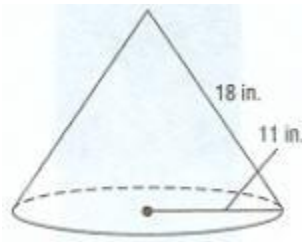


Find the surface area of the right cone. Round your answer to two decimal places.

14.

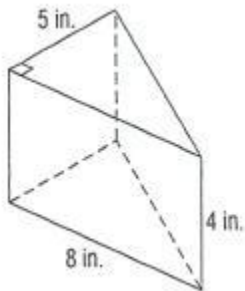


15.

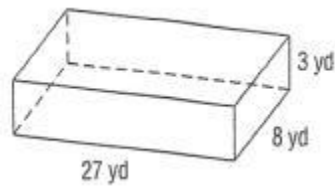


Find the volume of the right prism or right cylinder. Round your answer to two decimal places.

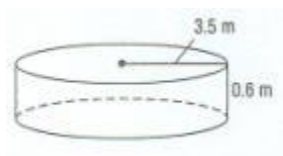
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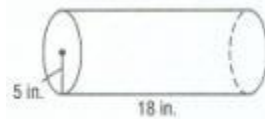
17.



18.

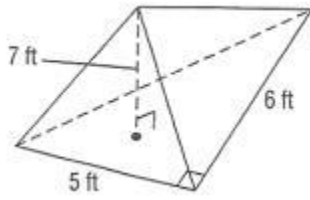


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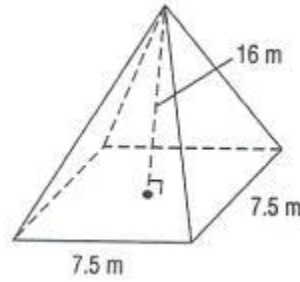


Find the volume of the pyramid. Round your answer to two decimal places.

20.

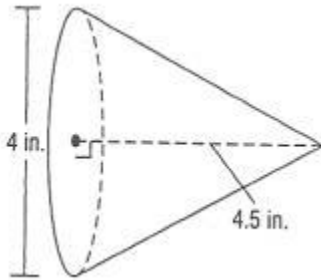


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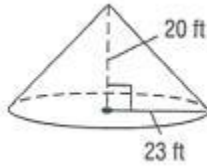


Find the volume of the cone. Round your answer to two decimal places.

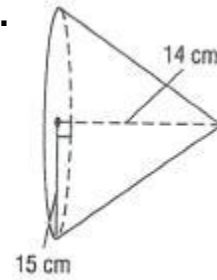
22.



23.



24.

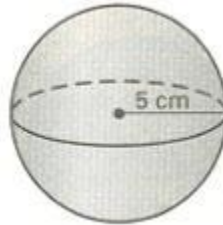


Find the surface area of the sphere. Round your answer to two decimal places.

25.



26.

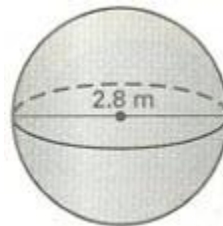


Find the volume of the sphere. Round your answer to two decimal places.

27.



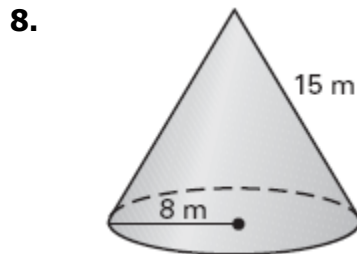
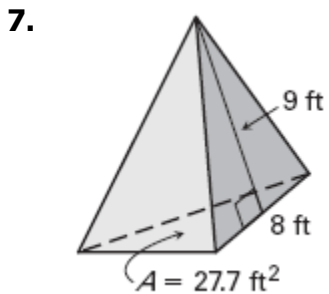
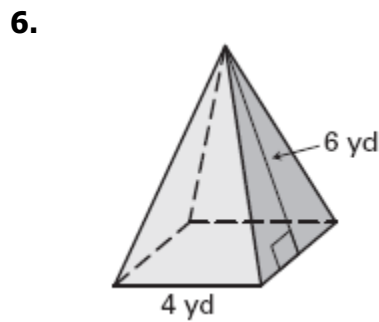
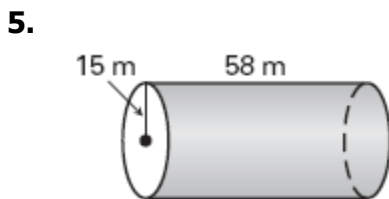
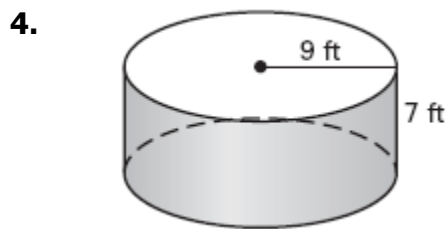
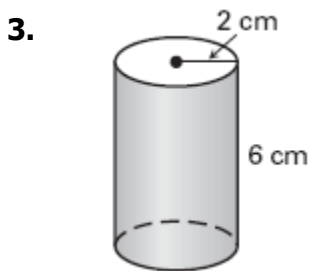
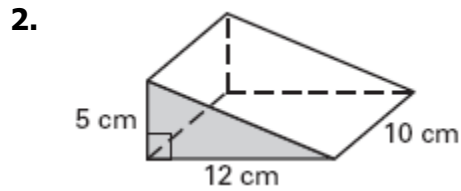
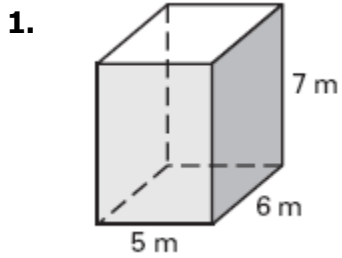
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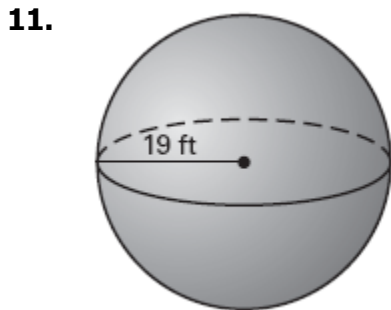
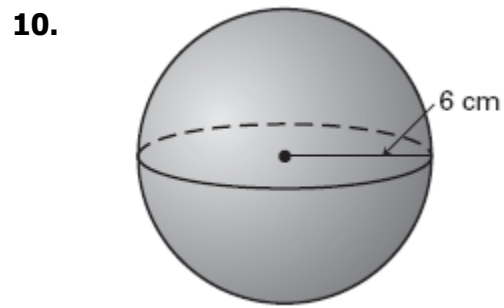
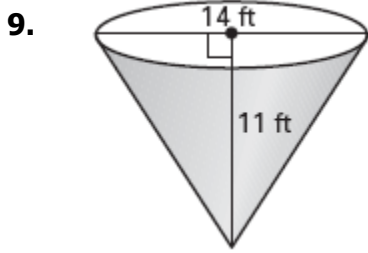


Check your solutions:

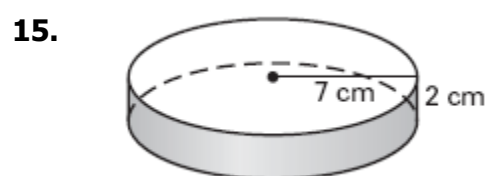
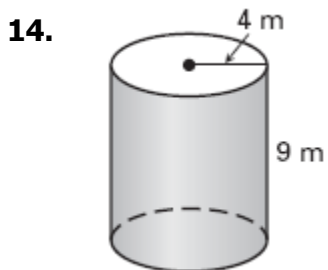
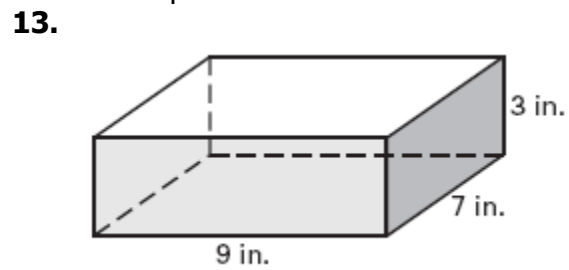
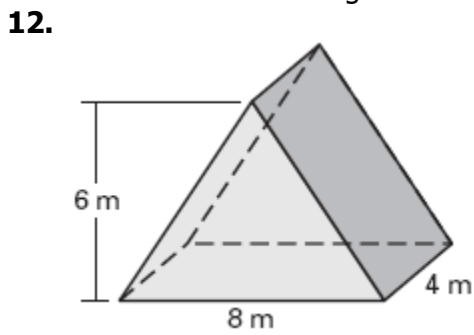


Find the surface area of the following figures. Round your answers to two decimals places.

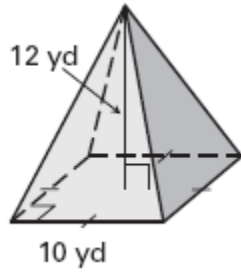




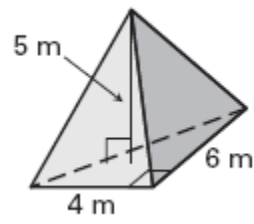
Find the volume of each figure. Round answers to two decimal places.



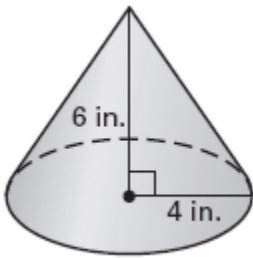
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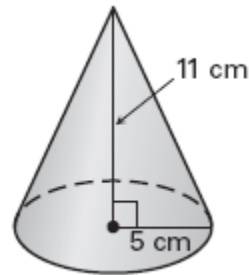
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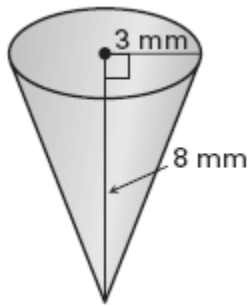
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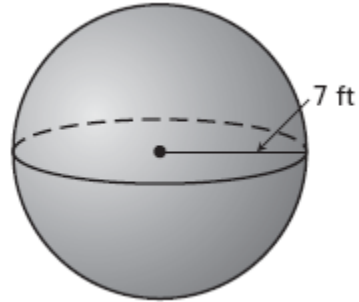
19.



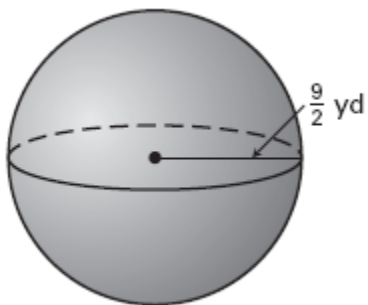
20.



21.



22.



Check your solutions:



Check your solutions →

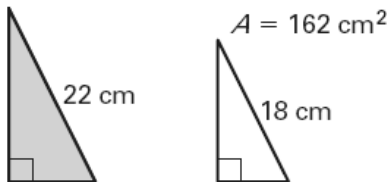


Complete the table of ratios for similar polygons.

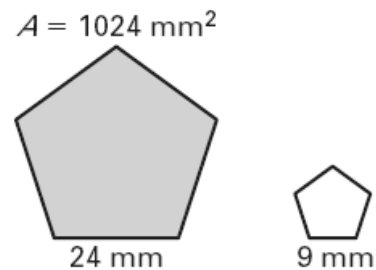
	Ratio of corresponding side lengths	Ratio of perimeters	Ratio of areas
1.	5:8		
2.		4:7	
3.			169:36
4.	66:18		

Corresponding lengths in similar figures are given. Find the ratios (shaded to unshaded) of the perimeters and areas. Find the unknown area.

5.



6.



The ratio of the areas of two similar figures is given. Write the ratio of the lengths of corresponding sides.

7. Ratio of areas = 16:81

8. Ratio of areas = 25:196

Complete the table of ratios for similar solids.

	Scale factor	Ratio of areas	Ratio of volumes
9.	5:8		
10.		25:81	
11.			1000:216
12.	2:3		

Solid A (shown) is similar to Solid B (not shown) with the given scale factor of A to B. Find the surface area and volume of Solid B.

13. Scale factor of 3:2

Surface Area

Volume



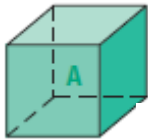
$$S = 324\pi \text{ in.}^2$$

$$V = 972\pi \text{ in.}^3$$

14. Scale factor of 2:1

Surface Area

Volume



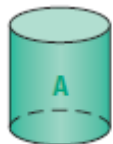
$$S = 864 \text{ ft}^2$$

$$V = 1728 \text{ ft}^3$$

15. Scale factor of 4:7

Surface Area

Volume



$$S = 64\pi \text{ cm}^2$$

$$V = 64\pi \text{ cm}^3$$

16. Two similar cylinders have volumes 12π cubic units and 324π cubic units. Find the scale factor of the smaller cylinder to the larger cylinder.