Prisms and Cylinders

Part of Prism or Cylinder	Picture & Formula
Lateral Area Prism	
Surface Area Prism	
Lateral Area Cylinder	
Surface Area Cylinder	

1) Find the lateral area.
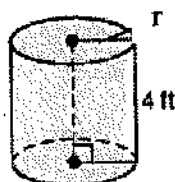

5 cm   12 cm

2) Find the surface area.

8

12   10

3) Find the surface area.

14 ft

18 ft
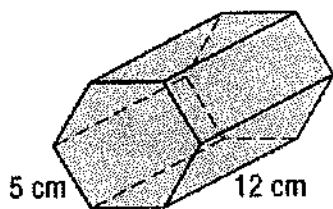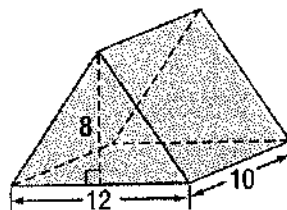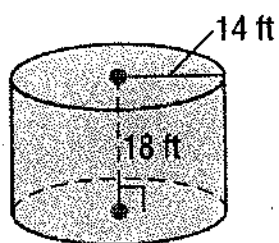
4) Find the radius, given the lateral area is approximately 50.3ft²

r

4 ft

Pyramids and Cones
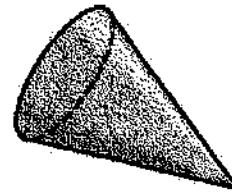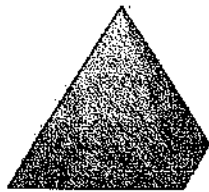
Part of Prism or Cylinder	Picture & Formula
Lateral Area **Regular Pyramid**	
Surface Area **Regular Pyramid**	
Lateral & Surface Area of a Cone	

1) Find the lateral area.

5 cm

2.5 cm

2) Find the surface area.

6 m

8 m

8 m   4 m
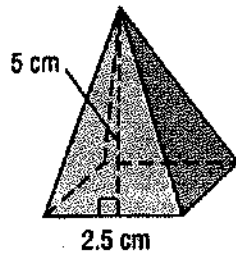
3) Find the surface area.

3.2 cm

1.4 cm
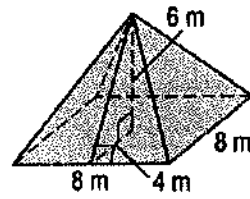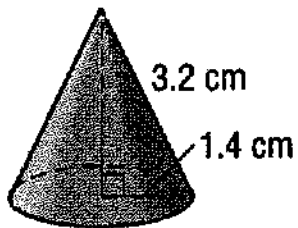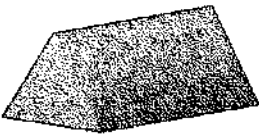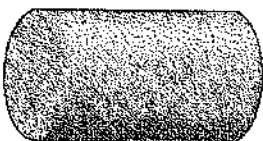
4) Find the lateral and surface area

10 ft

25 ft
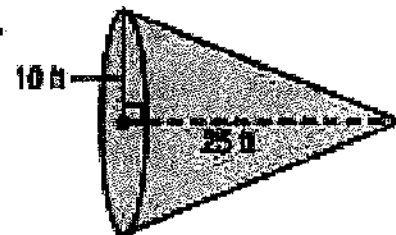
Prism or Cylinder	Picture & Formula
Volume of a Prism	
Volume of a Cylinder	

1) Find the volume of the prisms.

8 ft
8 ft
8 ft

30 in.
18 in.
15 in.
a
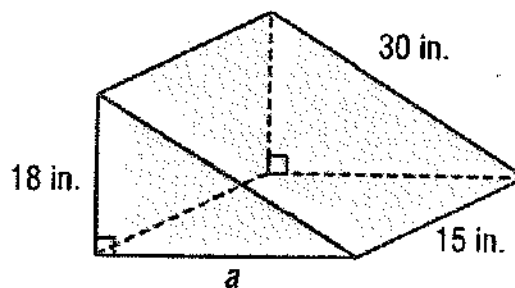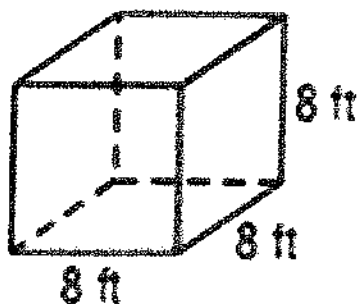
2) Find the volume of the cylinders.

|— 20 ft —|

20 ft

10 cm

13 cm
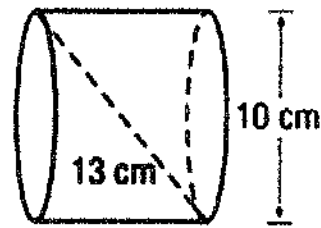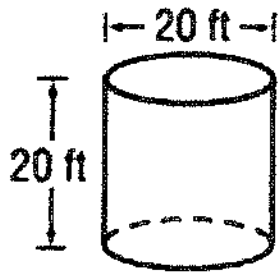
PENCIL GRIPS A pencil grip is shaped
3) like a triangular prism with a cylinder
removed from the middle. The base of
the prism is a right isosceles triangle
with leg lengths of 2 centimeters. The
diameter of the base of the removed
cylinder is 1 centimeter. The heights of
the prism and the cylinder are the same,
and equal to 4 centimeters.
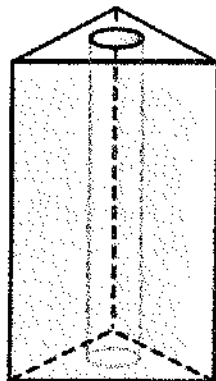
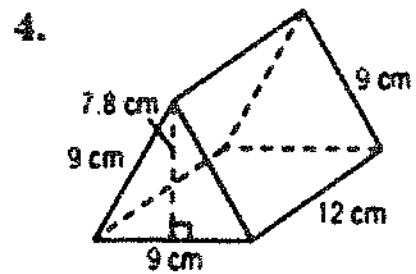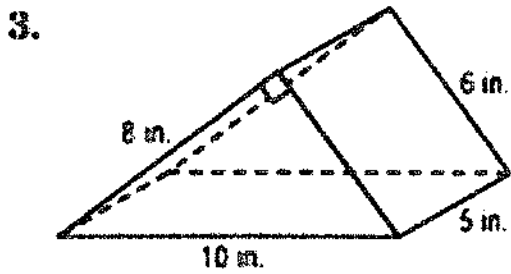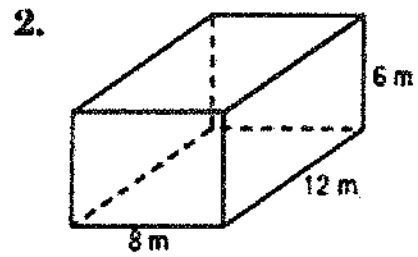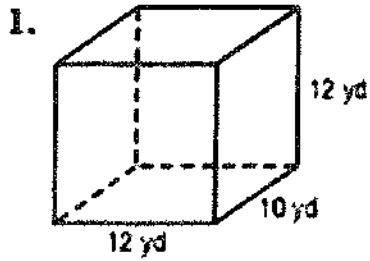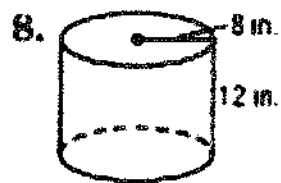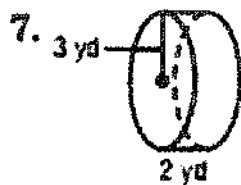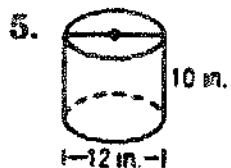What is the exact volume of the pencil
grip?

Name:_____

12.2 Prism and Cylinder Surface and Lateral Area

Find the lateral area and surface area of each prism. Round to the nearest tenth if necessary.

1.

12 yd
10 yd
12 yd

2.

6 m
12 m
8 m

3.

6 in.
8 in.
5 in.
10 in.

4.

7.8 cm
9 cm
9 cm
9 cm
12 cm

Find the lateral area and surface area of each cylinder. Round to the nearest tenth if necessary.

5.

10 in.

|—12 in.—|

6.

2 m

2 m

7.

3 yd

2 yd

8.

8 in.

12 in.

12-3 Pyramid and Cone Surface Area

Find the lateral area and surface area of each pyramid. Round to the nearest tenth if necessary.

1.

7 cm
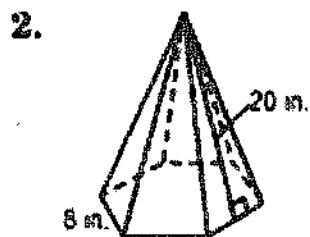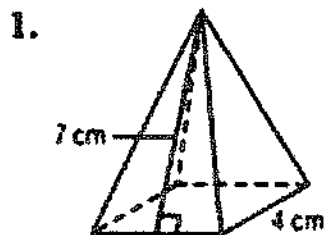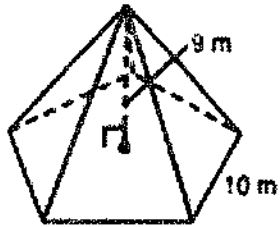
4 cm

2.

20 in.

8 in.

3.

9 m

10 m

4.

12 ft

14 ft
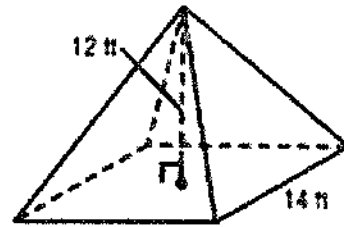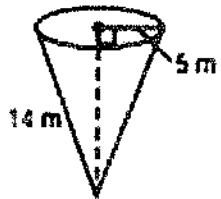
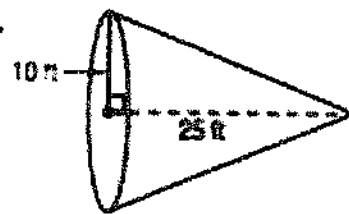Find the lateral area and surface area of each cone. Round to the nearest tenth if necessary.

5.

5 m

14 m

6.
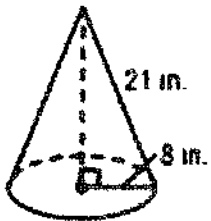
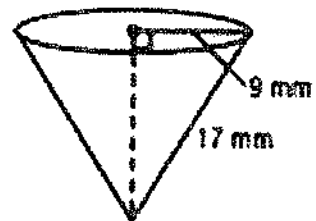

10 ft

25 ft

7.

21 in.

8 in.

8.
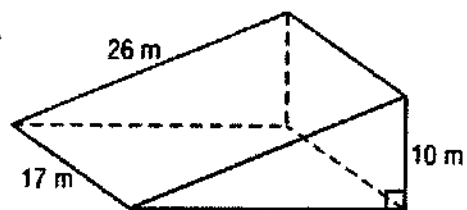

9 mm

17 mm

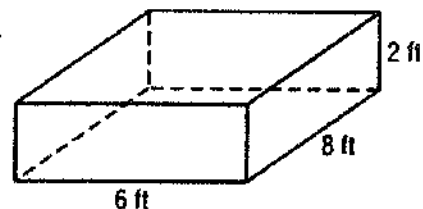## 12-4 Prism and Cylinder Volume

Find the volume of each prism. Round to the nearest tenth if necessary.

1.

26 m

10 m

17 m

2.

2 ft

8 ft

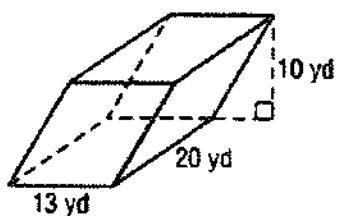6 ft

3.

10 yd

20 yd

13 yd

4.

34 in.

16 in.

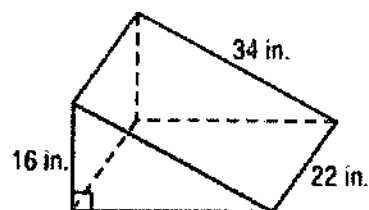22 in.

Find the volume of each cylinder. Round to the nearest tenth if necessary.

5.

2 ft

1 ft

6. 2 cm

18 cm

7.

16 mm — 17.5 mm

8.

7 ft

25 ft
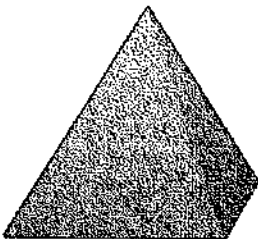
Pyramid or Cone	Picture & Formula
Volume of a Pyramid	
Volume of a Cone	

1) Find the volume of the pyramid.

15 ft

6 ft

10 ft

6.5 ft

8 ft
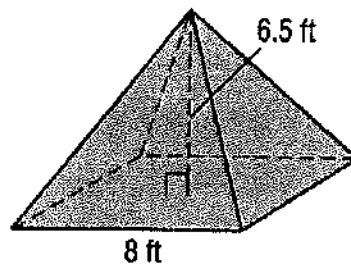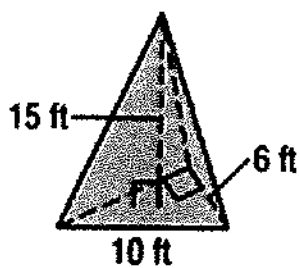
2) Find the volume of the cone.

5 in.

12 in.

26 ft

20 ft
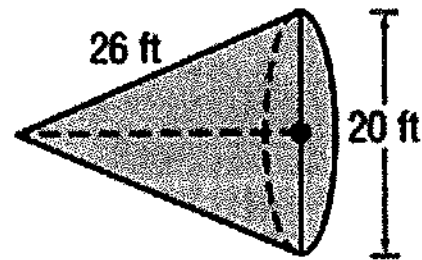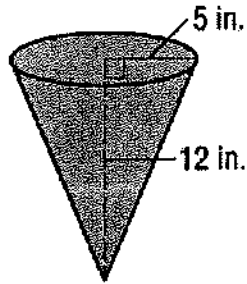
3) **STAGES** A stage has the form of a
square pyramid with the top sliced off
along a plane parallel to the base. The
side length of the top square is 12 feet
and the side length of the bottom square
is 16 feet. The height of the stage is
3 feet.

12 feet

3 feet

16 feet
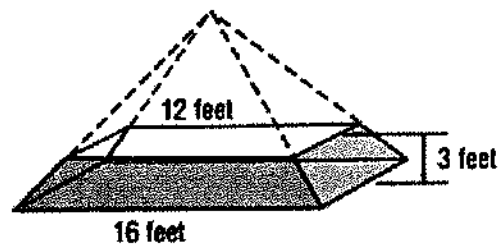
What is the volume of the stage?

12.5 Practice: pg 860 – 861; #1 – 8, 10 – 13, 17 - 20

Name:_____

Find the volume of each pyramid. Round to the nearest tenth if necessary.

1.

8 cm

4 cm

7 cm

2.

14 in.

8 in.
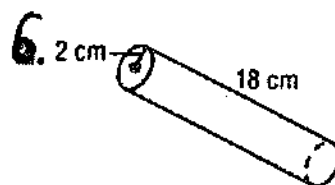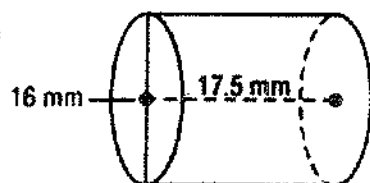
10 in.

3.

6 yd

8 yd

5 yd

4.

18 ft

regular
hexagon

6 ft
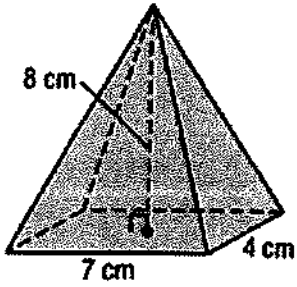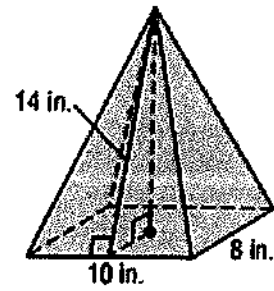
Find the volume of each cone. Round to the nearest tenth if necessary.

5.

8 ft

30 ft

6.

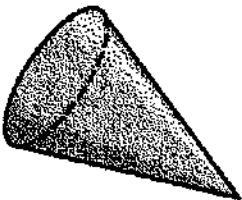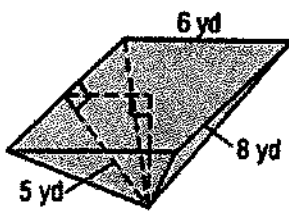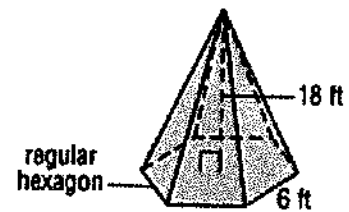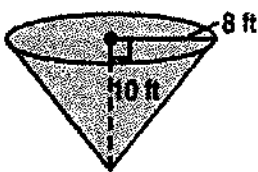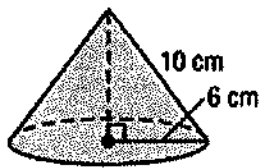10 cm

6 cm

7.

12 in.

30 in.

8.

18 yd

45°

20 yd
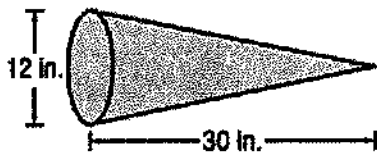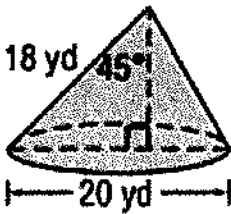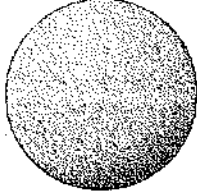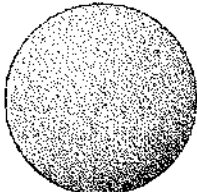
Spheres	Picture & Formula
Surface Area of a Sphere	
Volume of a Sphere	
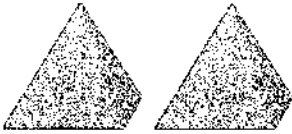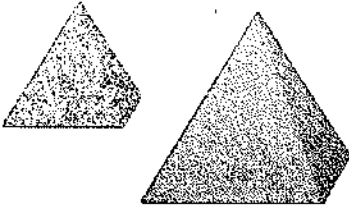
1) Find the volume and surface area of the spheres.

$C = 8\pi$ ft

8 cm
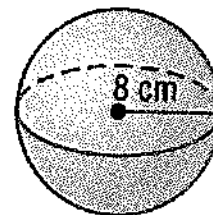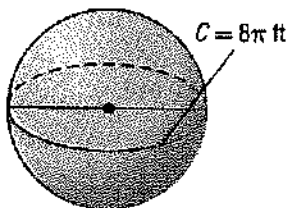
2) Find the surface area and volume of each hemisphere.
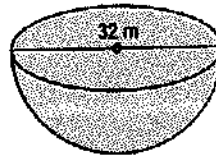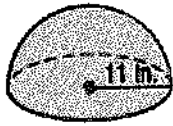
3) **ORANGES** Mandy cuts a spherical orange in half along a great circle. If the radius of the orange is 2 inches, what is the area of the cross section that Mandy cut? Round your answer to the nearest hundredth.

<u>**12.6 Practice: pg. 868 – 869; #1 – 25 odd**</u>

Congruent and Similar Solids	Picture & Formula	
Congruent Solids		
Similar Solids		
Similar Solids Example: Draw 2 cubes in the space to the right, one with side lengths of 2 and the other with side lengths of 3 →	**2x2x2 Cube:** Surface Area: Volume:	**3x3x3 Cube:** Surface Area: Volume:
Thm. 12.1		

1) Is the pair of figures *similar, congruent, or neither*? If similar state the scale factor:
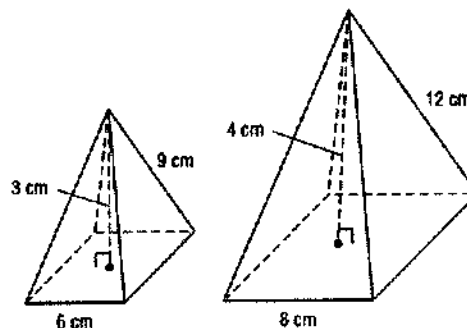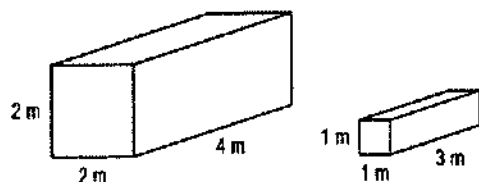
2) Is the pair of figures *similar, congruent, or neither*. If similar state the scale factor
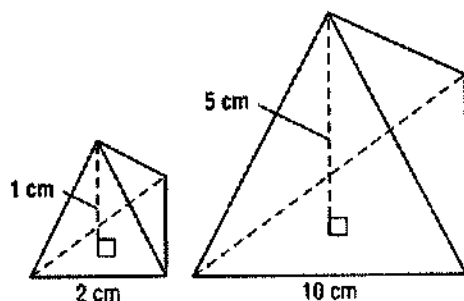
3) **MANUFACTURING** Boxes, Inc. wants to make the two boxes below. How long does the second box need to be so that they are similar?
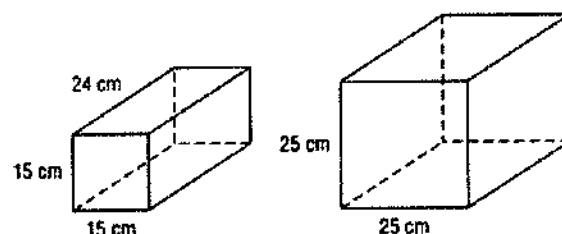
4) Two similar cones have radii of 9 inches and 12 inches. What is the ratio of the volume of the smaller cone to the larger cone.

5) Two similar triangular prisms have surface areas of 64 ft^2 and 289 ft^2. What is the ratio of the volume of the smaller prism to the larger prism?

Name:_____

Determine whether the pair of solids is similar, congruent, or neither. If the solids are similar, state the scale factor.

1

4 in.
8 in.
4 in.
2 in.
4 in.
4 in.
8 in.
6 in.
12 in.

4.2 in.   12.3 in.   12.3 in.   4.2 in.

3 ft
1 ft
3 ft
1 ft
3 ft
9 ft
3 ft

5 m   10 m
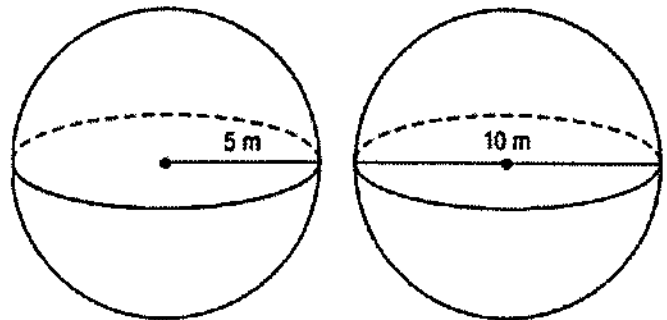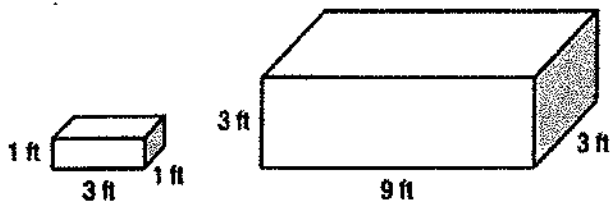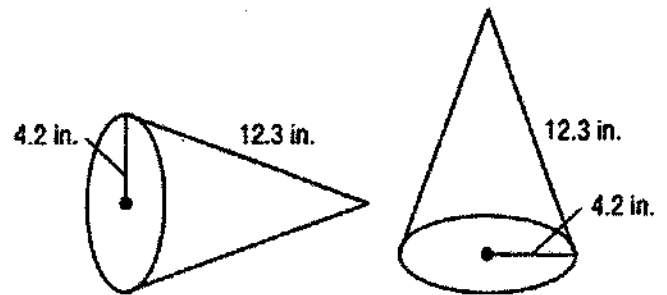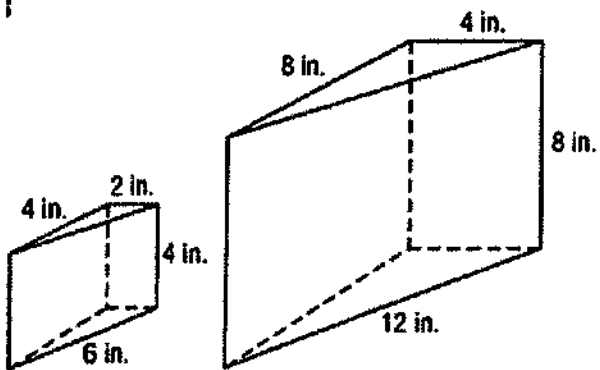
5) Two cubes have sides of 3 in. and 8 in. What is the ratio of the surface area of the small sphere to the surface area of the large sphere?

6) Two similar triangular prisms have volumes of 27 square meters and 64 square meters. What is the ratio of the surface area of the small prism to the surface area of the large prism?
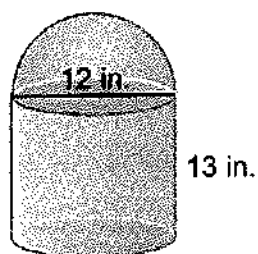
7) Two similar cylinders have surface areas of 40π square feet and 90π square feet. What is the ratio of the height of the large cylinder to the height of the small cylinder?

8) Two cubes have surface areas of 72 square feet and 98 square feet. What is the ratio of the volume of the small cube to the volume of the large cube?

20

Composite Figures ~ Homework

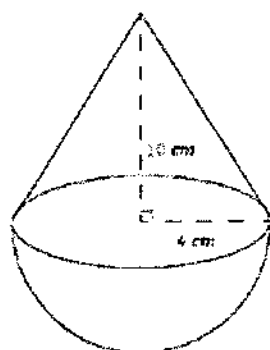Find the surface area and volume of the following composite solids. Round answers to the nearest tenth.
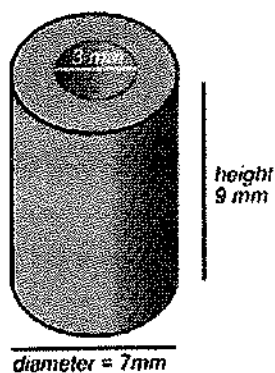
1.

12 in.

13 in.

SA=_____

Volume=_____

2.

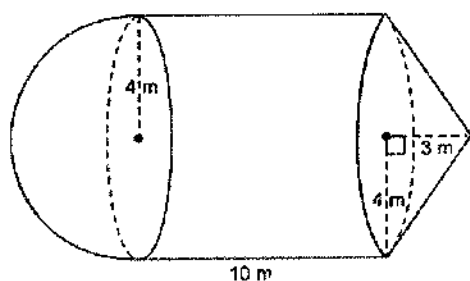10 cm

4 cm

SA=_____

Volume=_____

3.

3 mm

height
9 mm

diameter = 7mm

SA=_____

Volume=_____

4.

4 m

3 m

4 m

10 m

SA = _____

Volume=_____

5.

25 cm

18 cm

48 cm

SA=_____

Volume=_____

6.

35 cm

42 cm

9 cm

SA=_____

Volume=_____

7.

5

2

SA=_____

Volume=_____

8.

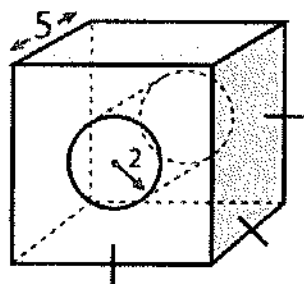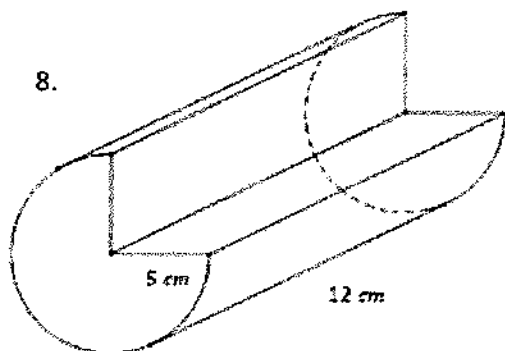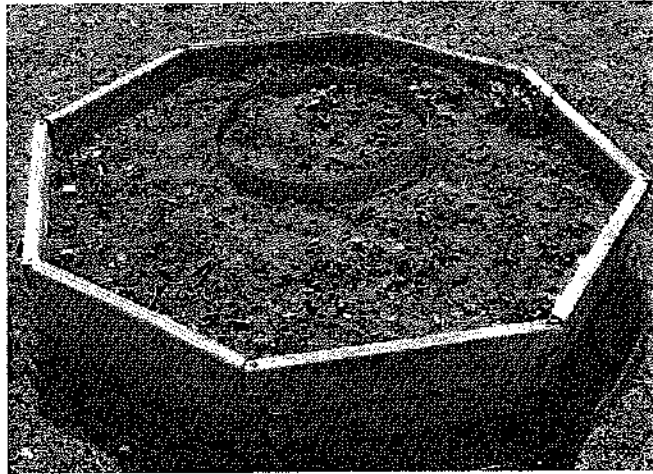5 cm

12 cm
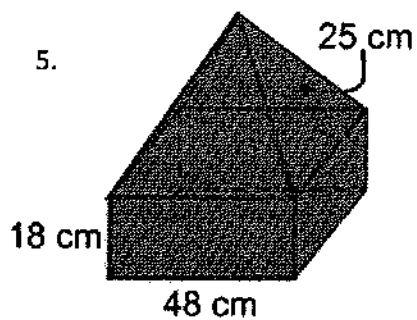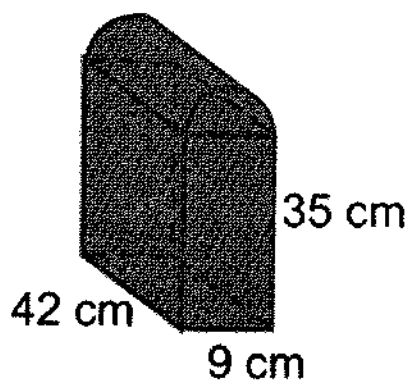
SA=_____

Volume=_____

Volume Practice

1.) You are designing a garden for the school and you want to make octagonal prisms. Each side will be 18in. long and the depth of the box will be 7 in. How much planting soil will you need to buy to fill it up?

2.) You are going to make a total or 6 boxes. How much soil will you need total?

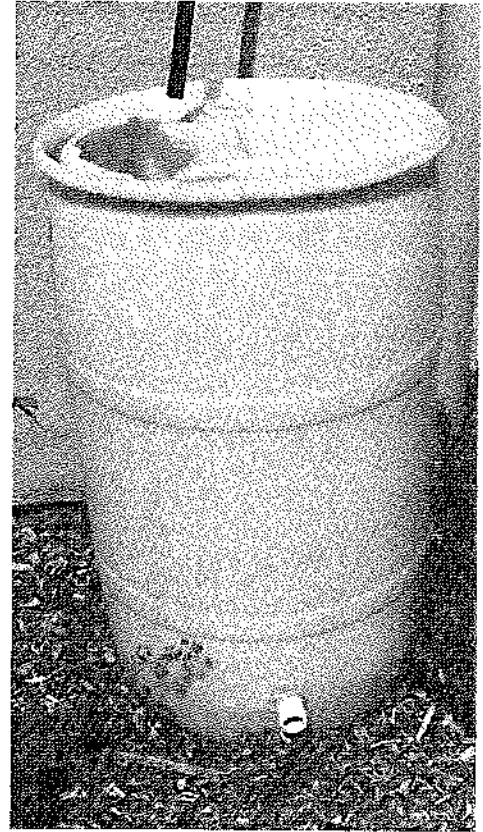3.) Here is the soil you want from Home Depot. How much will it cost to finish the project?

Kellogg Garden Organics 3 cu. ft.
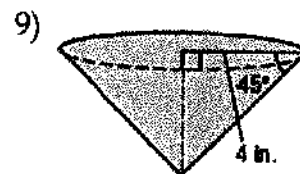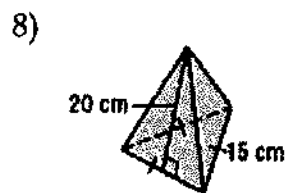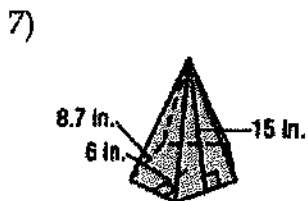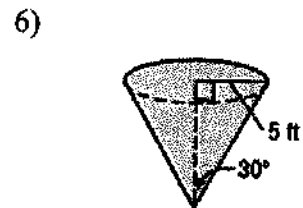Raised Bed and Potting Mix Premium
Outdoor Container Mix
Model# 649
★ ★ ★   (118)
$9.97

4.) You are using a rain barrel to collect rain off of your roof When it rains outside. The barrel is 3 feet high and has A diameter of 1.5 feet. How much water can it hold when it is full?
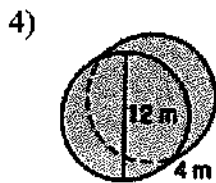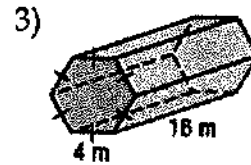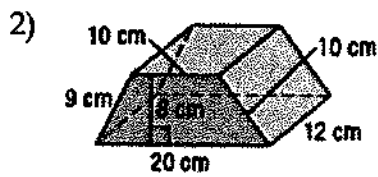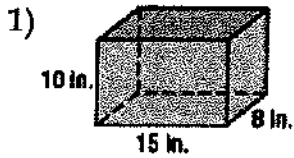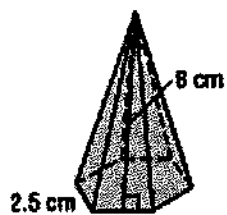

5.) Your roof is a rectangle with a length or 120 feet and a width of 55 feet. If all of the rain off the roof runs into the rain barrel, how many inches of rain will it take to fill the barrel?
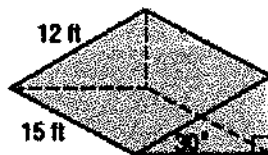
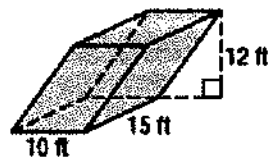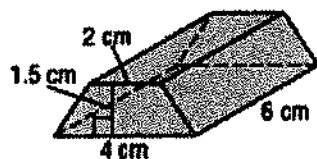**For questions 1-12 Find the lateral area and the surface area.**

1)

10 in.
8 in.
15 in.

2)

10 cm
10 cm
9 cm
8 cm
12 cm
20 cm

3)

4 m
18 m

4)

12 m
4 m

5)

2 m
1 m

6)

5 ft
30°

7)

8.7 in.
6 in.
15 in.

8)

20 cm
15 cm

9)

45°
4 in.

10)

8 cm

2.5 cm

11)

12 ft

15 ft

30°

12)

12 ft

10 ft

15 ft
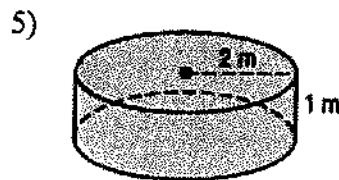
For questions 13-22 Find the volume.

13)

2 cm

1.5 cm

4 cm

6 cm

14)

1.5 ft

12 ft

15)

13 cm

10 cm

16)

10 ft

15 ft

12 ft

17)

12 ft

15 ft

30°

18)

13 m

3 m

5 m

19)

18 ft

regular
hexagon

6 ft

20)

16 in.

15 in.

15 in.

21)

8 ft

10 ft

22)

18 yd 45°

20 yd
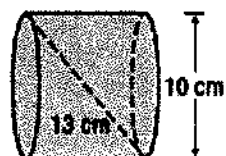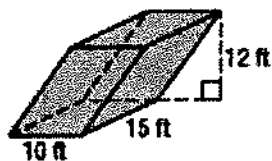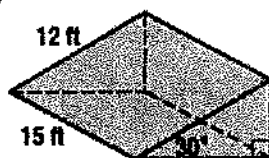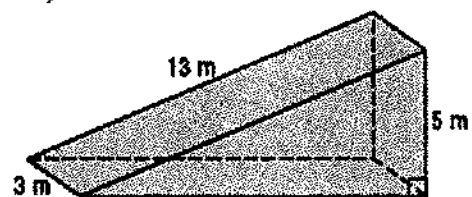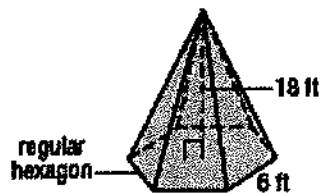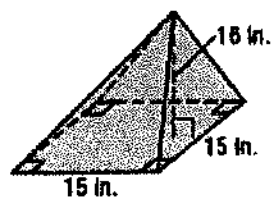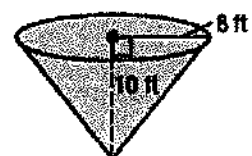
23) Find the surface area.

5 m

24) Find the surface area of a hemisphere, if the area of the great circle is 4π ft^2

25) Find the surface area.

9 cm

26) Find the volume

16 in.

27) Find the volume.

32 m

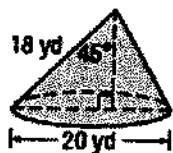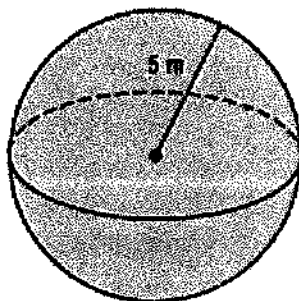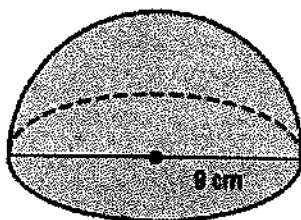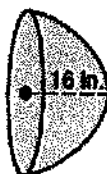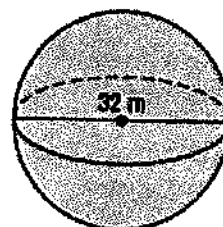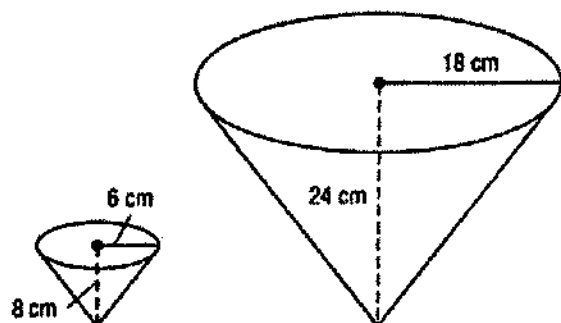28) Find the volume of a hemisphere if the diameter is 48yd.

2) Two similar pyramids have heights of 4 inches and 7 inches. What is the ratio of the volume of the small pyramid to the volume of the large pyramid.

30) Two similar cylinders have surface areas of 40π square feet and 90π square feet. What is the ratio of the height of the large cylinder to the height of the small cylinder.

Determine whether each pair of solids is *similar, congruent,* or *neither.* If the solids are similar, state the scale factor of the smaller solid to the bigger solid.

31)

32)

33) Two similar pyramids have heights of 4 inches and 7 inches What is the ratio of the volume of the small pyramid to the volume of the large pyramid?
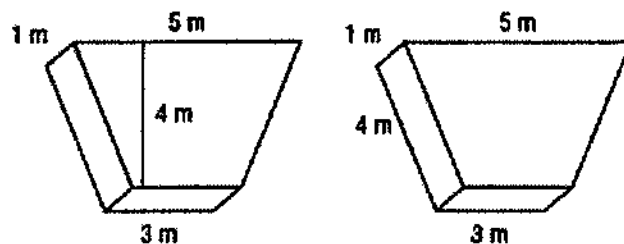
34) Two similar ice cream cones are made of a half sphere on top and a cone on bottom. They have radii of 1 inch. and 1.75 inches respectively. What is the ratio of the volume of the small ice cream cone to the volume of the large ice cream cone? Round to the nearest tenth.