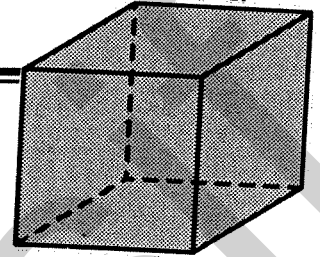
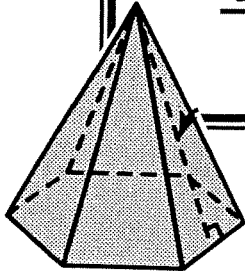


NAME: \_\_\_\_\_

DATE: \_\_\_\_\_

# **TOTAL SURFACE** **AREA**



**LATERAL AREA OF A SOLID:**

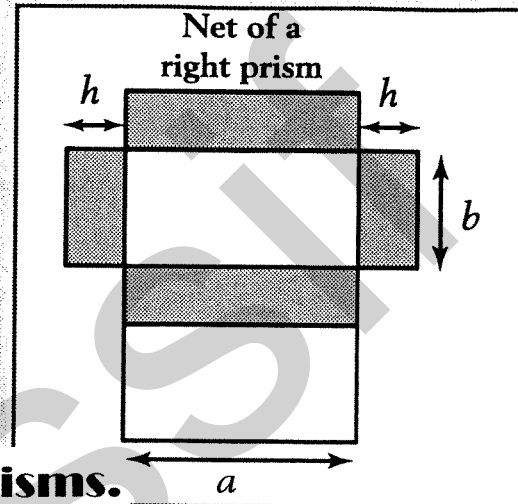
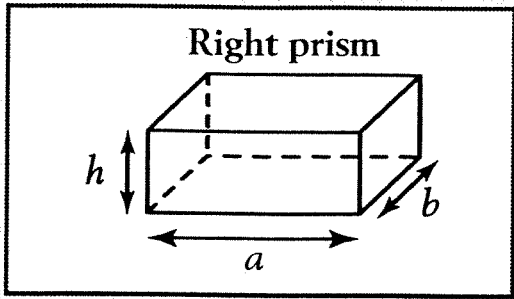
**SURFACE AREA OF A SOLID:**

**Area of Regular Shapes**

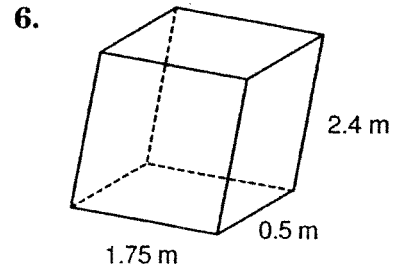
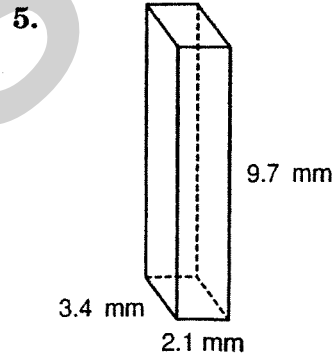
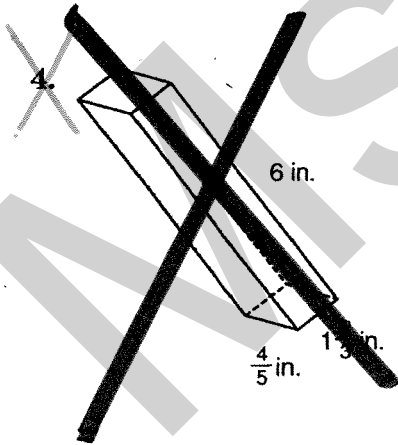
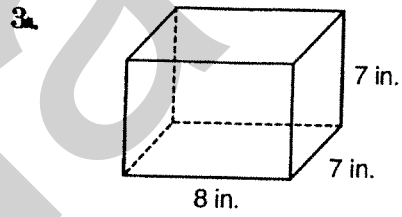
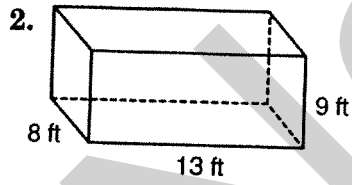
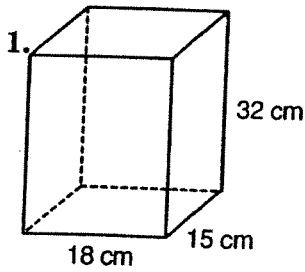
- **CUBES**
- **PRISMS**
- **CYLINDERS**
- **PYRAMIDS**
- **CONES**
- **SPHERES**

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# Surface Area of Prisms

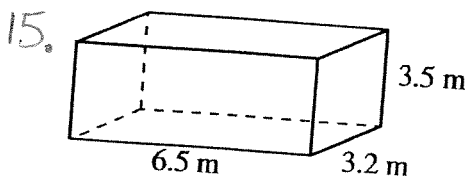
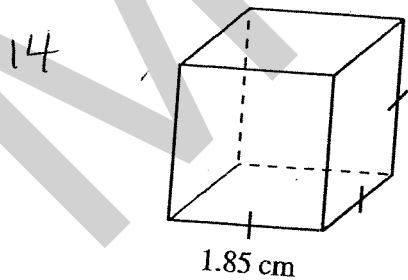
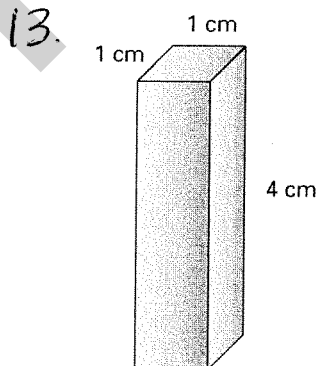
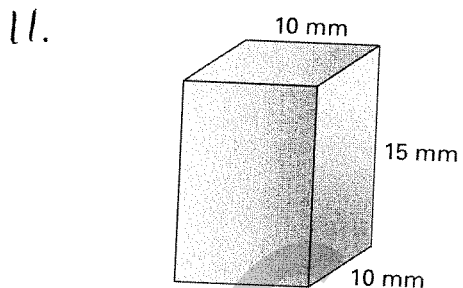
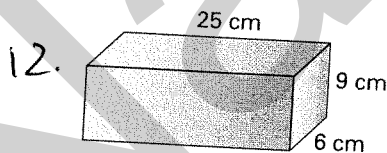
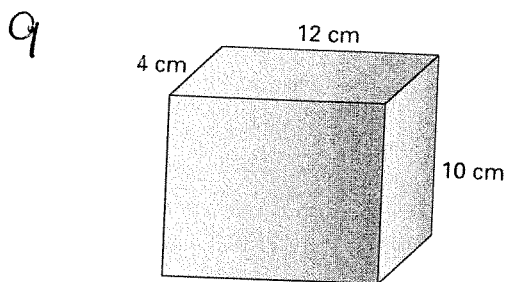
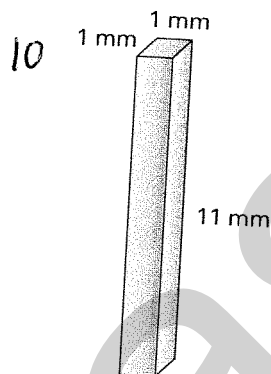
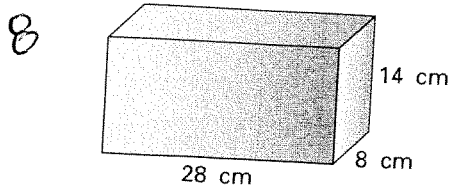
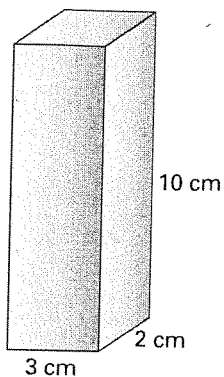


**Calculate the area of the following prisms.**



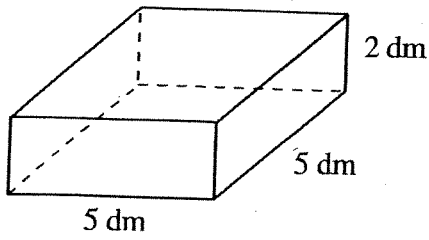
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7 Determine the surface area of each of the following right prisms.

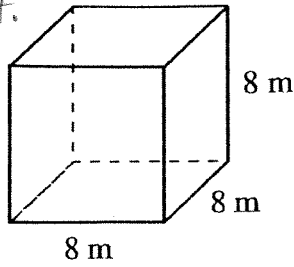


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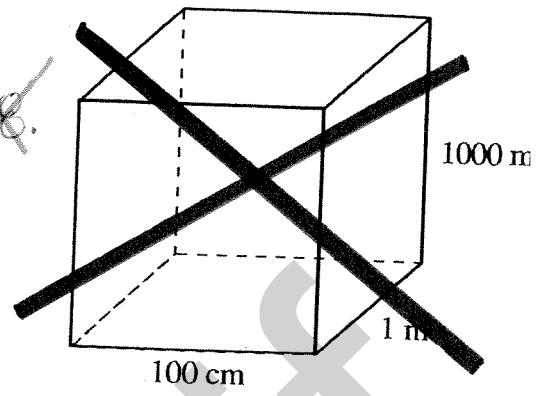
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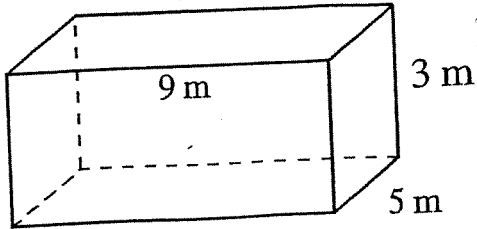
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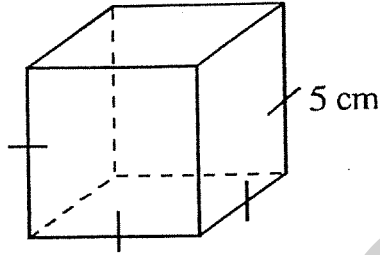
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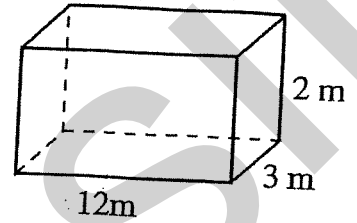
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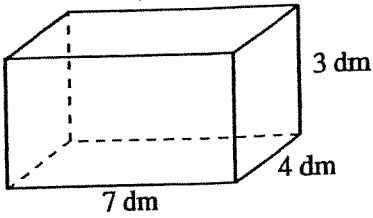
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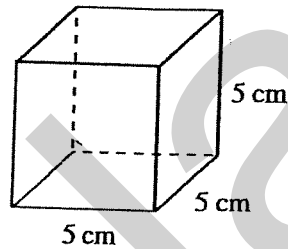
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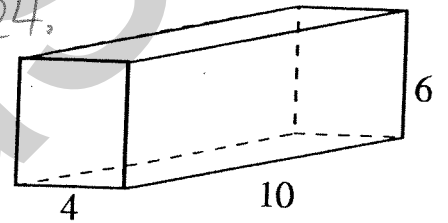
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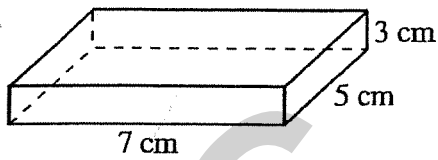
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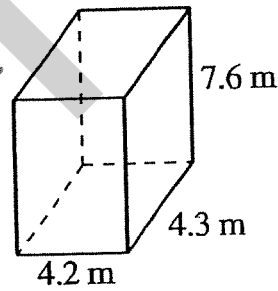
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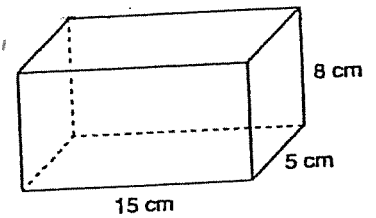
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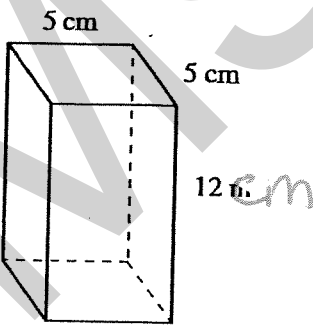
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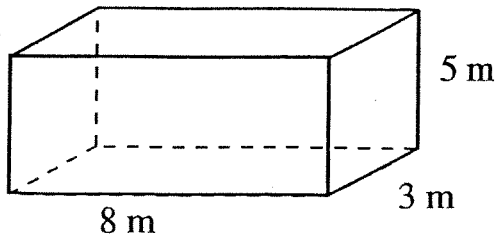
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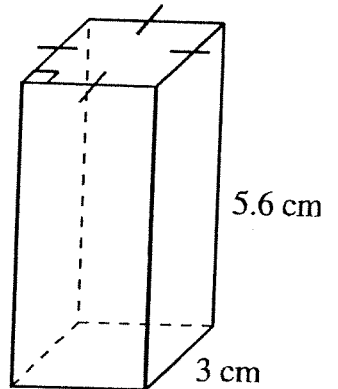
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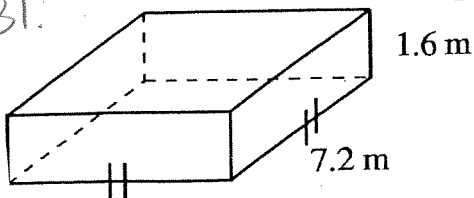
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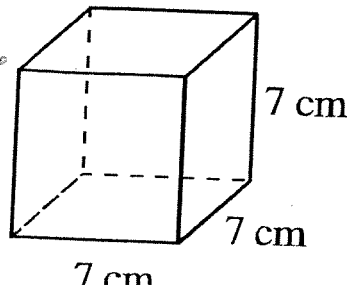
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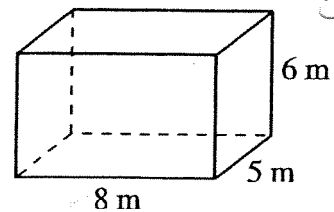
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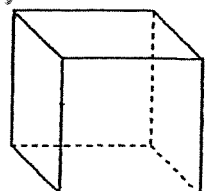
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33.



34.

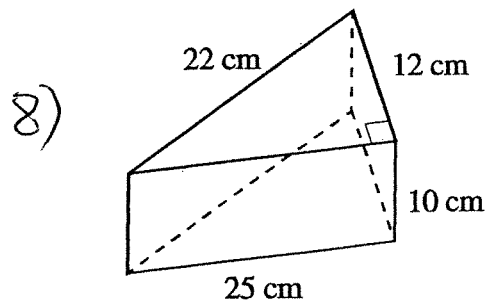
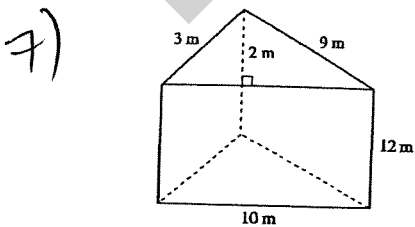
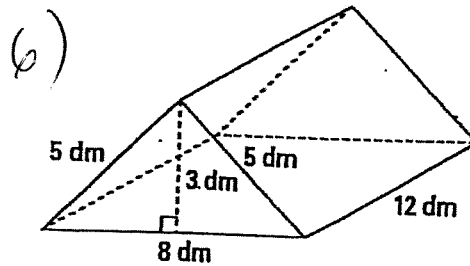
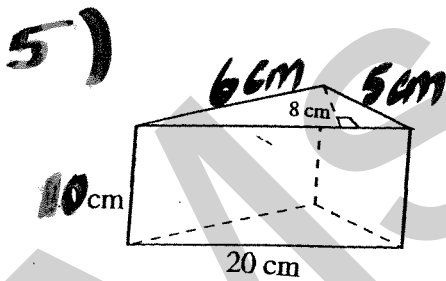
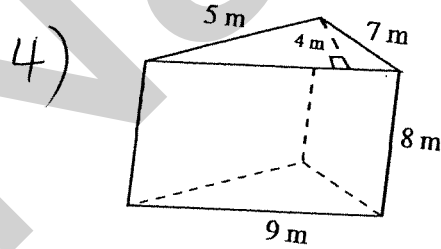
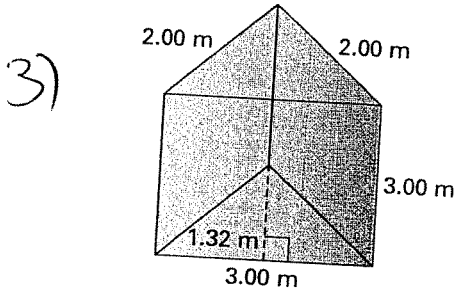
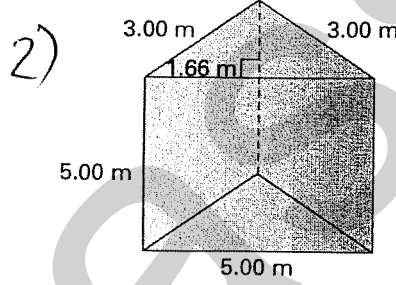
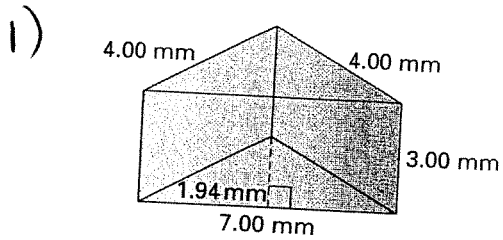
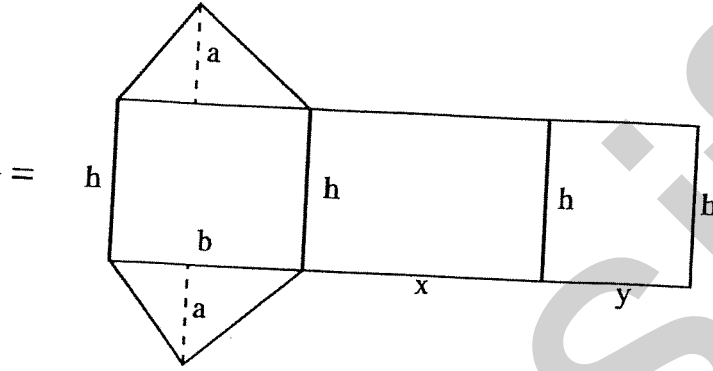
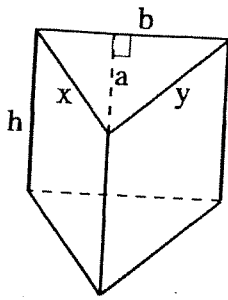


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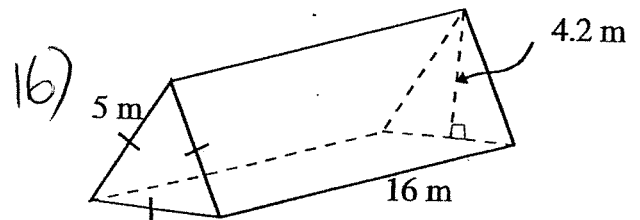
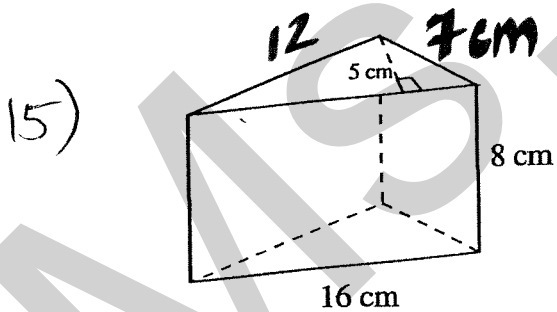
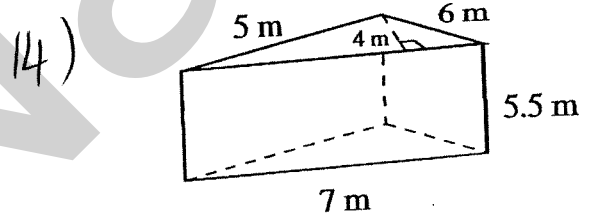
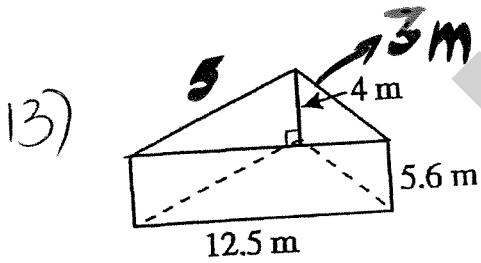
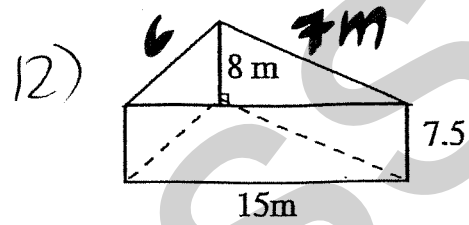
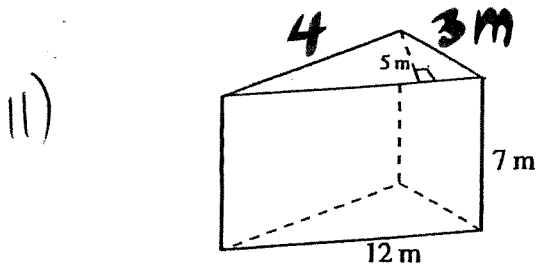
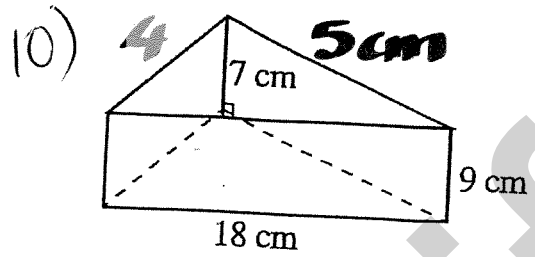
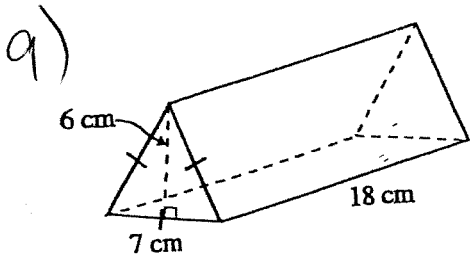


# SURFACE AREA OF TRIANGULAR PRISMS.

**Find the surface area of the following figures.**

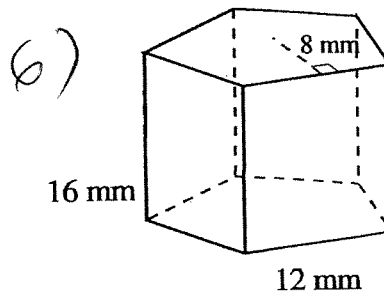
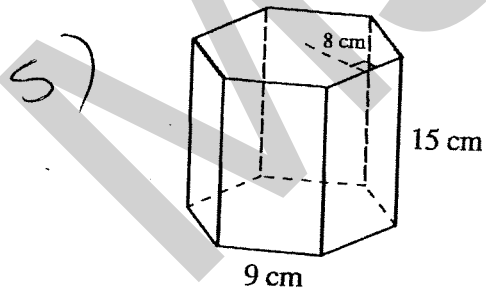
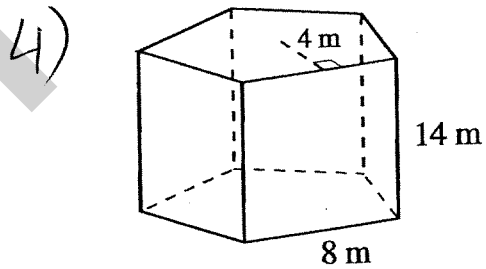
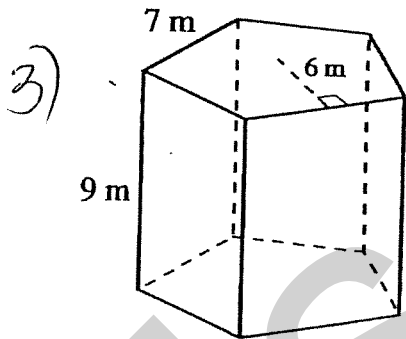
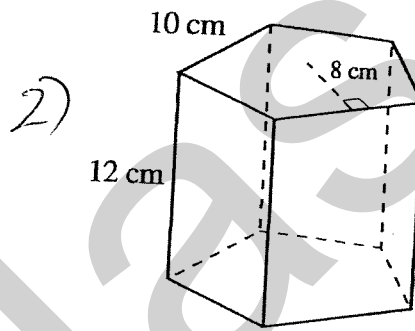
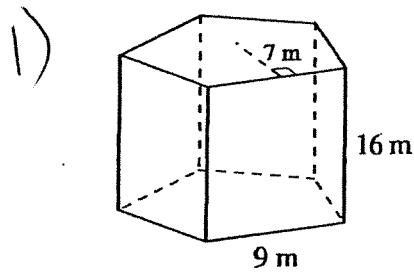
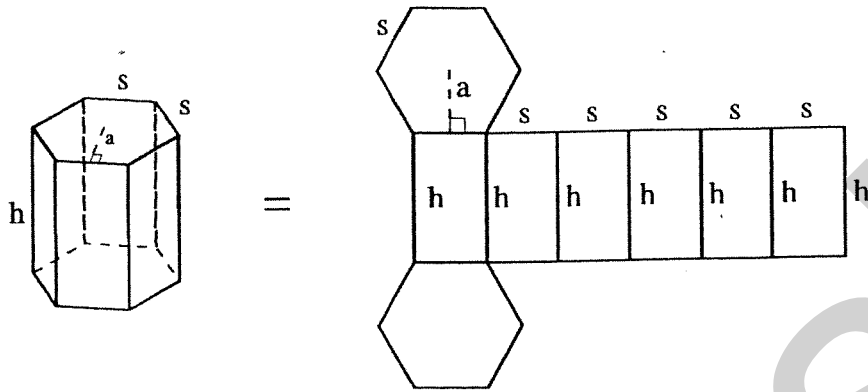


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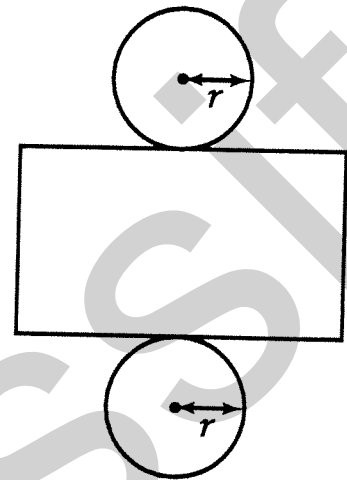
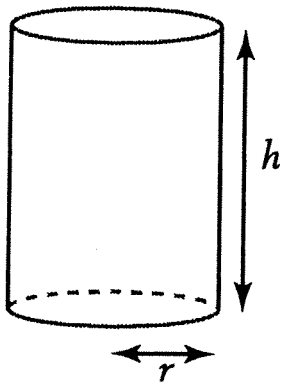
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# Surface Area of Hexagonal Prism

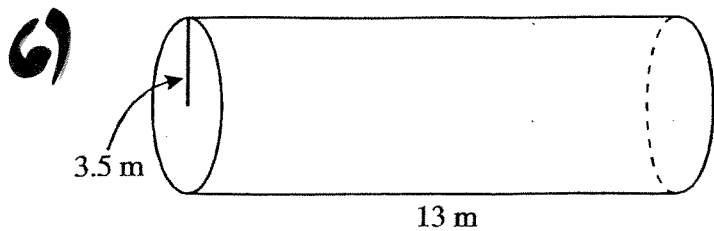
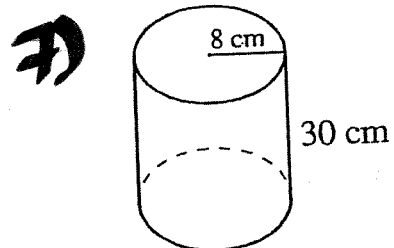
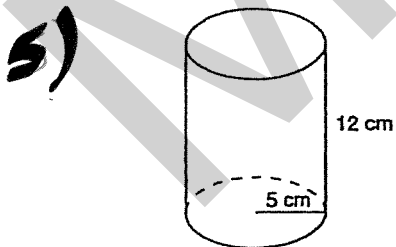
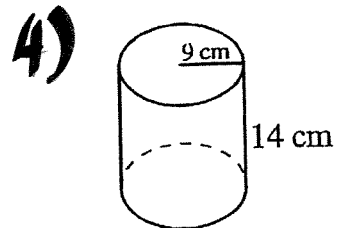
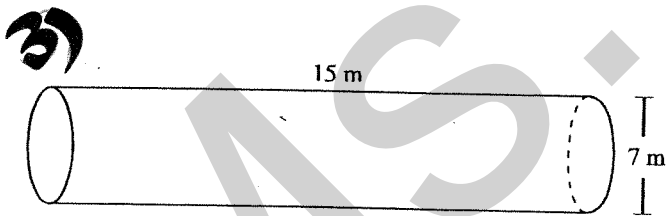
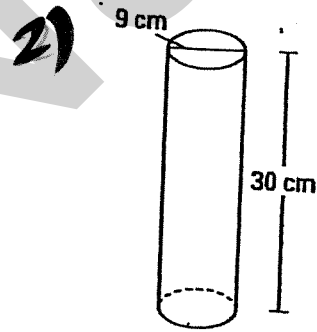
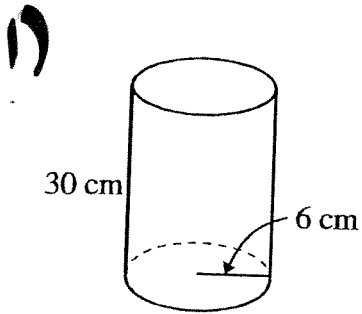


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# Surface Area of Cylinders



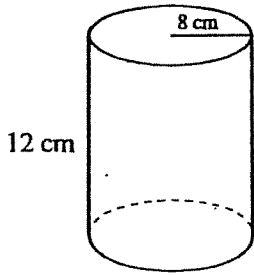
**Calculate the area of the following cylinders.**



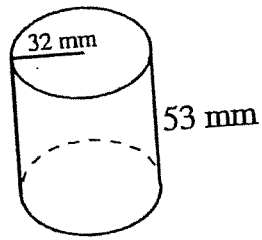
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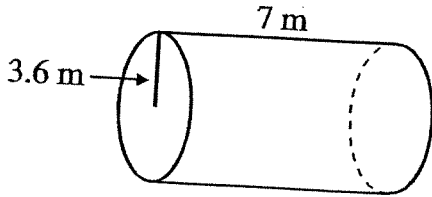
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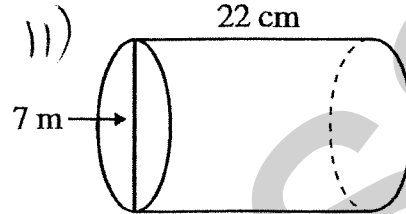
9)



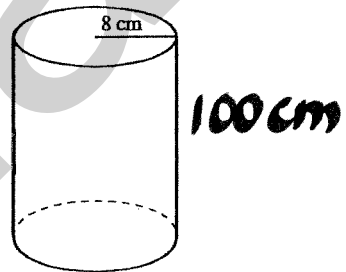
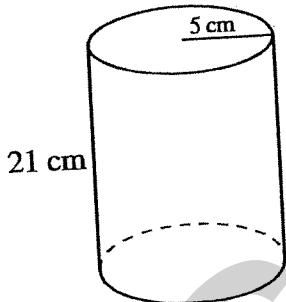
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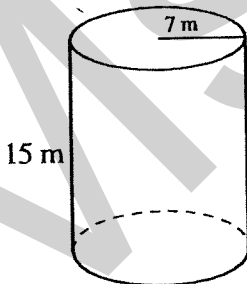
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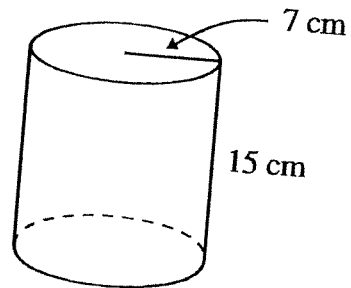
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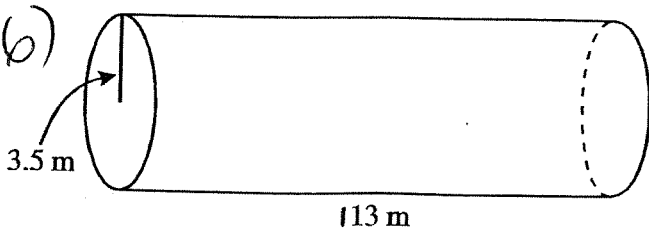
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15)



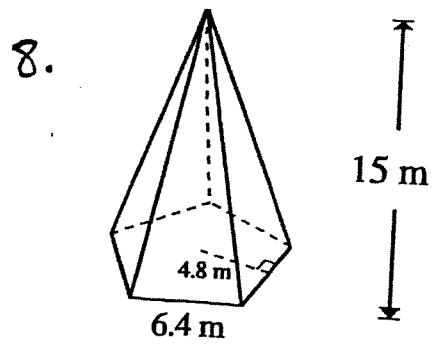
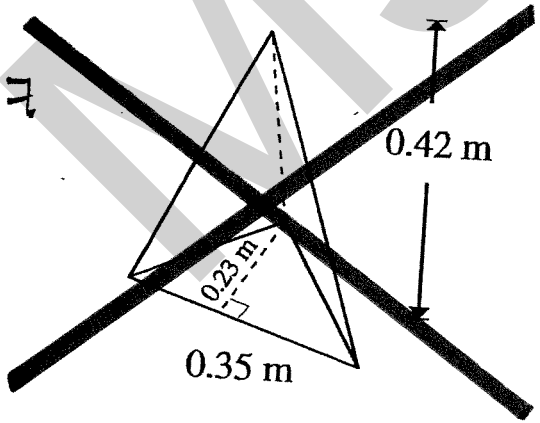
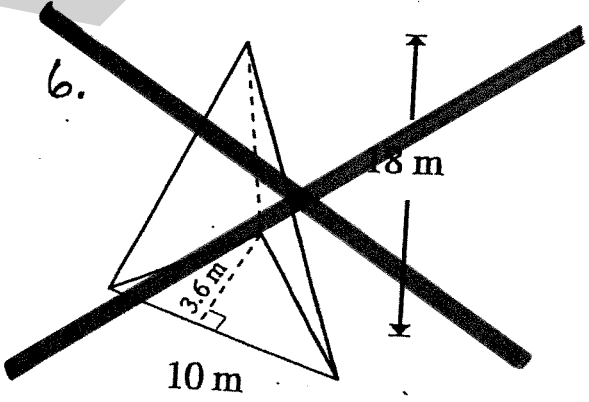
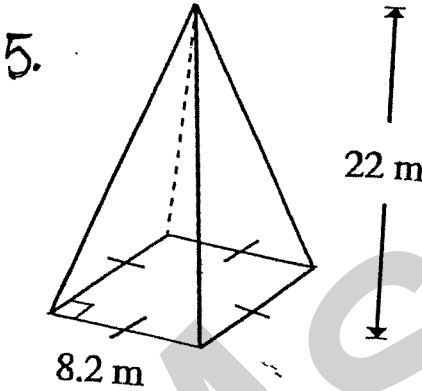
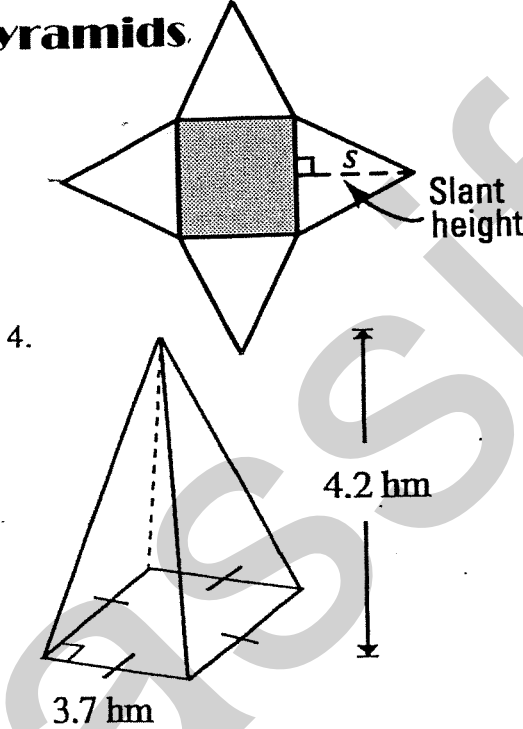
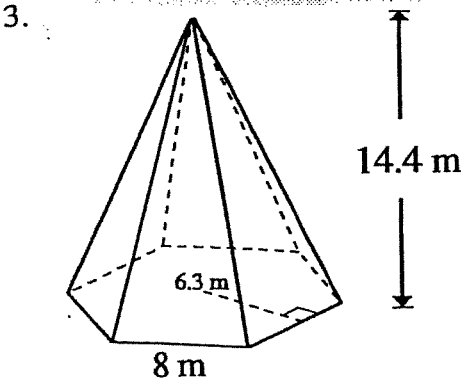
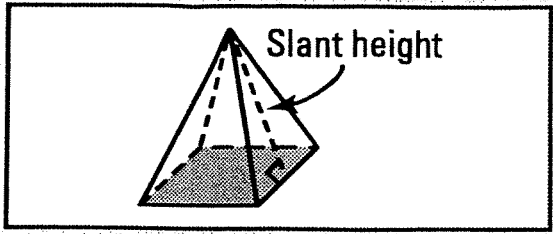
16)



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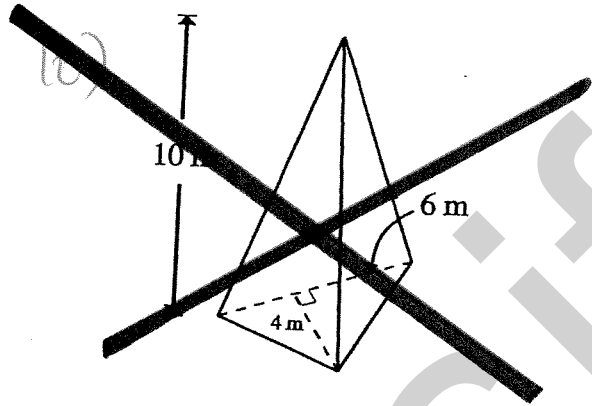
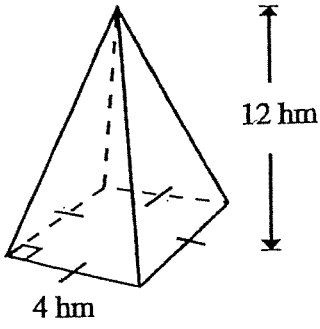
# Surface Area of Pyramids

**Calculate the area of the following pyramids.**

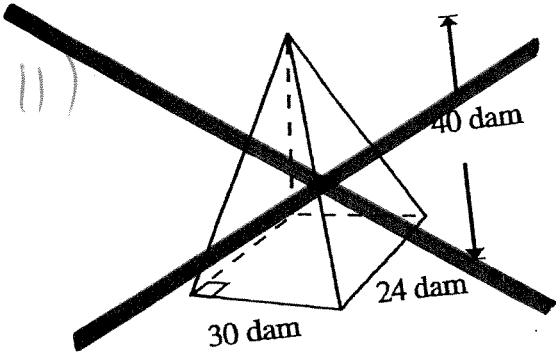


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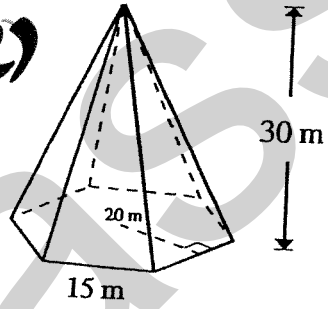
9)



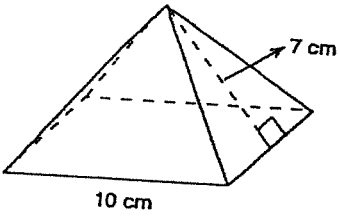
11)



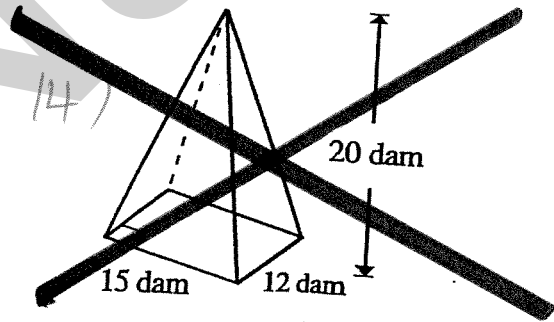
12)



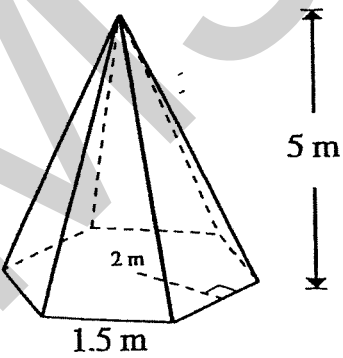
13)



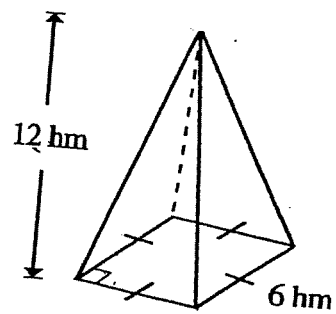
14)



15)

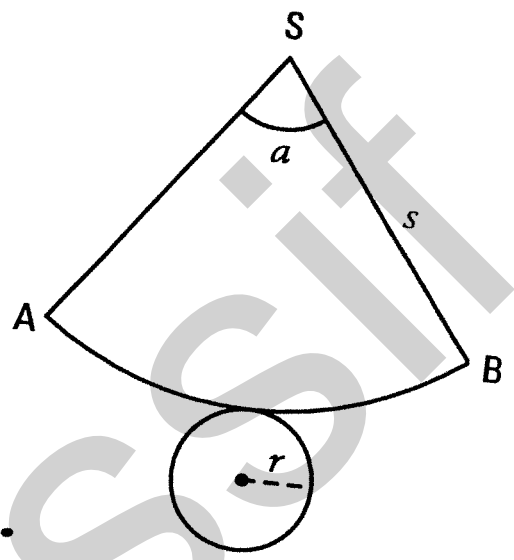
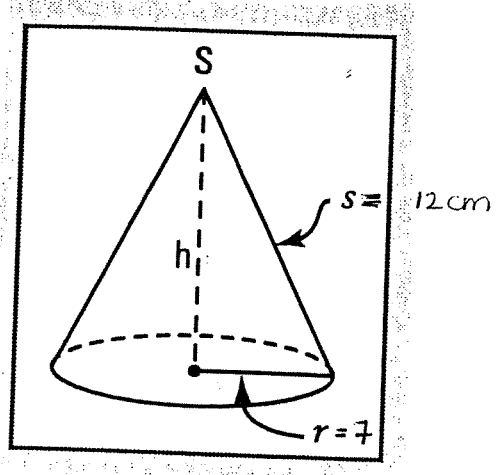


16)

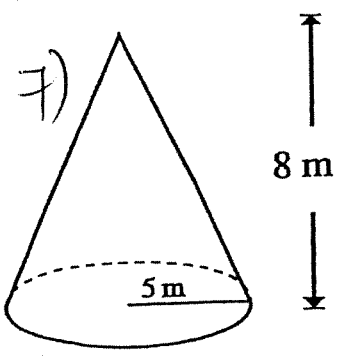
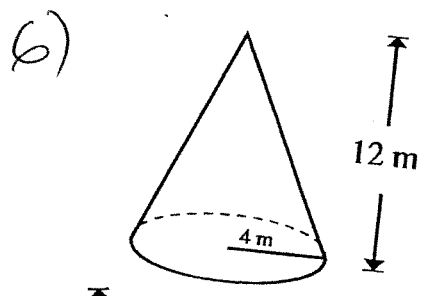
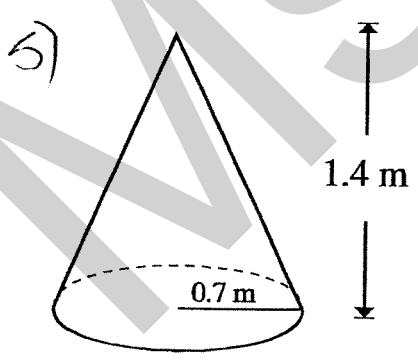
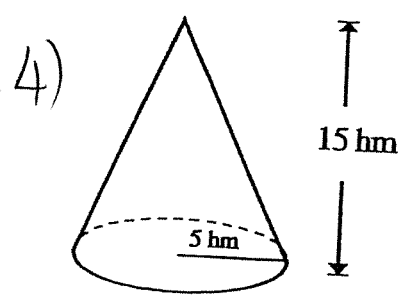
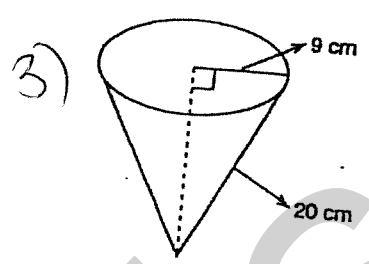
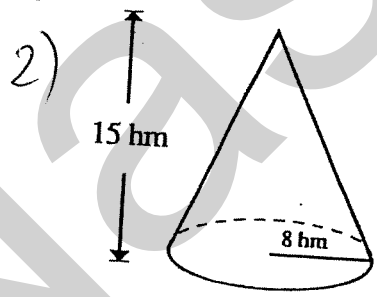
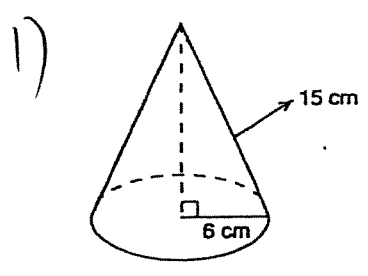


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# Surface Area of Cones



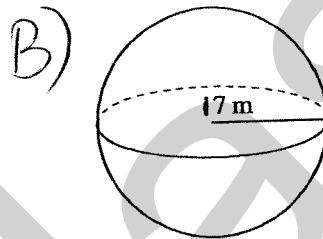
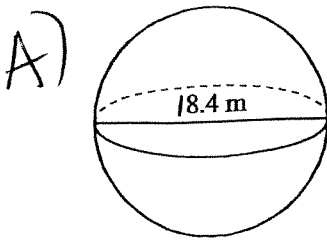
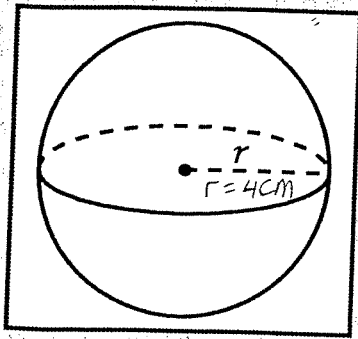
**Calculate the area of the following cones.**



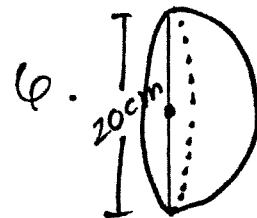
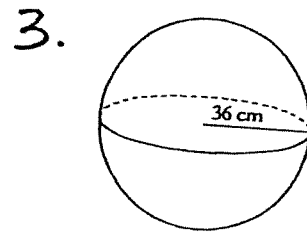
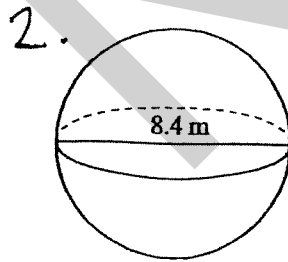
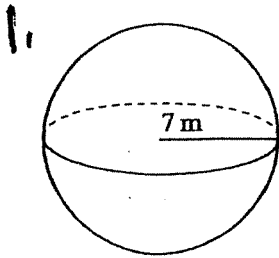
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# Surface Area of Spheres



Find the surface area of the spheres below.



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## Notes & Formulas for Volume & Area of Solids

Solid Shape	Volume	Lateral Area	*Total Area
Sphere			
Pyramid or Cone			
Prism or Cylinder			

\* also known as surface area

- $a$  = apothem
- $A_b$  = Area of the base
- $b$  = base
- $B$  = biggest base
- $d$  = shortest diagonal
- $D$  = longest diagonal
- $h$  = height
- $h_s$  = slant height
- $l$  = length
- $P_b$  = perimeter of base
- $r$  = radius
- $s$  = side
- $w$  = width
- $\pi$  = Pi (approximately 3.14)

Shape	$P_b$	$A_b$
Circle		
Triangle		
Square		
Rectangle		
Parallelogram		
Rhombus		
Trapezoid		
???agon		

Circumference (perimeter) of a circle:

$$2\pi r \text{ or } \pi d \text{ where } d = \text{diameter}$$

Finding lateral and total area of irregular pyramids.

- Find the slant height of each triangle that makes up the sides of the pyramid. The slant height can then be used as the height of each triangle for calculating the area. This may involve the use of the *Pythagorean Theory* ( $a^2 + b^2 = c^2$  where  $a$  &  $b$  represent the shorter sides (legs) of a right triangle and  $c$  the hypotenuse or longest side of a right triangle (the side across from the right angle)).
- Lateral area in this case would be the sum of the areas of all the triangles involved, and total area would be the lateral area plus the area of the base.

# Notes & Formulas for Volume & Area of Solids

## Conversions

King Harry died and mother didn't care much!

km   hm   dam   m   dm   cm   mm

These are linear measurements. Converting is one jump per unit to the left or right (multiplying or dividing by 10). For example,  $10 \text{ m} = 1 \text{ dam} = 100 \text{ dm}$

---

km<sup>2</sup>   hm<sup>2</sup>   dam<sup>2</sup>   m<sup>2</sup>   dm<sup>2</sup>   cm<sup>2</sup>   mm<sup>2</sup>

These are measurements of area. Converting is two jumps per unit to the left or right (multiplying or dividing by 100). For example,  $10 \text{ m}^2 = 0.1 \text{ dam}^2 = 1000 \text{ dm}^2$

---

km<sup>3</sup>   hm<sup>3</sup>   dam<sup>3</sup>   m<sup>3</sup>   dm<sup>3</sup>   cm<sup>3</sup>   mm<sup>3</sup>

These are measurements of volume. Converting is three jumps per unit to the left or right (multiplying or dividing by 1000). For example,  $10 \text{ m}^3 = 0.01 \text{ dam}^3 = 10000 \text{ dm}^3$

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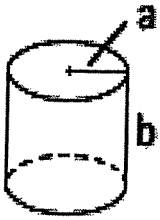
$$1 \text{ Litre (1 L)} = 1 \text{ dm}^3$$

Jumping from one table to another:

km<sup>3</sup>   hm<sup>3</sup>   dam<sup>3</sup>   m<sup>3</sup>   dm<sup>3</sup>   cm<sup>3</sup>   mm<sup>3</sup>

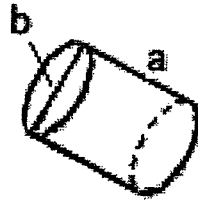
kL   hL   daL   L   dL   cL   mL

5)



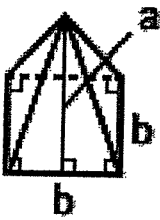
$$a = 5 \text{ cm}$$
$$b = 10 \text{ cm}$$

6)



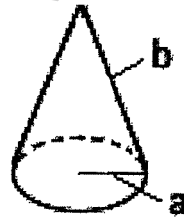
$$a = 10 \text{ dm}$$
$$b = 8 \text{ dm}$$

7)



$$a = 6 \text{ m}$$
$$b = 4 \text{ m}$$

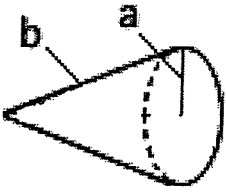
8)



$$a = 2 \text{ cm}$$
$$b = 6 \text{ cm}$$

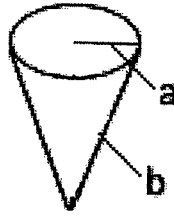
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9)



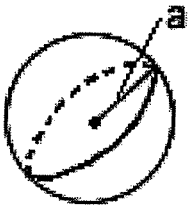
$$a = 3 \text{ km}$$
$$b = 7 \text{ km}$$

10)



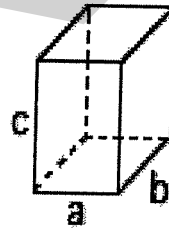
$$a = 4 \text{ mm}$$
$$b = 10 \text{ mm}$$

11)



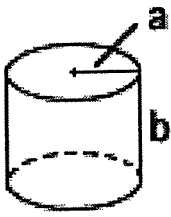
$$a = 3 \text{ m}$$

12)



$$a = 3 \text{ cm}$$
$$b = 4 \text{ cm}$$
$$c = 5 \text{ cm}$$

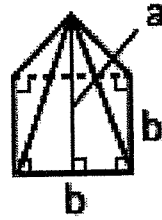
13)



$$a = 3.5 \text{ dm}$$

$$b = 4.2 \text{ dm}$$

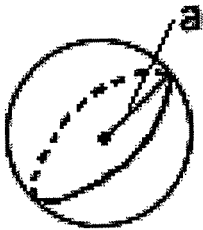
14)



$$a = 3.8 \text{ km}$$

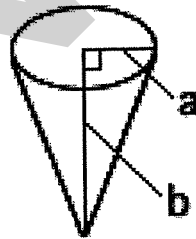
$$b = 2.6 \text{ km}$$

15)



$$a = 2.2 \text{ cm}$$

16)



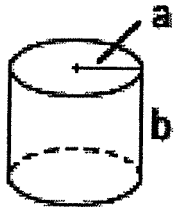
$$a = 1.5 \text{ dm}$$

$$b = 3.5 \text{ dm}$$

(height  $h$ , NOT  
slant height  $s$ )

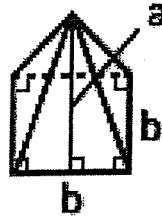


13)



$$a = 3.5 \text{ dm}$$
$$b = 4.2 \text{ dm}$$

14)



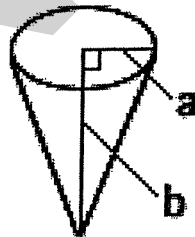
$$a = 3.8 \text{ km}$$
$$b = 2.6 \text{ km}$$

15)



$$a = 2.2 \text{ cm}$$

16)

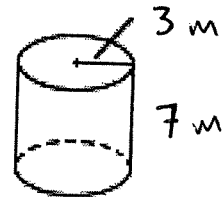
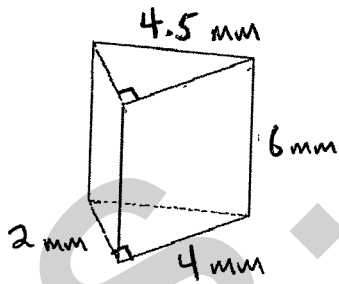
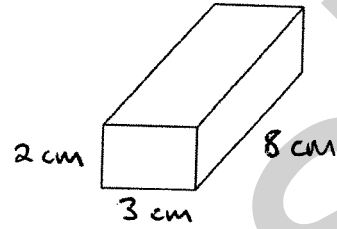
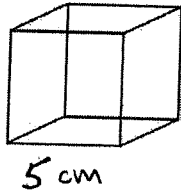


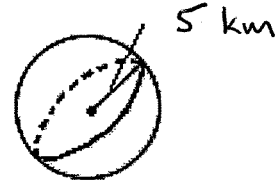
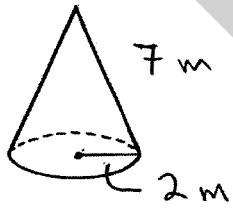
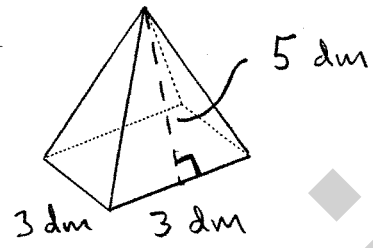
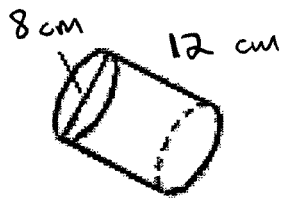
$$a = 1.5 \text{ dm}$$
$$b = 3.5 \text{ dm}$$

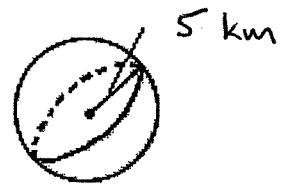
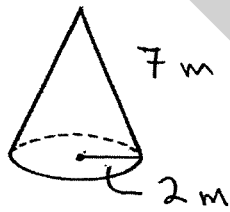
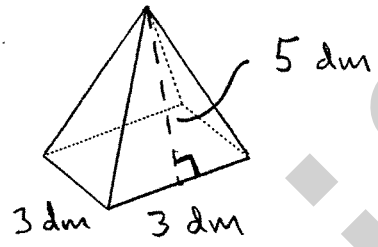
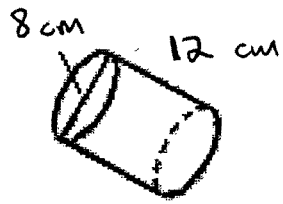
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## Surface Area of Solids

For each of the following solids, find the area of the bases, the lateral area, and the total surface area. Round your answers to the nearest tenth. Use  $\pi = 3.14$ .



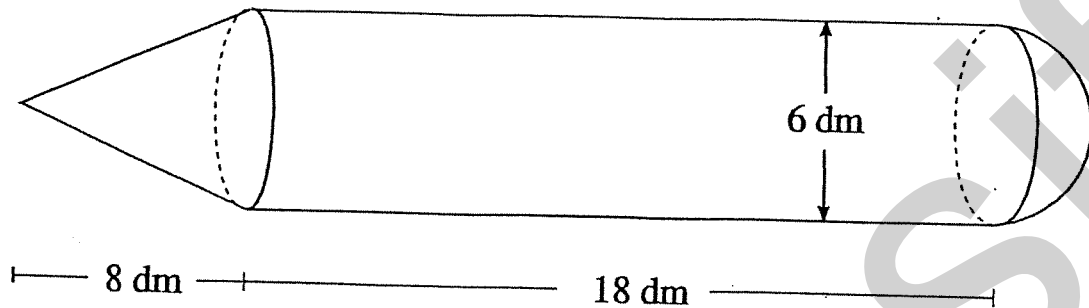




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## Area of Decomposable Solids

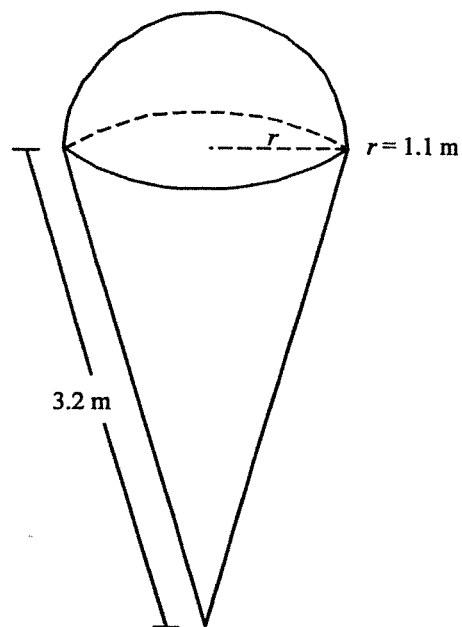
① What is the surface area of the shape below?



② A milk bar has a sign in the shape of a huge ice cream cone. The sign is made up of a cone and a hemisphere, as shown in the diagram below. The owners of the milk bar want to change the colour of the entire sign.

One litre of paint covers 6 square metres and costs \$12.

How much will it cost to paint the sign?

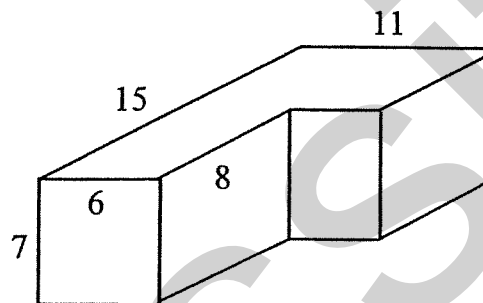


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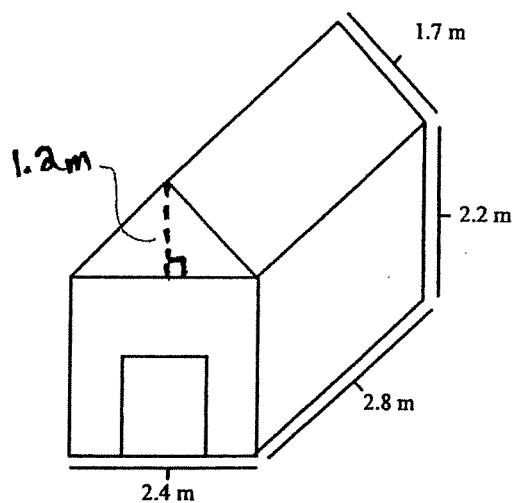


## Area of Decomposable Solids

- 1) A group of students is to cover all the surfaces of the box below with cloth.  
What is the total area of the surface to be covered? (All measurements are given in cm)



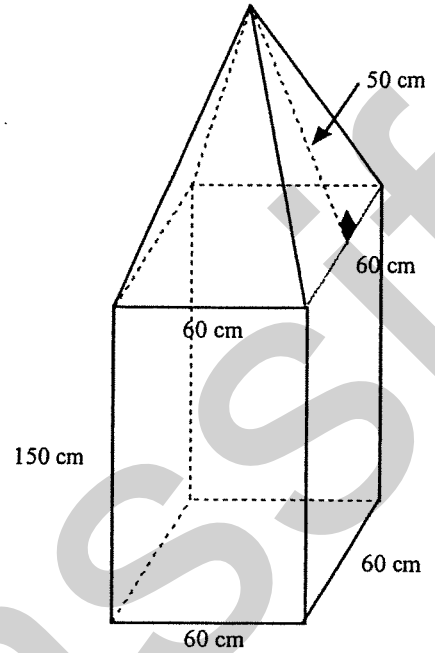
- 2) Eric wants to paint the exterior of his gardening shed (everything except the bottom).  
If 1 litre of paint covers  $10 \text{ m}^2$  of wood, how many litres of paint does he need?



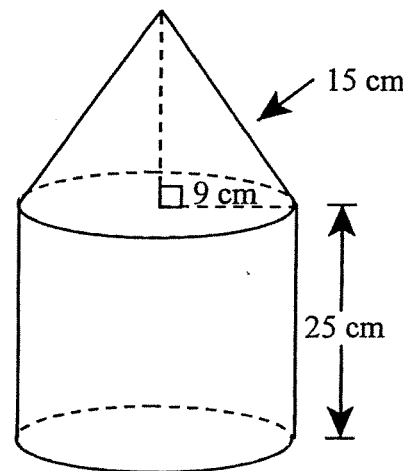
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- 3) The monument to the right has the shape of a square-based pyramid on top of a right prism with a square base.

What is the total surface area of the monument?  
(Base not included!)



- 4) What is the total surface area of the following solid?



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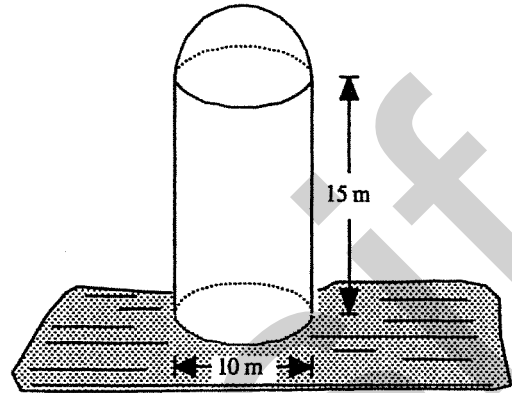
- 5) You have to paint the outer surface of a silo shaped like a cylinder topped with a hemisphere.

The bottom of the silo will not be painted.

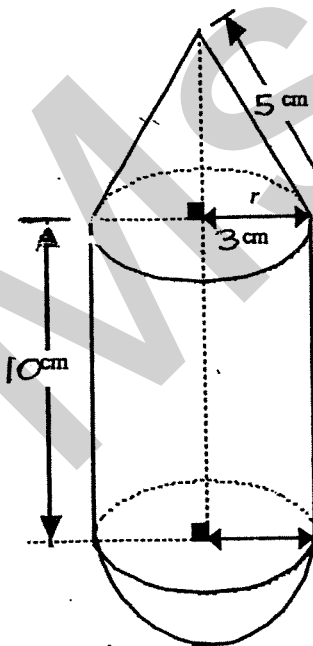
The measurements of the silo are given in the diagram on the right.

One litre of paint covers 20 square metres and costs \$15.

How much will it cost to paint the silo?



- 6) A military engineer wants to construct a model of the following high-calibre bullet out of a thin sheet of copper. What area of copper sheeting is needed?



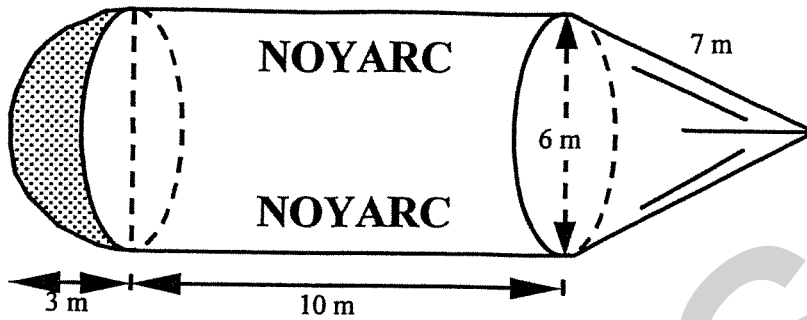
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7)

To advertise its "Noyarc" pencils, the company that makes them ordered a blimp. This blimp is formed from a hemisphere, a right cylinder and a right cone.

The dimensions of the blimp are shown below.

What is the total surface area of the blimp?

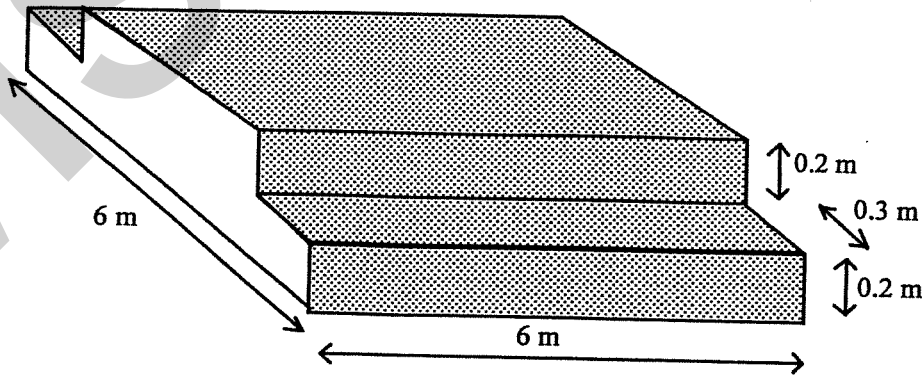


8)

Final preparations are under way for a school's annual drama presentation.

Robert's team has to install a green carpet on the symmetrical podium where the play will be staged. The surface to be carpeted is shaded in the diagram below. There is no carpet under the podium or on the sides.

What area of carpeting will be required to cover the podium?



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## AREA AND VOLUME GOING BACKWARDS

1. The volume of a rectangular prism is  $60 \text{ cm}^3$ . The height is 5 cm, the width is 3 cm. Find the length.
2. The volume of a rectangular prism is  $386 \text{ cm}^3$ . If the area of the base is  $50.24 \text{ cm}^2$ . Find the height.
3. The volume of a cylinder is  $351.68 \text{ cm}^3$ . If the area of the base is  $50.24 \text{ cm}^2$ , find the height.
4. The volume of a cylinder is  $452.16 \text{ cm}^3$ . The area of the base is  $28.26 \text{ cm}^2$ . Find the height.
5. The volume of a cylinder is  $6154.4 \text{ cm}^3$ . The height is 10 cm. Find the area of the base and then find the radius.
6. The volume of a cylinder is  $1356.48 \text{ cm}^3$ . The height is 12 cm. Find the area of the base and then find the radius.
7. The volume of a cylinder is  $5024 \text{ cm}^3$ . The height is 13 cm. Find the radius.
8. The volume of a cylinder is  $2034.72 \text{ cm}^3$ . The height is 9 cm. Find the radius.
9. The volume of a pyramid is  $24 \text{ cm}^3$ . The height is 4 cm and the width is 3 cm. Find the length.
10. The volume of a square based pyramid is  $720 \text{ cm}^3$ . The length and width are 12 cm. Find the height.
11. The volume of a pyramid is  $1998 \text{ cm}^3$ . The length is 37cm, and the width is 9 cm. Find the height.
12. The volume of a pyramid is  $336 \text{ cm}^3$ . The length is 14 cm and the width is 8 cm. Find the height.
13. The volume of a cone is  $25.12 \text{ cm}^3$ . If the area of the base is  $12.56 \text{ cm}^2$ , find the height.
14. The volume of a cone is  $1017.3 \text{ cm}^3$ . If the area of the base is  $254.34 \text{ cm}^2$ , find the height.

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15. The volume of cone is  $78.5 \text{ cm}^3$ . If the height is 3 cm, find radius.
16. The volume of a cone is  $226.08 \text{ cm}^3$ . If the height is 6 cm, find the radius.
17. The volume of a cone is  $923.16 \text{ cm}^3$ . If the height is 18 cm, find the radius.
18. The volume of a cone is  $200.96 \text{ cm}^3$ . If the height is 12 cm, find the radius.
19. The volume of a square-based pyramid is  $2160 \text{ cm}^3$ . The height is 15 cm. Find the length of one side of the base.
20. The volume of a square-based pyramid is  $480 \text{ cm}^3$ . If the height is 10 cm, find the length of one side of the base.
21. A prism with square base has a volume of  $648 \text{ cm}^3$  and a height of 8 cm. Find the length of one side of the base.
22. Calculate the height of a cylindrical oil tank if the area of the base is  $40 \text{ dm}^2$  and the volume is  $500 \text{ dm}^3$ .
23. What is the area of the base of a square-based pyramid with height of 12 cm whose volume is  $48 \text{ cm}^3$ ?
24. The volume of a cone is  $314 \text{ cm}^3$ . The height of the cone measures 12 cm. What is the measure of the diameter?
25. The volume of a cone is  $628 \text{ cm}^3$ . The height of the cone measures 24 cm. What is the measure of the diameter?

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