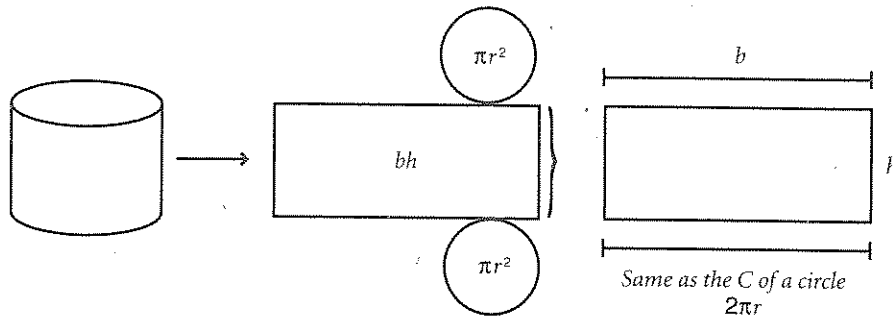


SURFACE AREA OF A CYLINDER

When you are looking for the surface area of a cylinder, you need to find the area of two circles (the bases), and the area of the curved surface that makes up the side of the cylinder. The area of the curved surface is hard to visualize when it is rolled up. Picture a paper towel roll. It has a circular top and bottom. When you unroll a sheet of the paper towel, it is shaped like a rectangle. The area of the curved surface is the area of a rectangle with the same height as the cylinder, and the base measurement is the same as the circumference of the circle base.



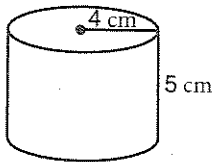
$$\begin{aligned} \text{Surface area of a cylinder} &= \text{area of two circles} + \text{area of rectangle} \\ &= 2\pi r^2 + bh \\ &= 2\pi r^2 + 2\pi rh \end{aligned}$$

Theorem: The surface area (S.A.) of a cylinder is determined by finding the sum of the area of the bases and the product of the circumference times the height.

$$S.A. = 2\pi r^2 + 2\pi rh$$

Examples: Find the surface area of each cylinder. Use 3.14 for π .

(a)

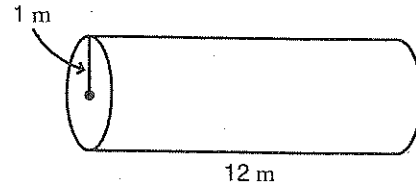


$$\begin{aligned} S.A. &= 2\pi r^2 + 2\pi rh \\ S.A. &\approx 2(3.14)(4)^2 + 2(3.14)(4)(5) \\ S.A. &\approx 100.48 + 125.6 \\ S.A. &\approx 226.08 \text{ cm}^2 \end{aligned}$$

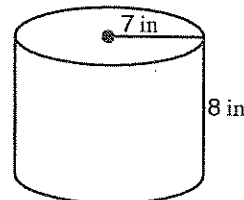
PRACTICE

Find the surface area of each cylinder shown or described.

_____ 9.



_____ 10.



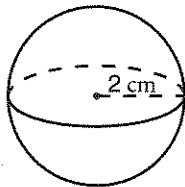
SURFACE AREA OF A SPHERE

A sphere is the set of all points that are the same distance from some point called the center. A sphere is most likely to be called a ball. Try to find an old baseball and take the cover off of it. (Make sure it does not have Mark McGwire's autograph on it first!) When you lay out the cover of the ball, it roughly appears to be four circles. Recall that the formula for finding the area of a circle is $A = \pi r^2$.

Theorem: The surface area (S.A.) formula for a sphere is four times π times the radius squared.

$$S.A. = 4\pi r^2$$

Example: Find the surface area of the sphere. Use 3.14 for π .



$$S.A. = 4\pi r^2$$

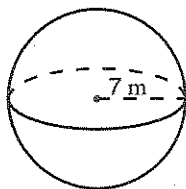
$$S.A. \approx (4)(3.14)(2)^2$$

$$S.A. \approx 50.24 \text{ cm}^2$$

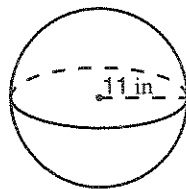
PRACTICE

Find the surface area of each sphere shown or described. Use 3.14 for π .

_____ 21.



_____ 22.

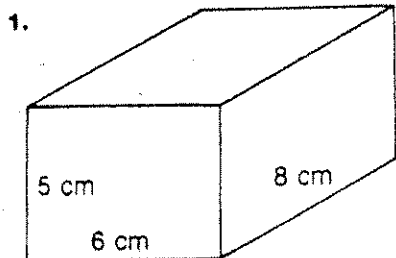


_____ 23. Sphere: $r = 16 \text{ cm}$

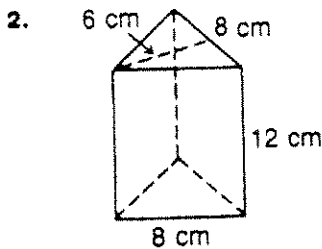
_____ 24. Sphere: $r = 10 \text{ ft}$

Surface Area of Space Figures

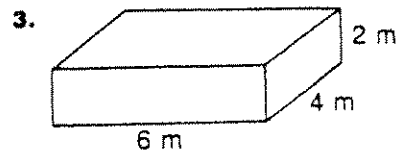
Find the total surface area of each prism.



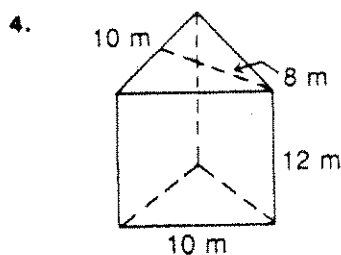
Surface area = _____



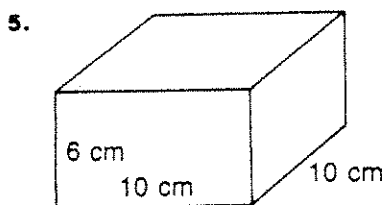
Surface area = _____



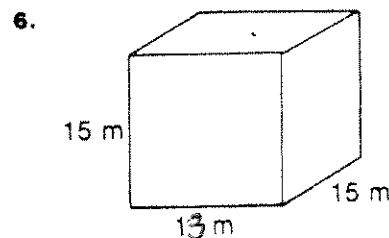
Surface area = _____



Surface area = _____

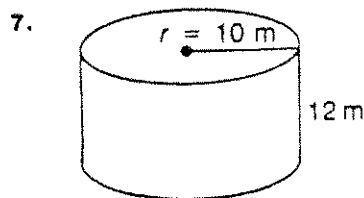


Surface area = _____

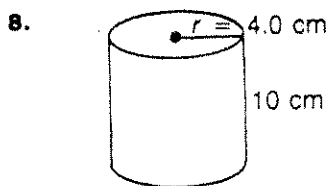


Surface area = _____

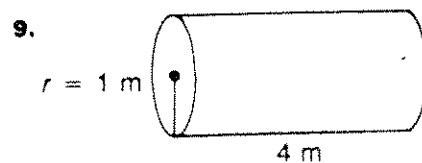
Find the total surface area of each cylinder.



Surface area = _____

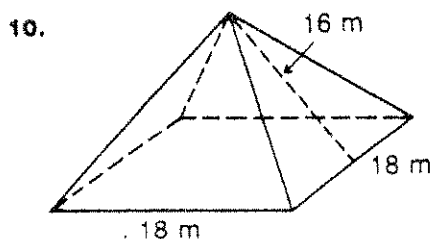


Surface area = _____

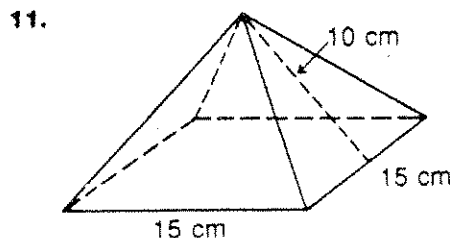


Surface area = _____

Find the total surface area of each pyramid.



Surface area = _____

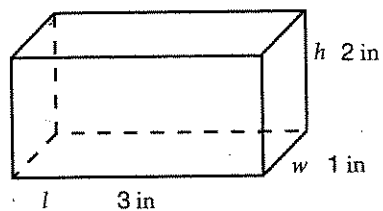


Surface area = _____

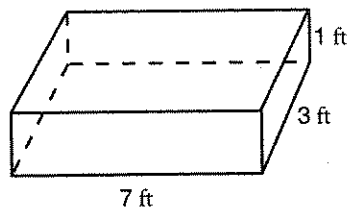
PRACTICE

Find the surface area of each rectangular prism.

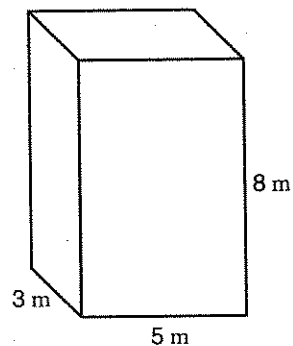
____ 10.



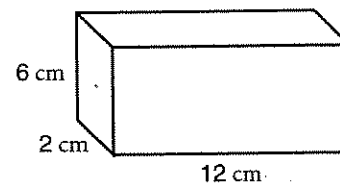
____ 11.



____ 12.



____ 13.



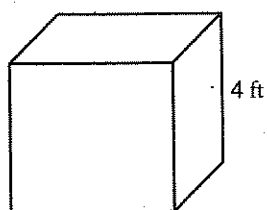
____ 14. $l = 9$ in, $w = 3$ in, $h = 5$ in

____ 15. $l = 6$ ft, $w = 8$ ft, $h = 10$ ft

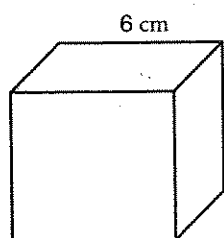
PRACTICE

Find the surface area of each cube.

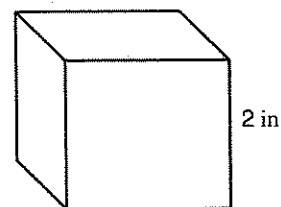
____ 16.



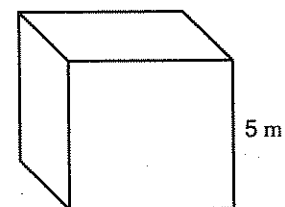
____ 17.



____ 18.



____ 19.

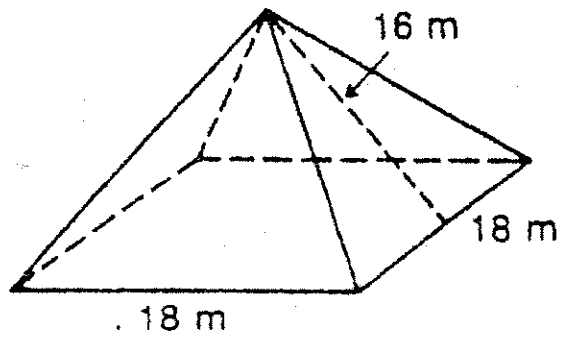


____ 20. $e = 7$ cm

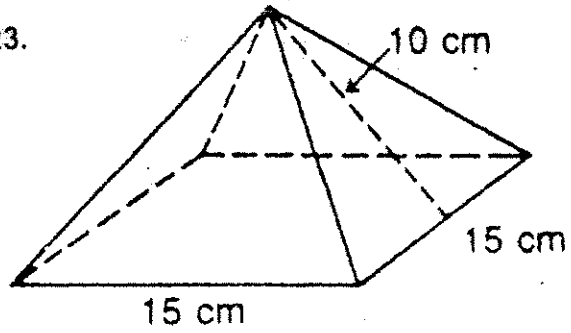
____ 21. $e = 10$ ft

Find the total surface area of each pyramid.

22.



23.



24.

