

# Surface Area

Key

**Definition:** The surface area is the sum of the areas of all the faces.

*In other words, surface area is like wrapping paper for a present or paint on walls. While surface area is two-dimensional, it covers a three-dimensional object.*

*To find the surface area of prisms and pyramids, follow the steps below...*

- ✓ First, decide what the **shapes** are on each of the faces.
- ✓ Second, find the **area** of each figure.
- ✓ Finally, **add** all the areas together to find the total surface of the solid.

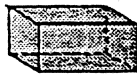
*Practice finding the shapes of the faces.*

*Below are pictures of three-dimensional figures. Match each two-dimensional figure to its correct name.*

B 1. rectangular pyramid



e 2. rectangular prism



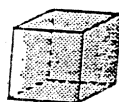
D 3. cylinder



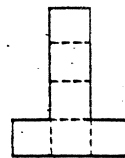
C 4. triangular prism



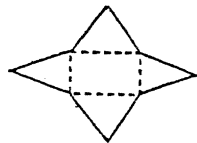
a 5. cube



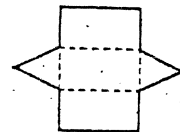
a.



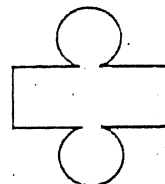
b.



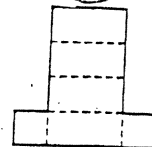
c.



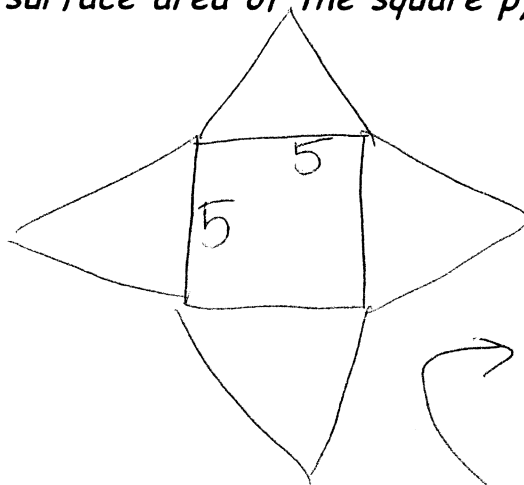
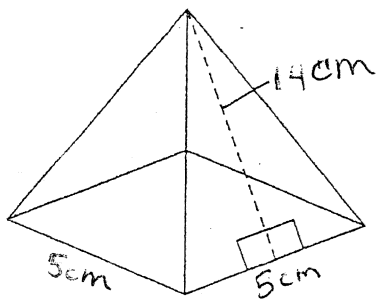
d.



e.



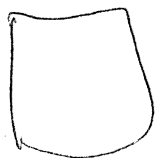
**Example: Find the surface area of the square pyramid below...**



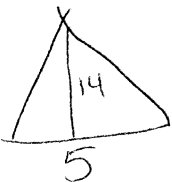
$$SA = 25 + 4(35)$$

$$SA = 25 + 140$$

$$SA = 165 \text{ cm}^2$$



$$A = 5(5) = 25$$

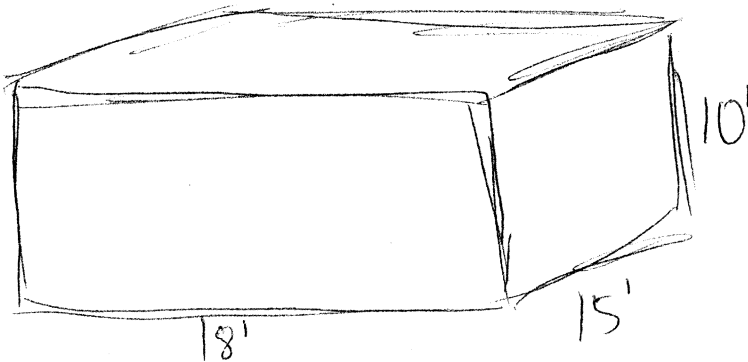


$$A = \frac{1}{2}bh = \frac{1}{2}(5)(14) = 35$$

**Example: Finding the amount of paint needed for a bedroom...**

A bedroom is 18 ft. long, 15 ft. wide, and 10 ft. high. If the walls and ceiling of the bedroom are given one coat of paint, what is the total area to be painted?

(not the floor!)



$$SA = \boxed{\begin{matrix} \text{Top} \\ 18 \end{matrix}}^{15} + \boxed{\begin{matrix} \text{left} \\ 15 \end{matrix}}^{10} + \boxed{\begin{matrix} \text{right} \\ 15 \end{matrix}}^{10} + \boxed{\begin{matrix} \text{front} \\ 18 \end{matrix}}^{10} + \boxed{\begin{matrix} \text{back} \\ 18 \end{matrix}}^{10}$$

$$SA = 270 + 150 + 150 + 180 + 180$$

$$SA = 930 \text{ ft}^2$$