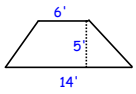
Lesson 11.2 Warm Up (Clickers)

1. How many faces does a polyhedron have that has 24 edges and 16 vertices?

2. What is the arc length of a circle that has an arc angle of 55 degrees and a radius of 8 in.?

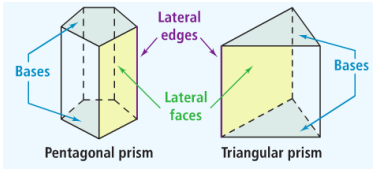
3. What is the area of the figure below?



Lesson 11.2 SA of Prisms & Cylinders

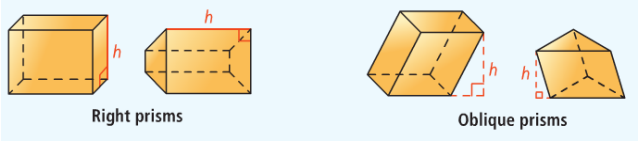
*To find the surface area of a three-dimensional figure, find the sum of the areas of all the surfaces of the figure.

A prism is a polyhedron with two congruen, parallel faces, called bases. The other faces are lateral faces. You can name a prism using the shape of its bases.



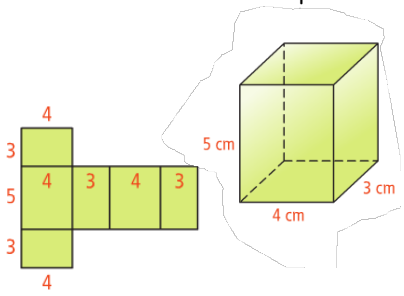
An altitude of a prism is a perpendicular segment that joins the planes of the bases. The height h of a prism is the length of an altitude. A prism may either be right or oblique.

*In a right prism, the lateral faces are rectangles and a lateral edge is an altitude. In oblique prisms, some or all of the lateral faces are nonrectangular. You can assume that all the prisms we deal with are right prisms unless otherwise noted.



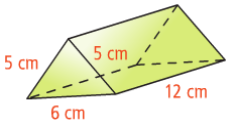
The lateral area (L.A.) of a prism is the sum of the areas of the lateral faces. The surface area (S.A.) is the sum of the lateral area and the area of the two bases.

Ex. What is the area of the prism? Use the net if needed.

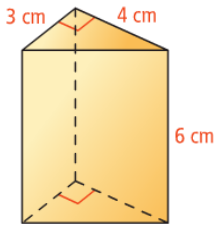


Surface Area of Prisms: SA = hp + 2B where h is height, p is perimeter, and B is the area of the base.

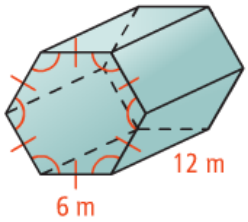
Ex. What is the surface area of the prism below?



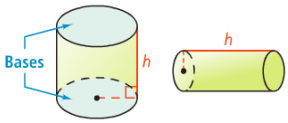
1 What is the surface area of the prism?



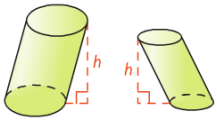
2 What is the surface area of the prism (a = 3√3) rounded to the nearest whole number?



A cylinder is a solid that has two congruent parallel bases that are circles. An altitude of a cylinder is a perpendicular segment that joins the planes of the bases. The height h of a cylinder is the lenght of the altitude.

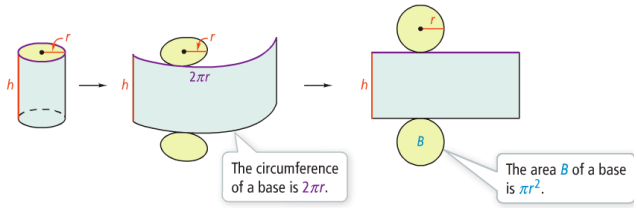


Right cylinders



Oblique cylinders

Surface Area of a Cylinder: SA = 2πrh + 2πr² where r is the radius and h is the height.

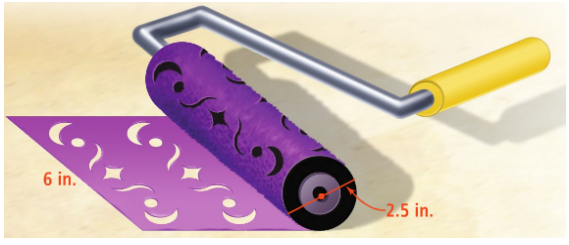


Lateral Area = 2πrh Surface Area = L.A. + 2πr²

Ex. The radius of the base of a cylinder is 4 in. and its height is 6 in. What is the surface area of the cylinder in terms of pi?

3 A cylinder has a height of 9 cm and a radius of 10 cm. What is the surface area of the cylinder, rounded to the nearest tenth?

You are using the cylindrical stencil roller below to paint patterns on your floor. What area does the roller cover in one full turn?



4 A smaller stencil roller has a height of 1.5 in. and the same diameter as the roller in the previous problem (d = 2.5 in.). What area does the smaller roller cover in one turn, rounded to the nearest tenth?