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## How do you find lateral surface area of a triangular prism

A prism having triangular bases is called a triangular prism. A triangular prism has three rectangular faces (lateral surfaces) and two triangular faces (bases) as shown in the figure below. Lateral Surface Area of Triangular Prism (LSA) Let a, b, and c be the three sides of the triangular base, and h be the height of the prism. Lateral surface area of a triangular prism is the area of three rectangular faces (R1, R2 and R3) of the prism as shown in the net of triangular prism in the figure given below. ∴ Lateral surface area (LSA) = area of R1 + R2 + R3 = ah + bh + ch = (a + b + c)h = Ph ∴ Lateral surface area (LSA) = Ph Total Surface Area of Triangular Prism (TSA) Total surface area of a triangular prism is the sum of the lateral surface area and the areas of two triangular bases. ∴ Total surface area (TSA) = LSA + 2 × area of triangular base = Ph + 2A ∴ Total surface area (TSA) = Ph + 2A] Volume of the Triangular Prism (V) The volume of a triangular prism is the total space occupied by the prism. It is given by the product of its area of the base and the height of the prism.i.e. Volume of the triangular prism(V), = Area of triangular base × height of the prism = A × h ∴ Volume of triangular prism (V) = Ah] Worked Out Examples Example 1: Find the lateral surface area, total surface area, and volume of the given triangular prism. Solution: Here, Base of the prism is a right-angled triangle, AB = 6cm BC = 8cm ∴ Perimeter of base (P) = 6 + 8 + 10 =24cm ∴ Area of triangular base (A) =  $\frac{1}{2}$  AB × BC =  $\frac{1}{2}$  × 6 × 8 = 24cm2 Height of prism (h) = 20cm ∴ Lateral surface area (LSA) = P × h = 24cm × 20cm = 480cm2 ∴ Total surface area (TSA) = LSA + 2A = 480 + 2 × 24 = 528cm2 ∴ Volume (V) = A × h = 24cm2 × 20cm = 480cm3 LSA = 480 cm2, TSA = 528 cm2 and Volume = 480 cm3 Ans. Example 2: Find the lateral surface area, total surface area, and volume of the given triangular prism. Solution: Here, Base of prism is equilateral triangle of length (a) = 6cm ∴ Perimeter of base (P) = 6 + 6 + 6 =18cmHeight of prism (h) = 15cm ∴ Lateral surface area (LSA) = P × h = 18cm × 15cm = 270cm2 ∴ Total surface area (TSA) = LSA + 2A = 270 + 2 × 15.58 = 270 + 31.16 = 301.16cm2 ∴ Volume (V) = A × h = 15.58cm2 × 15cm = 233.7cm3 ∴ LSA = 270 cm2, TSA = 301.15 cm2 and Volume = 233.7 cm3 Ans. Example 3: Find the lateral surface area, total surface area, and volume of the given triangular prism. Solution: Here, Three sides of base triangle are, a = 13cm b = 14cm c = 15cm ∴ Perimeter of base (P) = 13 + 14 + 15 = 42cm ∴ Semi-perimeter (s) = 42/2 = 21cmHeight of prism (h) = 20cm ∴ Lateral surface area (LSA) = P × h = 42cm × 20cm = 840cm2 ∴ Total surface area (TSA) = LSA + 2A = 840 + 168 = 1008cm2 ∴ Volume (V) = A × h = 84cm2 × 20cm = 1680cm3 ∴ LSA = 840 cm2, TSA = 1008 cm2 and Volume = 1680 cm3 Ans. If you have any question or problems regarding the Triangular Prism, you can ask here, in the comment section below. Was this article helpful? LIKE and SHARE with your friends... If you're seeing this message, it means we're having trouble loading external resources on our website. If you're behind a web filter, please make sure that the domains \*.kastatic.org and \*.kasandbox.org are unblocked. The surface area is the area that describes the material that will be used to cover a geometric solid. When we determine the surface areas of a geometric solid we take the sum of the area for each geometric form within the solid. The volume is a measure of how much a figure can hold and is measured in cubic units. The volume tells us something about the capacity of a figure. A prism is a solid figure that has two parallel congruent sides that are called bases that are connected by the lateral faces that are parallelograms. There are both rectangular and triangular prisms. To find the surface area of a prism (or any other geometric solid) we open the solid like a carton box and flatten it out to find all included geometric forms. To find the volume of a prism (it doesn't matter if it is rectangular or triangular) we multiply the area of the base, called the base area B, by the height h.  $SV=B \cdot h$  A cylinder is a tube and is composed of two parallel congruent circles and a rectangle which base is the circumference of the circle. Example The area of one circle is:  $A=\pi r^2$   $A=\pi \cdot 4^2$   $A=\pi \cdot 16$   $A \approx 50.27$  The circumference of a circle:  $C=2\pi r$   $C=2\pi \cdot 4$   $C=8\pi$   $C \approx 25.13$  The area of the rectangle:  $A=C \cdot h$   $A=25.13 \cdot 6$   $A \approx 150.78$  The surface area of the whole cylinder:  $A=50.27+150.78=201.05$  units<sup>2</sup> To find the volume of a cylinder we multiply the base area (which is a circle) and the height h.  $SV=\pi r^2 \cdot h$  A pyramid consists of three or four triangular lateral surfaces and a three or four sided surface, respectively, at its base. When we calculate the surface area of the pyramid below we take the sum of the areas of the 4 triangles area and the base square. The height of a triangle within a pyramid is called the slant height. The volume of a pyramid is one third of the volume of a prism.  $SV=\frac{1}{3} \cdot B \cdot h$  The base of a cone is a circle and that is easy to see. The lateral surface of a cone is a parallelogram with a base that is half the circumference of the cone and with the slant height as the height. This can be a little bit trickier to see, but if you cut the lateral surface of the cone into sections and lay them next to each other it's easily seen. The surface area of a cone is thus the sum of the areas of the base and the lateral surface:  $A_{\text{base}}=\pi r^2$ ; and:  $A_{\text{LS}}=\pi r \cdot l$  Example  $A_{\text{base}}=\pi r^2$   $A_{\text{LS}}=\pi r \cdot l$   $A_{\text{total}}=\pi r^2 + \pi r \cdot l$   $A_{\text{total}}=\pi r^2 + \pi r \cdot 10$   $A_{\text{total}}=\pi r^2 + 10\pi r$   $A_{\text{total}}=\pi r^2 + 10\pi r$   $A_{\text{total}}=\pi r^2 + 10\pi r$  Example Find the volume of a prism that has the base 5 and the height 3.  $B=3 \cdot 5=15$   $SV=15 \cdot 3=45$  units<sup>3</sup> Video lesson Find the surface area of a cylinder with the radius 4 and height 8 Find the volume of a cone with height 5 and the radius 3 how do you find the lateral surface area of a right triangular prism. how to get the lateral surface area of a triangular prism. how to find the lateral and total surface area of a triangular prism. how to find lateral and surface area of a triangular prism

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