$= 10449.92\ cm^3 = 10.44992$ liters

$\therefore$ Cost of the milk $= 10.44992 \times 20$

$=$ Rs. $208.8894 =$ Rs. 209

Now, surface area $= \pi(r_1 + r_2)l + \pi r_2^2$

$= \pi(r_1 + r_2)\sqrt{h^2 + (r_1 - r_2)^2} + \pi r_2^2$

$= 3.14(20+8)\sqrt{(16)^2 + (20-8)^2} + 3.14(8)^2$

$= 3.14 \times 28\sqrt{256+144} + 3.14 \times 64$

$= 1158.4 + 200.96$

$= 1959.36\ cm^2$

$\therefore$ Area of the metal sheet used $= 1959.36\ cm^2$

$\therefore$ Cost of metal sheet $= 1959.36 \times \frac{8}{100}$

$=$ Rs. $156.7488 =$ Rs. 156.75

5. A metallic right circular cone 20 cm high and whose vertical angle is 60° is cut into two parts at the middle of its height by a plane parallel to its base. If the frustum so obtained be drawn into a wire of diameter $\frac{1}{16}$ cm, find the length of the wire.

Ans. $\tan 30^\circ = \frac{r_2}{10}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{r_2}{10}$

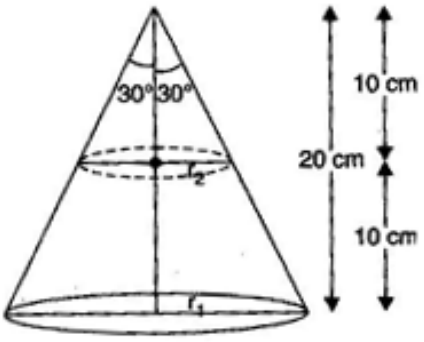
$\Rightarrow r_2 = \frac{10}{\sqrt{3}}$ cm

$\tan 30^\circ = \frac{r_1}{20}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{r_1}{20}$

$\Rightarrow r_1 = \frac{20}{\sqrt{3}}$ cm

$h = 10$ cm



$\therefore$ Volume $= \frac{1}{3}\pi h\left(r_1^2 + r_2^2 + r_1 r_2\right)$

$= \frac{1}{3} \times \frac{22}{7} \times 10\left\{\left(\frac{20}{\sqrt{3}}\right)^2 + \left(\frac{10}{\sqrt{3}}\right)^2 + \left(\frac{20}{\sqrt{3}}\right)\left(\frac{10}{\sqrt{3}}\right)\right\}$

$= \frac{1}{3} \times \frac{22}{7} \times 10 \times \left(\frac{400}{3} + \frac{100}{3} + \frac{200}{3}\right)$

$= \frac{1}{3} \times \frac{22}{7} \times 10 \times \frac{700}{3} = \frac{22000}{9} cm^3$

Diameter of the wire $= \frac{1}{16}$ cm

$\therefore$ Radius of the wire $= \frac{1}{32}$ cm

Let the length of the wire be l cm.

Then, Volume of the wire $= \pi r^2 l = \frac{22}{7}\left(\frac{1}{32}\right)^2 l =$

$\frac{11l}{3584}\ cm^3$

According to the question,

$\frac{11l}{3584} = \frac{22000}{9}$

$\Rightarrow l = \frac{22000 \times 3584}{11 \times 9}$

$\Rightarrow l = \frac{2000 \times 3584}{9}$

$\Rightarrow l =$ 796444.44 cm = 7964.4 m

********** END **********