6. Describe how the two figures at the right are alike and how they are different. Which box has larger lateral surface area.
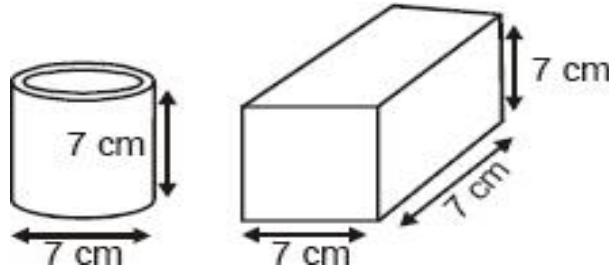
Sol. Try yourself

7. A closed cylindrical tank of radius 7 m and height 3 m is made from a sheet of metal. How much sheet of metal is required?

Sol. Here, r = 7m and h = 3 m.

Sheet of metal required to make a closed cylinder = Total surface area of the cylinder. = $(2\pi rh + 2\pi r^2)$ sq. units.

=$(2x\frac{22}{7} \times 7 \times 3 + 2 \times \frac{22}{7} \times 7 \times 7)$

= (132 + 308) m² = 440 m²

8. The lateral surface area of a hollow cylinder is 4224 cm². It is cut along its height and formed a rectangular sheet of width 33 cm. Find the perimetre of rectangular sheet.

Sol. A hollow cylinder is cut along its height to form a rectangular sheet.

Area of cylinder = Area of rectangular sheet 4224 cm² = 33 cm × Length

$$Length = \frac{4224 \ cm^2}{33 \ cm} = 128 \ cm$$

Thus, the length of the rectangular sheet is 128 cm. Perimeter of the rectangular sheet

= 2 (Length + Width)

= [2(128 + 33)] cm

=(2 × 161)cm

= 322 cm

9. A road roller takes 750 complete revolutions to move once over to level a road. Find the area of the road if the diameter of a road roller is 84 cm and length is 1 m.

Sol. In one revolution, the roller will cover an area equal to its lateral surface area.
Thus, in 1 revolution, area of the road covered = 27πrh

$= 2 \times \dfrac{22}{7} \times 42 \text{ cm} \times 1m$

$= 2 \times \dfrac{22}{7} \times \dfrac{42}{100} m \times 1m = \dfrac{264}{100} m^2$

In 750 revolutions, area of the road covered

$= \left(750 \times \dfrac{264}{100}\right) m^2 = 1980 \, m^2$

10. A company packages its milk powder in cylindrical container whose base has a diameter of 14 cm and height 20 cm. Company places a label around the surface of the container (as shown in the figure). if the label is placed 2 cm from top and bottom, what is the surface area of the label.

Sol. Try yourself