

Exercise 9

The portion of a floating iceberg that is below the water surface is much larger than the portion above the surface. The total volume V of an iceberg is modeled by

$$V = 9.5S$$

where S is the volume showing above the surface.

- (a) Find the total volume of an iceberg if the volume showing above the surface is 4 km^3 .
(b) Find the volume showing above the surface for an iceberg with total volume 19 km^3 ?
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Solution

Part (a)

Plug in the given volume above the surface to the formula to get V , the total volume.

$$V = 9.5(4 \text{ km}^3) = 38 \text{ km}^3$$

Part (b)

Since the volume showing above the surface is desired, solve the given formula for S .

$$V = 9.5S$$

Divide both sides by 9.5.

$$S = \frac{V}{9.5}$$

Plug in the given total volume.

$$S = \frac{19 \text{ km}^3}{9.5} = 2 \text{ km}^3$$

Therefore, the volume showing above the surface is 2 km^3 .