Prism Word Problems Worksheets

A fuel tank is the shape of a right rectangular prism and has $27\ L$ of fuel in it. It is determined that the tank is $\frac{3}{4}$ full. The inside dimensions of the base of the tank are $90\ cm$ by $50\ cm$. What is the height of the fuel in the tank? How deep is the tank? $(1\ L = 1,000\ cm^3)$

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Let the height of the fuel in the tank be h cm.

$27\ \text{L} = 27{,}000\ \text{cm}^3$

$$V = Bh$$
$$V = (lw)h$$
$$27{,}000\ \text{cm}^3 = (90\ \text{cm} \cdot 50\ \text{cm}) \cdot h$$
$$27{,}000\ \text{cm}^3 = (4{,}500\ \text{cm}^2) \cdot h$$
$$27{,}000\ \text{cm}^3 \cdot \frac{1}{4{,}500\ \text{cm}^2} = 4{,}500\ \text{cm}^2 \cdot \frac{1}{4{,}500\ \text{cm}^2} \cdot h$$
$$\frac{27{,}000}{4{,}500}\ \text{cm} = 1 \cdot h$$
$$6\ \text{cm} = h$$

The height of the fuel in the tank is 6 cm. The height of the fuel is $\frac{3}{4}$ the depth of the tank. Let d represent the depth of the tank in centimeters.

$$6\ \text{cm} = \frac{3}{4}d$$
$$6\ \text{cm} \cdot \frac{4}{3} = \frac{3}{4} \cdot \frac{4}{3} \cdot d$$
$$8\ \text{cm} = d$$

The depth of the fuel tank is 8 cm.

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