A copper wire (density = 8.96 g/ cm^3) has a diameter of 0.25 mm. If a sample of this copper wire has a mass of 22g, how long is the wire

Solution:

Volume of copper V=mass/density:

$$V = \frac{22}{8.96} = 2.455 \text{ cm}^3$$

Wire's square S=π*R^2/2:

$$S = 3.1416 * \frac{0.0125^2}{2} = 0.000245 \text{ cm}^2$$

Wire's length L=V/S:

$$L = \frac{2.455}{0.000245} = 10020.4 \text{ cm=100.2 m}$$

Answer: 100.2 m

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