Melting the Eiffel Tower

The Eiffel Tower is 324 metres tall, and stands on a square base measuring 125 by 125 metres.

The main structure is wrought iron, which has a density of $7850 kg/m^3$.

The construction of the Eiffel Tower is a feat of architectural engineering – the lattice structure gives enormous strength and stability while only needing a relatively small amount of iron to do so.

The weight of the metal structure of the Eiffel Tower is 7300 *tonnes*. What is the total volume of the iron used, to the nearest cubic metre?

If the entire metal structure of the Eiffel Tower were to be melted down to form a cuboid with the same size base as the base of the tower (125 by 125 metres), what would the height of this cuboid be?

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$$Density = \frac{Weight}{Volume} \implies 7850 = \frac{7300000}{Volume}$$

$$Volume = \frac{7300000}{7850} = \boldsymbol{930m^3} \; to \; the \; nearest \; m^3$$

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$$Volume = length \times width \times height$$

$$930 = 125 \times 125 \times h \implies 930 = 15625h$$

$$h = \frac{930}{15625} = 0.0595m = \boldsymbol{5.95cm} \; to \; 2 \; d.p.$$