Core Conundrum

What is the density of Mars' core?

1. Convert km to cm.
   \[ 1,830 \text{ km} \cdot \left(100,000 \text{ cm} / 1 \text{ km}\right) = 183,000,000 \text{ cm} = 1.83 \times 10^8 \text{ cm} \]

2. Calculate the volume of Mars' core.
   \[ V = \frac{4}{3}\pi r^3 \]
   \[ V = \frac{4}{3}\pi (1.83 \times 10^8 \text{ cm})^3 \]
   \[ V \approx \frac{4}{3}\pi (6.13 \times 10^{24} \text{ cm}) \]
   \[ V \approx 2.57 \times 10^{25} \text{ cm}^3 \]

3. Convert kg to g.
   \[ (1.54 \times 10^{23} \text{ kg}) \cdot (1,000 \text{ g} / 1 \text{ kg}) = 1.54 \times 10^{26} \text{ g} \]

4. Divide the mass of Mars' core by its volume.
   \[ (1.54 \times 10^{26} \text{ g}) / (2.57 \times 10^{25} \text{ cm}^3) \approx 5.99 \text{ g/cm}^3 \]

How does that compare to the density of Earth's core?

Mars' core is less dense.

What does that tell us about the makeup of Mars' core?

Mars' core is made of less dense material than Earth's core.