

Suggested problems

Chapter 01

The quiz questions will be same or very similar to the following text-book problems.

Refer to the course website for the latest version of this document.

You are encouraged to seek the help of your instructor during his office hours.

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1. Earth is approximately a sphere of radius 6.37×10^6 m. What are (a) circumference in kilometers, (b) its surface area in square kilometers, and (c) its volume in cubic kilometers?

Answer: (a) 4.00×10^4 km; (b) 5.10×10^8 km² (c) 1.08×10^{12} km³

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7. Hydraulic engineers in the United States often use, as a unit of volume of water, the acre-foot, defined as the volume of water that will cover 1 acre of land to a depth of 1 ft. A severe thunderstorm dumped 2.0 in. of rain in 30 min on a town of area 26 km². What volume of water, in acre-feet, fell on the town?

Answer: 1.01×10^3 acre-feet

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22. Gold, which has a density of 19.32 g/cm³, is the most ductile metal and can be pressed into a thin leaf or drawn out into a long fiber. (a) If a sample of gold, with a mass of 27.63 g, is pressed into a leaf of 1.000 mm thickness, what is the area of the leaf? (b) If, instead, the gold is drawn out into a cylindrical fiber of radius 2.500 mm, what is the length of the fiber?

Answer: (a) 1.520 m² (b) 77.41 cm

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41. A cord is a volume of cut wood equal to a stack 8 ft long, 4 ft wide, and 4 ft high. How many cords are in 1.0 m³?

Answer: 0.3 cord
