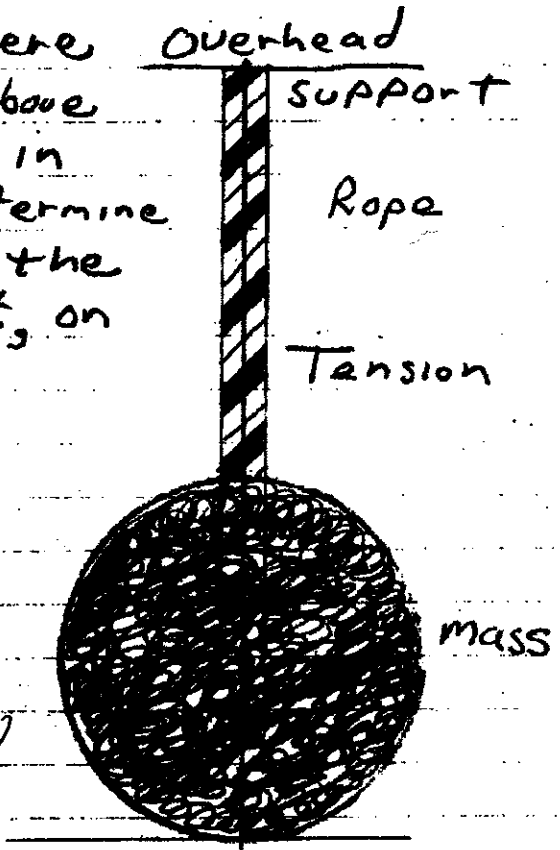
20080229_1422 Name _____

A rope supports a sphere of pure gold 20.0 meters above a surface. If the tension in the rope is 50,000 N determine the potential energy of the gold. The gold is at rest, on the planet Earth.



Solution:
Think! This is very easy.

The tension in the rope is the same as the weight of the supported object. The weight of an object is mg.

Potential Energy = mgh

$$PE = (mg)h$$
$$= (50{,}000\,N)(20.0\,m)$$
$$= 1{,}000{,}000\ n\text{-}m$$

$$\boxed{PE = 1.00 \times 10^6 \text{ joules}}$$