Name: _____   Period: _____   Date: _____

Density Jones (5 points)

In the opening scene of *Raiders of the Lost Ark*, daring archaeologist Indiana Jones (the guy in the hat) is exploring ancient ruins in search of a gold idol. The idol is on a booby-trapped platform that seems to be weight-sensitive – if it's removed, the trap goes off.

1. Estimate the size of the idol. You can approximate it as a rectangle if you wish. Guess how high it is and how wide/deep it is. Then multiply those three numbers together to <u>get the volume in cm^3</u>. (1 inch ~ 2.5 cm, 2 inches ~ 5 cm, 3 inches ~ 7.5 cm, and so on.)

2. The density of gold is (19.3 g / 1 cm^3). <u>Use this density as a conversion factor</u> to transform your estimate of the idol's <u>volume</u> into an estimate of the idol's <u>mass</u>.

3. Indiana seems to be trying to match the volume of his bag to the volume of the idol. Why is that a bad idea?

4. The density of sand is about (2.5 g / 1 cm^3). Use this density as a conversion factor to estimate the mass of sand that Indiana put in the bag.

    This mass is (circle one):   just right   too light   too heavy

5. If Indiana had studied physical science instead of archaeology, what volume of sand would he have put into the bag?

6. Indiana carries and tosses the idol as if it weighs just a couple of pounds. How much <u>should</u> it weigh? Convert your mass for the statue into pounds with this factor: (2.2 pounds / 1,000 g).