Name: _____ Period: _____ Date: _____

On the Density of Witches (5 points)

In a classic scene from *Monty Python and the Holy Grail*, an angry mob brings a woman to Sir Bedevere the Wise claiming she is a witch. He uses the following line of reasoning to devise a test:

1. What do you do with witches? Burn them!
2. What else burns? Wood!
3. Therefore: witches are made of wood!
4. Wood floats on water.
5. Ducks also float on water.
6. Therefore: wood and ducks have the same weight.
7. Conclusion: If the woman weighs the same as a duck, she is made of wood and is a witch!

As you may have noticed, there are a few things wrong with this argument!

1. What's wrong with line #3 of the argument?

2. The density of water is about $1\ g / 1\ cm^3$. What does this tell you about the density of most types of wood?

3. What does it tell you about the overall density of a duck?

4. If two objects have the same density, will they definitely have the same mass as well? Explain.

5. What's wrong with line #6 of the argument?

6. Compare the duck and the woman: which of them has a larger volume?

7. Surprisingly, Bedevere's scale shows that the duck and the woman have the same mass despite their difference in volume. This is pretty suspicious! What can you conclude about their densities from this? (Pick one.)
   A. They have the same density.
   B. The duck must have a higher density.
   C. The woman must have a higher density.

8. Which property of an object determines whether it will float in water or not?
   A. mass
   B. volume
   C. density