# HW answers for page 66 in the textbook

## 8H
## #'s 13, 14, 18, 20 and 21

13. What can you infer about the density of a material if a sample of it floats in water?

Considering that the density of water is 1 g/mL, if any material floats in water, it's density MUST be less than 1 g/mL. Anything above 1 will sink.

14. How do you know that the burning of candle wax is an exothermic change?

An exothermic change releases energy. We can see this release in energy as the lighted candle melts its wax and if we carefully hold our hands above or around the flame. The heat we feel is essentially the release of energy.

18. Ice has a lower density than liquid water. How does the volume of a kilogram of water change when it freezes to ice?

The volume of water expands and gets larger. This makes mathematic sense because as any denominator increases while the numerator remains the same, the calculation continues to get smaller. We also know that ice has a lower density than liquid water since it floats.

20. The elements phosphorus and oxygen form a compound with the formula $P_2O_5$. What is the ratio of phosphorus atoms to oxygen atoms in the compound?

2:5

21. A piece of magnesium metal has a mass of 56.5g and a volume of 32.5$cm^3$. What is the density of the magnesium?

1.738 $g/cm^3$

## 8R1-3
## #'s 12, 13, 17, 19 and 21

12. What two quantities do you need to measure in order to determine the density of an object?

In order to measure density, one must know the mass of the object and its volume.

13. What can you infer about the density of a material if a sample of it floats in water?

Considering that the density of water is 1 g/mL, if any material floats in water, it's density MUST be less than 1 g/mL. Anything above 1 will sink.

17. Which measurement shown in the diagram is not needed to find the volume of a box? Explain.

According to the image on page 66, question 17, we do not need the 5cm measurement. This is because in order to find the volume of any solid, regular shaped (straight sided) object we multiply the Length x Width x Height.

19. Suppose you dissolve some table salt in a glass of water. How could you prove to someone that the dissolving was a physical change and not a chemical change?

You can prove to someone that dissolving salt into a glass of water was a physical change and not a chemical change by evaporating the water. As the water molecules change state, the salt crystals are left behind.

21. A piece of magnesium metal has a mass of 56.5g and a volume of 32.5$cm^3$. What is the density of the magnesium?

1.738 $g/cm^3$