- Today

  - Review homework from Nov. 21

  - Density (a characteristic property)

    - How is density calculated?

    - Activity: Are pennies made of copper?

- Tuesday through Friday

  - Historical models of the atom

(1) Physical and chemical properties! Complete the following table.

	Definition	2 examples
Physical property		
Chemical property		

(2) Characteristic properties!

(a) What is a **characteristic property**?

(b) Can a characteristic property be physical, chemical, either, or neither?

(c) Let's consider whether **density** qualifies as a characteristic property. Look at Table 1 on page 13 of your book. Based on this information, explain how you could use density to identify an unknown substance.

(3) Physical and chemical *changes*!

(a) Complete the following table.

	Definition	2 examples
Physical change		
Chemical change		

(b) Is each of the following a likely sign of a chemical (C) change or a physical (P) change, or both (C+P)?

_____ Change in color

_____ Change in odor

_____ Creation of gas (fizzing, bubbling)

_____ Change in temperature

_____ Creation of light

_____ Creation of sound (e.g., explosion)

_____ Cannot easily be reversed

Homework: on a separate piece of paper, complete the following questions on pages 24 and 25:

- 5, 6, 7, 8, 9, 10, and 11
- 15, 16, and 17
- 22 and 23

17. concept mapping

LO: Use characteristic properties to identify a substance
SLE: Work collaboratively

Problem: Are pennies made of copper?

Hypothesis:

Procedure:

1. Find the mass of 10 pennies
2. Find the volume of those same 10 pennies
3. Find the density of the pennies by dividing the mass by the volume
4. Compare the density of the pennies with the published density of copper, which is 8.94 g/cm^3

Data:

Mass of pennies: _____

Volume of pennies: _____

Density of pennies: _____

Conclusion: Are the pennies made of copper? If not, what metal(s) might they be made of?

Densities of some common metals

Metal	Density (g/cm^3)
Aluminum	2.70
Copper	8.94
Gold	19.3
Iron	7.86
Lead	11.34
Magnesium	1.74
Silver	10.5
Tin	5.75
Zinc	7.14