Name: Key.

Unit Review - Matter

1. Give an example of a:
   A) qualitative observation: it's hot in here (answers will vary)
   B) quantitative observation: it's 22°C in here (answers will vary)

2. Define each term: observation, interpretation, description, data, experiment, hypothesis, theory, law
   observation: qualitative info. from our senses
   interpretation: giving meaning to observations
   description: a list of properties of something
   data: quantitative info gathered from experiment and/or references
   experiment: a test or procedure used to discover a result
   hypothesis: a single, unproven idea or assumption
   theory: a tested and refined explanation composed of a series of related hypotheses
   law: a general statement ~~that~~ about nature with supporting experimental evidence.

3. Write definitions for:
   A) matter: anything that has mass AND volume.

   B) intensive property: a property that is not dependent on amount of substance

4. Which of the following statements describe physical properties and which describe chemical properties:
   A) aluminum has a density of 2.70g/mL: physical
   B) an acid mixed with a base produces water: chemical
   C) water boils at 100°C: physical

5. Give one example of an:
   A) intensive property: boiling temperature (answers will vary)

   B) extensive property: mass (answers will vary)

6. Give an example of something which does not fit the definition of matter.
   light

7. Which phase of matter is not compressible but has molecules which can move past one another? liquid

8. How many phases does a homogeneous substance have? Heterogeneous?

one more than one

9. How does an element differ from a compound? Be specific. Give an example of each. Elements are made up of only one type of atom and cannot be chemically broken down. Compounds are made up of more than one type of atom and can be chemically broken down into elements.

Similarity: both contain only one type of particle. This is what makes each a pure substance.

10. Are each of the following atoms, molecules, or ions?

A) NO_3^- ion

B) Mn atom

C) $CuSO_4$ molecule

11. Are all mechanical mixtures heterogeneous?

Yes. M.Ms have more than one phase

12. How is a solution the same as and different from a compound?

SAME: both are homogeneous.

DIFF: Solution is a mixture (made up of more than one type of particle) and compound is a pure substance (made up of only one type of particle)

13. How is a solution the same as and different from a mechanical mixture?

SAME: both are mixtures

DIFF: a solution is homogeneous whereas a mechanical mixture is heterogeneous.

14. Define melting temperature.

the temperature at which a substance changes from a solid to a liquid.

15. Would the rusting of iron be considered a chemical or physical change? Explain.

Chemical ⇒ not easily reversed ⇒ chemical composition of iron changes.

16. What is a vapour and how does it differ from a gas?

- vapour is produced by evaporation (liq → gas below boiling temp)
- gas is produced by boiling

17. Hebden p.61 #61

Extra Question: What is the energy devoted to on the horizontal portions of the graph?

↳ energy devoted to phase change rather than temp change.