# 1TQ: Introduction: Matter and Measurement Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# *Text Questions from Brown, et. al.*

1.1

1. The properties of matter relate to what two things?

2. Every change in the observable world has its basis in what?

1.2

 3. Compressing a gas \_\_\_\_\_\_\_\_\_\_ the amount of space between particles and \_\_\_\_\_\_\_\_\_\_ the frequency

of collisions, but it doesn’t alter the \_\_\_\_\_\_ or \_\_\_\_\_\_\_ of the particles.

4. Describe each of the two types of substances.

5. In any mixture, each component retains…

6. Chemical symbols consist of one or two letters, with only the first letter…

 7. What is the law of constant composition (i.e., the law of definite proportions)?

 8. What general (and false) belief about chemicals persists among some people?

9. The substances making up a mixture are called…

1.3

 10. During a physical change, what changes and what doesn’t?

11. Are changes of state physical changes, or are they chemical changes?

12. What do we take advantage of, in separating the components of a mixture?

13. List three methods of separating a mixture.

1.4

14. Define mass and give its SI base unit.

15. Temperature is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ property that determines…

16. In what direction does heat flow spontaneously?

17. The Celsius scale was originally based on the boiling and freezing points of water at…

18. A. Both the Kelvin and Celsius scales have…

 B. With temperatures on the Kelvin scale, we never use…

19. A liter is equal to \_*\_\_\_\_*\_ and a milliliter is equal to \_\_\_\_\_\_.

20. When working with densities, what should we assume, if no temperature is reported?

1.5

 21. Give four examples of exact numbers.

 22. Numbers obtained by measurement are always \_\_\_\_\_\_\_\_\_; that is, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ always exist.

23. What does the standard deviation reflect?

24. We gain confidence in our measurements if the standard deviation of those measurements is…

25. How are measured quantities generally reported?

26. What are significant figures?

27. With regard to sig figs…

 A. …for addition and subtraction…

 B. …for multiplication and division…

 C. …exact numbers can be treated as if…

28. Why should you retain at least one extra digit when doing intermediate steps in a multistep problem?

1.6

29. Why is multiplying any quantity by a conversion factor equivalent to multiplying by the number 1?

 30. What is the relationship (i.e., the equality) between…

 A. …the length units, inches and centimeters?

 B. …the volume units, cubic inches and cubic centimeters?