

Name _____ Date _____ Class _____

CHAPTER 2 STUDY GUIDE FOR CONTENT MASTERY

Data Analysis

Section 2.1 Units of Measurement

In your textbook, read about SI units.

Complete the following table.

Quantity	SI Base Units	
	Base unit	Unit abbreviation
1. Time	Second	s
2. Mass	Kilogram	kg
3. Temperature	kelvin	K
4. Length	Meter	m

In your textbook, read about base units and derived units.

For each SI unit in Column A, write the letter of the matching item from Column B.

Column A

Column B

- b. 5. second
 - d. 6. meter
 - a. 7. kilogram
 - c. 8. cubic meter
- a. A platinum-iridium cylinder that is stored at constant temperature and humidity
 - b. The microwave frequency given off by a cesium-133 atom
 - c. A cube whose sides all measure exactly one meter
 - d. The distance that light travels through a vacuum in 1/299 792 458 second

9. Use Table 2-2 in your textbook to arrange the following prefixes in order from largest to smallest.

- centi-
- giga-
- kilo-
- mega-
- milli-
- nano-
- pico-

The correct order is: **giga-, mega-, kilo-, centi-, milli-, nano-, pico-**.

10. List the symbols and factors that the following prefixes represent.

- a. centi- _____ c. 1/100
- b. kilo- _____ k: 1000
- c. milli- _____ m: 1/1000

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Section 2.1 continued

Answer the following questions.

- 11. Which temperature scale will you use for your experiments in this class? Is this an SI unit?
Celsius; no, the SI unit for temperature is the kelvin.
- 12. How many grams are in a kilogram?
1000 g
- 13. How many liters are in a megaliter?
1 000 000 liters
- 14. How many centimeters are in a meter?
100 cm
- 15. What is the difference between a base unit and a derived unit?
Base units are defined units based on specific objects or events in the physical world. Derived units are defined by combining base units.
- 16. What is density?
Density is a ratio that compares the mass of an object to its volume.
- 17. Explain in terms of density why a grocery bag containing all canned goods is harder to lift than a grocery bag containing all paper goods.
Canned goods are more dense than paper goods. They have more mass per unit volume. Thus, for the same volume, the canned goods have more mass than the paper goods. The greater mass is more difficult to lift.
- 18. How can you obtain an object's volume if you know its density and its mass?
Answers may vary. Students should note that density is defined as the mass of an object divided by its volume. Thus, algebraically, you can determine that an object's volume is equal to its mass divided by its density.
- 19. What is the three-part process for problem solving?
analyze, solve, and evaluate
- 20. How are degrees Celsius converted to kelvins?
Add 273 to degrees Celsius.