

Directed Reading B *continued*

Match the correct description with the correct term. Write the letter in the space provided.

<p>c. volume</p> <p>d. density</p> <p>b. temperature</p> <p>a. mass</p>	<p>8. a measure of the size of an object or region in three-dimensional space</p> <p>9. the ratio of the mass of a substance to the volume of the substance</p> <p>10. a measure of how hot or cold something is</p> <p>11. a measure of the amount of matter in an object</p>	<p>a. mass</p> <p>b. temperature</p> <p>c. volume</p> <p>d. density</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>$D = m/V$ $D = \text{density}$ $m = \text{mass}$ $V = \text{volume}$ $D_{\text{water}} = 1 \text{ g/mL}$</p> </div>
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Match the correct description with the correct term. Write the letter in the space provided.

<p>c. meter</p> <p>a. kilogram</p> <p>b. liter</p> <p>d. cubic meter</p>	<p>12. the basic SI unit of length</p> <p>13. the basic SI unit of mass</p> <p>14. a unit used to express liquid volume</p> <p>15. a unit used to express the volume of larger solid objects</p>	<p>a. kilogram</p> <p>b. liter</p> <p>c. meter</p> <p>d. cubic meter</p>
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16. A cubic meter is equal to 1,000 **liters**.

17. What unit of measure is used to express the volume of smaller objects?
mL = milliliter or **cubic centimeters = cc's**

18. How is density calculated?

Density = mass/volume
 first use a balance scale to measure the mass,
 then use a ruler to measure the volume,
 then calculate the mass divided by the volume to equal the density.

19. Name three units that are used to measure temperature.

Fahrenheit, Celsius, and Kelvin

Directed Reading B *continued*

MODELS IN SCIENCE

- b. a model** 20. What is a pattern, plan, representation, or description designed to show the structure or workings of an object, system, or concept called?
- a. a test
 - b. a model**
 - c. a hypothesis
 - d. a scale

- a. a model** 21. Which of the following uses something familiar to help you understand something that is not familiar?
- a. a model**
 - b. a tool
 - c. data
 - d. a test

22. List the three common types of scientific models.

1. Physical model
2. Conceptual model
3. Mathematical model

23. List three examples of a physical model.

Model airplanes, dolls, and drawings (blueprints)

24. What type of model tries to put many ideas together to explain or summarize something?

Conceptual model

Directed Reading B *continued*

Match the correct description with the correct type of model. Write the letter in the space provided.

c. mathematical model

25. used to predict the weather

a. conceptual model

a. conceptual model

26. used to explain why the universe seems to be expanding

b. physical model

b. physical model

27. used to help understand how a real space shuttle blasts off into space

c. mathematical model

28. What can happen if a mathematical model contains a wrong value for a single variable?

The mathematical model could make highly inaccurate predictions if it contains a wrong value to one variable.

29. What are models often used to represent?

Things that are very small or very large.
 Things that cannot be seen.
 Things that are too complex to think of all parameters at once.

30. Give one example of a model that is used to learn about things that cannot be seen.

Sound waves cannot be seen, but a coiled spring can represent the sound waves.

31. Why is a model always limited in its usefulness?

A model is not exactly the same as the real object or system.

USING MODELS FOR SCIENTIFIC PROGRESS

C.

32. Which of the following is NOT a way that models are used by scientists?

- a. Models are used to communicate difficult information.
- b. Models can make a molecule easier to visualize.
- c. Models are used to validate inaccurate data.
- d. Models can be used to summarize new information.

d. theory

33. A system of ideas that explains many related observations and is supported by a large amount of scientific evidence is called a(n)

- a. model.
- b. law.
- c. variable.
- d. theory.

Directed Reading B *continued*

34. Why do scientists use models in their search for new information?

Models help to visualize many parts and concepts at one glance.
This leads the scientist to new angles to look at old problems.
Looking at these new angles allows them to design new experiments.

35. A descriptive statement or equation that reliably predicts events under certain conditions is called a(n) **law**.

36. What may happen when scientists make new observations that seem to show that a theory is wrong?

The scientists will revise the theory or make new theories.

37. Define *law*.

Law - a descriptive statement or equation that reliably predicts events under certain conditions.
For example, the law of gravity.

38. What does a law tell you, and what does a law not tell you?

A law tells you how things work, it tells what happens.
A law does not tell why it happens.

39. What law says that the total mass of materials formed during a chemical change is the same as the total mass of the starting materials?

The law of conservation of matter and energy
