Science, Matter, and Energy Reading Guide

1. What is science?

2. What assumption is the work of science based on?

3. What are some processes and skills that scientists use as they do their work?

4. What is a hypothesis? What is a scientific theory? What is a scientific law?

5. Why should scientific theories not be taken lightly?

6. How does science compare to technology?

7. How are hypotheses tested?

8. What roles do reasoning and creativity play in the scientific process?

9. What is the difference between inductive and deductive reasoning?

10. What is junk science? What are some questions you can ask yourself to discern junk science from sound science?

11. What is matter? What are the two chemical forms of matter?

12. What is the difference between an element and a compound?

13. How do scientists usually represent chemical elements?

14. How are the chemical elements classified?

15. What is an atom?

16. What are the main characteristics of protons, neutrons, and electrons?

17. How are elements represented on the periodic table? How can you use the periodic table to find information about an element, including its atomic number and mass number?

18. How do you find the atomic number and mass number for an element?

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19. What are isotopes?

20. What is the difference between a physical and a chemical change to matter? What are examples of each?

21. What is the law of conservation of matter?

22. What is energy? What is the difference between kinetic and potential energy?

23. What are some examples of kinetic and potential energy?

24. What is energy quality? What is the difference between high-quality energy and lowquality energy? 25. What are the first and second laws of thermodynamics?

26. How can energy be changed?

27. Why can we not "break even" in terms of energy quality?