

Unit 1: Chemistry as a Science**Chapter 1: The Science of Chemistry**

(Standardize Test Prep on pg. 34 & 35)

- D
- H
- C
- Photosynthesis is a chemical change because the products of the change are different substances than the starting materials.
- The conclusion is not valid because volume and shape give no information about identity and two different substances can have the same melting point. Additional information could include determining additional physical properties or chemical properties.
- A physical change is the conversion of liquid water to vapour. A chemical change is the reaction between wood and oxygen that generate heat while forming carbon dioxide and ash.
- H
- A
- G
- D
- F
- From the table, you can calculate the density of aluminium. Aluminium is much less dense than nickel, so if the pieces are the same size, the lighter one is aluminium.

Chapter 2: Matter and Energy

(Chapter Review on pg. 66 to 68)

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|--|-------------------------------------|------------------------------------|--|
| 17. (a) 2.147 | (b) 88 | (c) 2.12 | |
| 18. (a) exact | (b) not exact | (c) exact | (d) not exact |
| 19. (a) 7×10^8 | (b) 7.4×10^8 | (c) 7.430×10^8 | |
| 20. (a) four | (b) four | (c) six | (d) three |
| 21. 6.411 g | 22. 1.1 cm | 23. 2.79 m^2 | 24. 29.74 g/mL |
| 25. $8.82 \times 10^{-4} \text{ g}$ | 26. (a) 27.0 cm^3 | (b) 3.33 cm | 27. $0.091 \text{ J/g} \cdot \text{K}$ |
| 28. $4.9 \times 10^3 \text{ J}$ | 29. 13°C | 30. (a) 6.730×10^{-4} | (b) 5.00000×10^4 |
| 31. (a) 0.007050 g | (b) 40,000,500 mg | 32. $8.57 \times 10^8 \text{ m}^2$ | |
| 33. (a) 7.5×10^3 | (b) 9.2002×10^7 | 34. three | |
| 35. (a) $0.410 \text{ J/g} \cdot \text{K}$ | (b) $7.0 \times 10^2 \text{ J}$ | 36. $1.4 \times 10^6 \text{ m}^3$ | 37. 1.43 g/cm^3 |
| 38. $9.47 \times 10^{-4} \text{ g}$; $9.47 \times 10^{-7} \text{ kg}$ | | | |
| 39. (a) 4500 g | (b) 0.00605 m | (c) 3,115,000 km | |
| 40. (a) $8.000000 \times 10^8 \text{ m}$ | (b) $9.5 \times 10^{-4} \text{ m}$ | (c) $6.0200 \times 10^4 \text{ L}$ | (d) $1.5 \times 10^{-3} \text{ kg}$ |
| 41. (a) 2.600000×10^{14} | (b) 6.42×10^{-7} | (c) $3.4 \times 10^8 \text{ cm}^2$ | |
| 42. (a) 133 m^2 | (b) $2.1 \times 10^2 \text{ L/min}$ | (c) 105 m/s | |

(Standardize Test Prep on pg. 70 & 71)

- C
- G
- D
- F
- Because the temperatures of the object differ under the same conditions, they must have different specific heats, so they are made of different metals.
- The scientific method is a series of steps followed to solve problems, including collecting data, formulating a hypothesis, testing a hypothesis, and stating conclusions.
- C
- I
- C
- F
- B
- The right side of the graph, which shows the conditions of water in the gas phase.