



Physical and Chemical Sciences
The Nature of Matter

Additional FCAT Practice Questions

Directions: Select the best answer for each of the following questions

Spacing of Atoms

1. Donald is making chocolate covered strawberries for a snack. He takes some chocolate out of the refrigerator where he has it stored and heats it until it melts. The chocolate undergoes changes during the heating process. When are the chocolate molecules closest together?
 - A. when they are in the refrigerator
 - B. when they are being melted
 - C. when they are at room temperature
 - D. when the melted chocolate begins to melt
2. Butter can exist as a solid block, as liquid, and can even evaporate into a gas. When is the average kinetic energy of the butter at its lowest level?
 - A. when the butter is at room temperature.
 - B. when the butter is melting in the sun
 - C. when the butter is vaporized as a gas
 - D. when the butter is refrigerated

3. Joe is pouring some fresh Florida orange juice. What is the reason the juice can flow out of the juice container?
- A. the molecules break apart during pouring so they are able to flow
 - B. the molecules are close together and do not move around easily
 - C. molecules are quite far apart and move around freely
 - D. the molecules tend to slide past each other easily
4. Del uses plastic building blocks to model the way molecules behave in pure substances. She takes the blocks and stacks them close together in a regular way. What does this assembly of blocks represent about solids and liquids?
- A. solids have very little spacing between each molecules
 - B. liquids have little spacing but slide past each other
 - C. solids have a small amount of kinetic energy
 - D. liquids have a moderate amount of kinetic energy
5. Del is making homemade peach popsicles by freezing peach nectar around wooden sticks. Which best describes what is happening to the peach nectar as it is cooling in the freezer?
- A. the kinetic energy is increasing and spaces between the molecules is getting smaller
 - B. the kinetic energy is decreasing and spaces between the molecules is getting smaller
 - C. the kinetic energy is decreasing and spaces between the molecules is getting larger
 - D. the kinetic energy is increasing and spaces between the molecules is getting larger

Chemical Properties

6. What is the density of a 3000 g rectangular block that has a base area of 100 cm^2 and a height of 15 cm?
- A. 3.0 g/cm^3
 - B. 0.5 g/cm^3
 - C. 2.0 g/cm^3
 - D. 45 g/cm^3
7. Mr. Feynman's class measured the mass and volume of three liquids.

Liquid	Mass (grams)	Volume (cm^3)
olive oil	18.0	20.0
soya sauce	15.6	15.0
honey	11.0	10.0

- What is the difference in the density between the most dense liquid and the least dense liquid?
- A. 0.20 g/cm^3
 - B. 0.14 g/cm^3
 - C. 0.06 g/cm^3
 - D. 1.10 g/cm^3
8. A clear glass window will allow an image to pass through it undistorted. At nighttime the window will also act like a mirror if the person looking through it is standing in a well lit room. What properties of the glass permit it to behave this way?
- A. It is opaque and translucent.
 - B. It is reflective and transparent.
 - C. It is opaque and transparent.
 - D. It is reflective and transparent.

9. Jacob heats a block of wax by floating it in a pan of water that he is heating on a stove. After a while the wax melts. Still later, the water begins to boil. What can Jacob conclude about the
- A. The melting point of wax is greater than the boiling point of water.
 - B. The melting point of wax is greater than the melting point of water.
 - C. The freezing point of water is greater than the freezing point of wax.
 - D. The freezing point of water is the same as the freezing point of wax.
10. Maher wishes to find the volume of a small irregularly shaped rock. Which method gives the best volume measurement.
- A. Place the rock in a graduated cylinder partly filled with water. Note the change in the level of the water.
 - B. Estimate the length, width, and height of the rock and multiply these values together.
 - C. Compare it to an object of similar size whose volume is known.
 - D. Weigh the rock and compare it to the weight of a rectangular block of wood that is about the same size.

Answers

1. A
2. D
3. D
4. A
5. B
6. C
7. A
8. D
9. B
10. A