\_\_\_\_ 1. In nuclear fission, \_\_\_\_\_ losses in mass produce \_\_\_\_\_ amounts of energy.

\_\_\_\_ 2. A nuclear chain reaction occurs when excess \_\_\_\_\_ collide with other nuclei.

\_\_\_\_ 3. Which of the following is an advantage of nuclear energy as a power source?

\_\_\_\_ 4. Which of the following is a disadvantage of nuclear energy as a power source?

\_\_\_\_ 5. The nuclear power used for electricity is produced by what nuclear process?

\_\_\_\_ 6. A fission chain reaction can be slowed by using materials that will do what?

\_\_\_\_ 7. The ideal location for a radioactive-waste storage facility is one that has what characteristics?

\_\_\_\_ 8. Are nuclear reactors commonly used throughout the world?

\_\_\_\_ 9. When a fusion reactor for safely generating energy is developed, the element that could meet Earth’s energy demands for millions of years is what?

\_\_\_\_ 10. \_\_\_\_\_ is a measure of the ability to do work.

\_\_\_\_ 11. The law of conservation of energy states that energy:

\_\_\_\_ 12. How are work and energy related?

\_\_\_\_ 13. What is chemical energy?

\_\_\_\_ 14. The Celsius temperature scale is defined by which temperatures?

\_\_\_\_ 15. A cold-blooded reptile basks on a warm rock in the sun. Its body is warmed by which heat transfer method(s)?

\_\_\_\_ 16. \_\_\_\_\_ does not involve the movement of matter.

\_\_\_\_ 17. Energy from the sun reaches Earth by which heat transfer method(s)

\_\_\_\_ 18. Temperature is a measure of:

\_\_\_\_ 19. The temperature at which all molecular motion stops is what?

\_\_\_\_ 20. Convert 300 K to the Celsius scale.

\_\_\_\_ 21. What is heat?

\_\_\_\_ 22. Heat always moves from an object of \_\_\_\_\_ temperature to an object of \_\_\_\_\_ temperature.

\_\_\_\_ 23. As the kinetic energy of the molecules in a substance increases, the temperature of the substance:

\_\_\_\_ 24. What is conduction?

**SPECIFIC HEATS AT 25**°**C**

|  |  |  |  |
| --- | --- | --- | --- |
| **Substance** | ***c* (J/kg** • **K)** | **Substance** | ***c* (J/kg** • **K)** |
| Water (liquid) | 4,186 | Copper | 385 |
| Steam | 1,870 | Gold | 129 |
| Ammonia (gas) | 2,060 | Iron | 449 |
| Ethanol (liquid) | 2,440 | Mercury | 140 |
| Aluminum | 897 | Lead | 129 |
| Carbon (graphite) | 709 | Silver | 234 |

\_\_\_\_ 25. Which type of substances are typically good conductors of energy as heat?

\_\_\_\_ 26. How much heat energy will cause the temperature of 7.0 kg of iron to increase its temperature by 15 K? The specific heat of iron is 449 J/kg • K.

\_\_\_\_ 27. 10.0 kg of a substance underwent a 3.0 K change in temperature when 11,500 J of energy as heat was added to the substance. What is the substance?

\_\_\_\_ 28. Which substance listed in the table above has a specific heat approximately 10 times greater than the specific heat of silver?

\_\_\_\_ 29. Using the following table, determine which substance can absorb the most energy in a temperature increase of 1 K.

\_\_\_\_ 30. The temperature of a substance increases by 3 K when 1,635 J is added to a 2 kg quantity of the substance. What is the specific heat of the substance?

\_\_\_\_ 31. The temperature of 1.5 kg of ethanol is 37°C. What will the final temperature be if 80,000 J of energy as heat is added to the ethanol?

\_\_\_\_ 32. Calculate the specific heat for a 20 g piece of metal if 30 J of energy is required to raise its temperature by 12.5 K.

\_\_\_\_ 33. Calculate the energy transferred when raising the temperature of 16 kg of water by 3°C (*c* = 4,186 J/kg • K).