

Name: _____

Date: _____ Period: _____

17.1 – The Flow of Energy – Heat and Work

1. What area of study in chemistry is concerned with the heat transfers that occur during chemical reactions?

2. What is chemical potential energy?

3. In which direction does heat always flow?

4. What can be considered the system and what are the surroundings when studying a mixture of chemicals undergoing a reaction?

System –

Surroundings –

5. What is the law of conservation of energy?

6. What is an endothermic process?

7. Describe an endothermic process.

8. In an endothermic reaction, which loses and gains heat, the system or surroundings?

9. What is an exothermic process?

10. Describe an example of an exothermic process.

11. In an exothermic reaction, which loses and gains heat, the system or surroundings?

12. In what two units is heat measured?

13. How are those units related?

14. What is the difference between a calorie and a Calorie?

15. What is the difference between specific heat and heat capacity?

16. What is the formula used to calculate specific heat?

17. TRUE or FALSE – Samples of two different substances having the same mass always have the same heat capacity.

18. Compare the heat capacity of a 2 kg steel frying pan and a 2 g steel pin. If the heat capacities of these differ, explain why.

17.2 – Measuring and Expressing Enthalpy Changes

19. What is calorimetry?

20. With what instrument do we measure calorimetry?

21. What is enthalpy?

22. What is the difference between a positive enthalpy and a negative enthalpy?

23. A chemical equation that includes the enthalpy change is called a _____ equation.

24. What is the difference between the heat of reaction and heat of combustion?

17.3 – Heat in Changes of State

25. What is the molar heat of fusion?

26. What is the molar heat of solidification?

27. How are they related?

28. What is the molar heat of vaporization?

29. What is the molar heat of condensation?

30. How are they related?

31. What is the molar heat of solution?

17.4 – Calculating Heats of Reaction

32. What is Hess's law of heat summation?

33. TRUE or FALSE – Graphite is a more stable form of elemental carbon than diamond at 25 C, so diamond will slowly change to graphite over an extremely long period of time.

34. Look at table 17.4 on page 530. Methane burns to form carbon dioxide and water vapor. Write and balance the equation for the burning of methane.

35. Will the heat of this reaction be positive or negative? How do you know?

36. How does your experience confirm your answer to #34?