

Name: _____ Date: _____ Block: _____

Part 1: Balancing, Endothermic vs. Exothermic, Determining Type of Reaction

Balance the following chemical equations. If you see a polyatomic ion like (NO₃) on both sides of the arrow (→) you can balance it as a whole unit. If you **do** see a polyatomic ion like (NO₃), **draw a circle around it**. After you have balanced the equation underline the word energy and then tell whether the reaction is **endothermic** or **exothermic**.

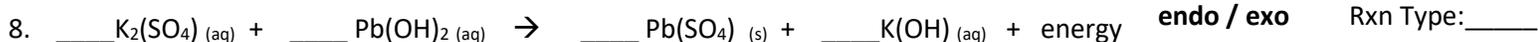
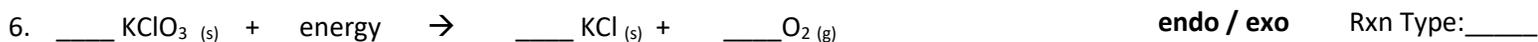
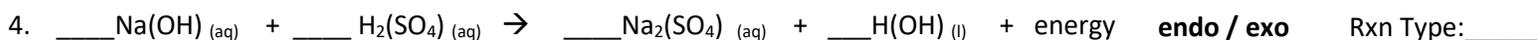
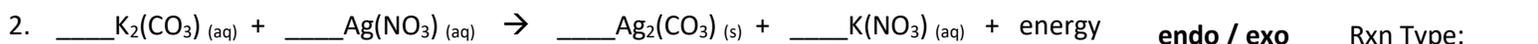
Video Help: [Types of rxn](#)

[Types of rxn with predicting](#)

[Balancing](#)

[Khan Balancing](#)

[Endo/Exo w/ diagrams](#)



Part 2: Determine if the following are soluble or insoluble. Then indicate if a precipitate or an aqueous solution forms.

11. CaCO₃

14. PbSO₄

Soluble/Insoluble/net ionic

12. Potassium iodide

15. Silver chloride

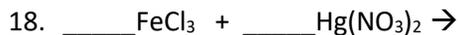
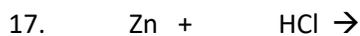


13. NH₄OH

16. KC₂H₃O₂

Part 3: Determine Type, Predict Products, and Balance.

Refer to Warm-Up #29 or Aqueous Activity for Help



Questions 21-25 refer to Figure 1

21. Is the reaction endothermic or exothermic? Explain your reasoning.

22. What is the potential energy of the products?

23. What is the potential energy of the activated complex?

24. What is the value of the activation energy?

25. What is value of the ΔH_{rxn} ?

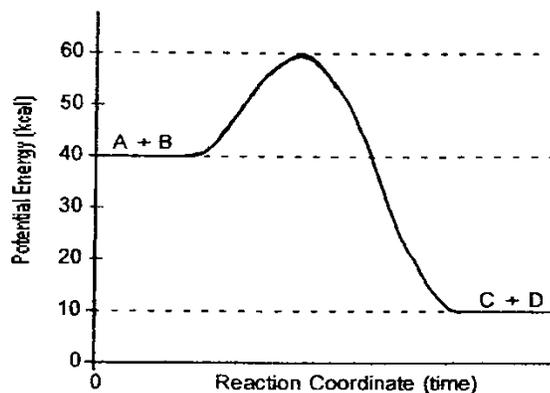


Figure 1

Questions 26-30 refer to Figure 2

26. Is the reaction endothermic or exothermic? Explain your reasoning.

27. What is the potential energy of the activated complex of the catalyzed reaction?

28. What is the value of the activation energy of the catalyzed reaction?

29. What is the value of the activation energy of the uncatalyzed reaction?

30. How does ΔH for the catalyzed compare to ΔH for the uncatalyzed reaction? (same, greater or less) Explain your reasoning.

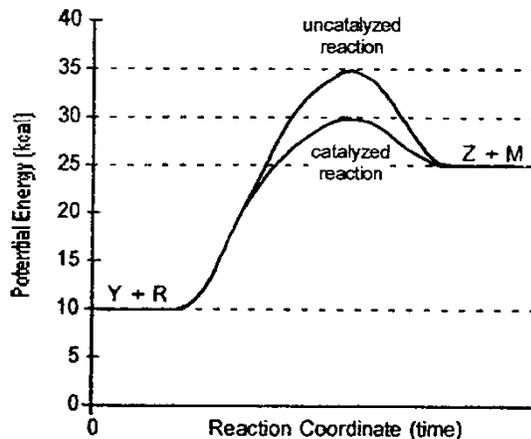
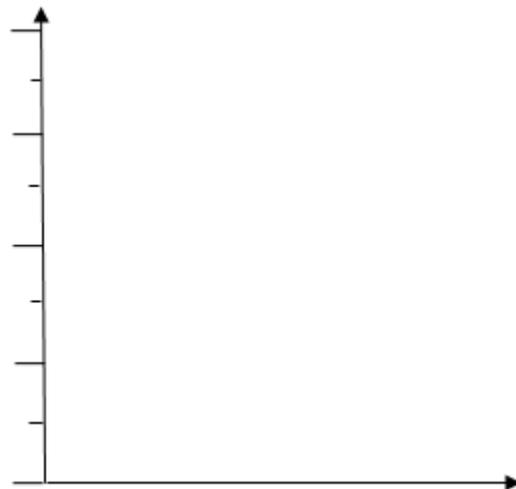


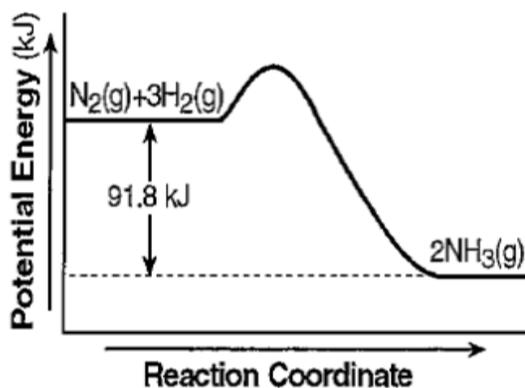
Figure 2

31. To the right, draw a reaction path diagram with the following criteria:

- Label the x-axis and y-axis with appropriate units.
- Use and label an appropriate scale for the y-axis.
- Reactants have 250 kJ of potential energy stored in their bonds
- An activation energy of 100 kJ
- Products have 50 kJ of potential energy stored in their bonds
- Calculate enthalpy (ΔH) = _____
- Is the reaction endothermic or exothermic?



32. Write a thermochemical equation based off the information found in the energy path diagram below.



33. Write the following reactions with the change in enthalpy as a reactant or product.



34. In the thermochemical equation below, the energy has been written on the reactants side or the products side. Write the energy as a ΔH value with the correct sign for the reaction below.



35.

OMIT Question #35

OMIT Question #35

36.

OMIT Question #36

OMIT Question #36

37. What is a chemical change?

38. Describe the four indications of a chemical reaction?

39. What are the two criteria for an effective "good" collision?

40. Describe five ways to speed up a reaction.