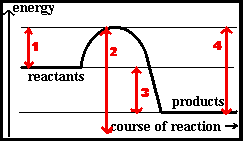
**Exothermic vs Endothermic Worksheet**

1. Change **1**. When calcium carbonate forms calcium oxide and carbon dioxide heat is absorbed.  
   Change **2**. Calcium oxide releases heat when shaken with carbon dioxide.  
   **Which line BEST describes these changes**?
   1. change **1** is exothermic; change **2** is endothermic
   2. change **1** is endothermic; change **2** is endothermic
   3. change **1** is exothermic; change **2** is exothermic
   4. change **1** is endothermic; change **2** is exothermic
2. **Which of the following involves a chemical reaction**?
   1. cooking a cake
   2. filtering sand from water
   3. fractionally distilling oil
   4. melting ice
3. **Which of these involves a chemical reaction**?
   1. boiling water
   2. apples decaying
   3. magnetizing iron
   4. ice melting
4. **Which of these processes is always exothermic**?
   1. evaporation
   2. insulation
   3. combustion
   4. Melting
5. **When ammonium chloride dissolves in water the temperature falls. The type of energy change is described as**?
   1. exothermic
   2. activated
   3. endothermic
   4. a decomposition
6. **Which of these involves a physical change and NOT a chemical reaction**?
   1. apples decaying
   2. iron rusting
   3. frying bacon
   4. boiling water
7. **Which of the following temperature changes is NOT the result of a chemical change**?
   1. a rise in temperature as neutralisation takes place
   2. a rise in temperature when a fuel burns
   3. a fall in temperature as a precipitate falls
   4. a fall in temperature as liquid metal cools to solidify
8. **Which of the following results in a chemical reaction**?
   1. adding vinegar to water
   2. leaving milk to go sour
   3. stirring sugar with tea
   4. mixing salt with water
9. **Which of these process is always exothermic**?
   1. melting
   2. condensing
   3. boiling
   4. Evaporation
10. **The chemical change when a fuel burns can be described as**?
    1. a precipitation
    2. an exothermic reaction
    3. a reversible reaction
    4. an endothermic reaction
11. **Heat is taken in when ammonium nitrate dissolves in water. This is an example of**?
    1. exothermic change
    2. endothermic charge
    3. electrolysis
    4. thermal decomposition
12. **Which of these process is always endothermic**?
    1. burning
    2. condensation
    3. freezing
    4.   Boiling
13. **Which of the following energy changes changes   
    corresponds to the overall energy change for the reaction**?
    1. energy change **2**
    2. energy change **1**
    3. energy change **3**
    4. energy change **4**
14. Equal amounts of four different substances (A-D) where added separately to equal amounts of an acid and a thermometer placed in the mixture. **For which substance is the reaction the most endothermic**?
    1. temperature rises by 5oC
    2. temperature falls by 3oC
    3. temperature rises by 3oC
    4. temperature falls by 5oC
15. **Which of the following is a physical change**?
    1. making polythene from gaseous oil molecules
    2. dissolving sugar in coffee
    3. making lime from limestone
    4. lighting a match
16. **Which of these processes is always endothermic**?
    1. melting
    2. burning
    3. condensation
    4. freezing

17. Calculate the reaction energy of the combustion of methanol and draw a graph to represent the reaction.

2 CH3OH(l) + 3 O2(g) → 2 CO2(g) + 4 H2O(g)

18. Is each of the following reactions endothermic or exothermic? Explain your answers.

**A.** When a certain amount of potassium nitrate is dissolved in water, the water temperature drops from23°C to 18°C.

**B.** Jack cooks himself a steak.

**C.** When cold water is mixed with sulphuric acid, the mixture can rapidly reach the boiling point of water.

**D.** A flare burns up slowly.

Endothermic reactions:

|  |  |
| --- | --- |
|  |  |
|  | |

Exothermic reactions:

|  |  |
| --- | --- |
|  |  |
|  | |

**19.** Refer to Tables 4.12 and 4.13 on page 115 of your student book to answer the following questions about the combustion of acetylene, a gas used in welding.

The unbalanced equation for the combustion of acetylene is:

C2H2 + O2 CO2 + H2O

The bond structures are:

H–C≡C–H + O=O O=C=O + H–O–H

**a)** Calculate the reaction energy of this reaction.

|  |
| --- |
|  |
|  |

**b)** What amount of energy is needed to start this reaction?

|  |
| --- |
|  |
|  |

**c)** What amount of energy is released during the formation of new bonds?

|  |
| --- |
|  |
|  |

**d)** How many grams of acetylene are needed for a welding task that takes 4832 kJ of energy?

|  |
| --- |
|  |
|  |