**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:

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Exothermic reactions:

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**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.

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

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

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

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