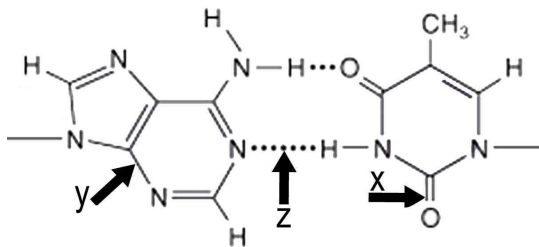


Chemistry Review Worksheet

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1. The following represents what type of bonds?

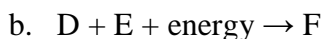
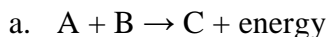


x.

y.

z.

2. Indicate whether these reactions are endergonic or exergonic?

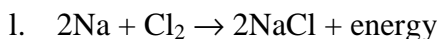
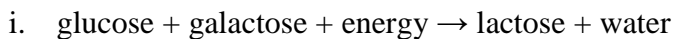
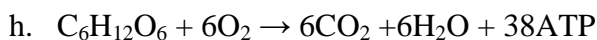


c. a reaction in which energy is released

d. a reaction in which the reactants have more energy than the products

e. a reaction in which the products have more energy than the reactants

f. a reaction in which energy must be added



kcal = **kilocalories**, a measure of heat energy

ATP = acronym for a special energy carrying molecule **Adenosine Triphosphate**

3. In these reactions, is the first chemical oxidized or reduced?

- a. $\text{Cl} \rightarrow \text{Cl}^-$
- b. $\text{Na} \rightarrow \text{Na}^+$
- c. $\text{Zn}^{2+} \rightarrow \text{Zn}$
- d. $\text{Cu}^+ \rightarrow \text{Cu}^{2+}$
- e. $\text{Fe}^{3+} \rightarrow \text{Fe}^{2+}$
- f. $\text{P} \rightarrow \text{P}^{3-}$
- g. $\text{Ca} \rightarrow \text{Ca}^{2+}$
- h. $\text{Pb}^{2+} \rightarrow \text{Pb}^{4+}$
- i. $2\text{H}^+ \rightarrow \text{H}_2$
- j. $2\text{O}^{2-} \rightarrow \text{O}_2$
- k. $\text{NAD}^+ \rightarrow \text{NADH}$
- l. $\text{C}_2\text{H}_6\text{O} \rightarrow \text{C}_2\text{H}_4\text{O}$
- m. $\text{FADH}_2 \rightarrow \text{FAD}$
- n. $\text{Q} \rightarrow \text{QH}_2$

NAD = the acronym for a special electron carrier molecule **N**icotinamide **A**denine **D**inucleotide

NADH = **N**icotinamide **A**denine **D**inucleotide with **H**ydrogen added

FAD = the acronym for a special electron carrier molecule **F**lavin **A**denine **D**inucleotide

FADH₂ = **F**lavin **A**denine **D**inucleotide with two (**2**) **H**ydrogens added

Q = a special electron carrier molecule **Q**uinone

QH₂ = **Q**uinone with two (**2**) **H**ydrogens added

4. In these reactions, which chemical is oxidized and which chemical is reduced?

- a. $\text{Na} + \text{Cl} \rightarrow \text{Na}^+ + \text{Cl}^-$
- b. $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$
- c. $2\text{Al} + 6\text{H}^+ \rightarrow 2\text{Al}^{3+} + 3\text{H}_2$
- d. $\text{FADH}_2 + \text{Q} \rightarrow \text{FAD} + \text{QH}_2$
- e. $\text{C}_3\text{H}_4\text{O}_3 + \text{NADH} + \text{H}^+ \rightarrow \text{C}_3\text{H}_6\text{O}_3 + \text{NAD}^+$
- f. $\text{Fe} + \text{S} \rightarrow \text{Fe}^{2+} + \text{S}^{2-}$
- g. $2\text{Ag}^+ + 2\text{Br}^- \rightarrow 2\text{Ag} + \text{Br}_2$
- h. $\text{Li}^+ + \text{K} \rightarrow \text{Li} + \text{K}^+$
- i. $\text{C}_4\text{H}_6\text{O}_4 + \text{FAD} \rightarrow \text{C}_4\text{H}_4\text{O}_4 + \text{FADH}_2$