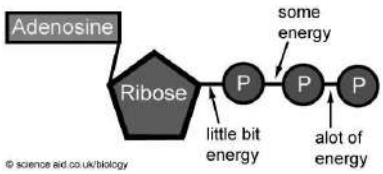
WLHS / AP Bio / Monson

Name_____
Date_____Per_____

READING GUIDE: CH 8 – An Introduction to Metabolism (8.1 – 8.3)

1) What is meant by "metabolism"?_____

2) Define the following terms. Give an example of each.



A) energy

B) kinetic energy

C) potential energy

D) chemical energy

E) entropy

3) Distinguish between **CATABOLIC** and **ANABOLIC** pathways. Give an example of each.

4) What is meant by "free energy"?_____

_____

5) When energy is converted, some becomes unavailable to do work. What is the fate of this unusable energy?_____

6) In the equation: **$\Delta G = \Delta H - T\Delta S$**, what does each letter represent?

ΔG:_____ ΔH:_____

T:_____ ΔS:_____

7) Using the equation in #6, how can we predict whether or not a reaction will be spontaneous?

._____

8) Explain and give an example of the following entropy changes:

*__INCREASE IN ENTROPY__:_____

example:_____

*__DECREASE IN ENTROPY__:_____

example:_____

9) Contrast exergonic and endergonic reactions in terms of: free energy, stability, and capacity to do work. Give an example of each.

*__EXERGONIC REACTIONS__:_____

example:_____

*__ENDERGONIC REACTIONS__:_____

example:_____

10) Summarize the 1st and 2nd Laws of Thermodynamics:

1st Law:_____

2nd Law:_____

11) List and give an example of the **three main kinds of WORK** performed by a cell. (see section 8.3)

12) Explain the concept of **energy coupling**._____

_____

13) Define **phosphorylated**._____

_____

14) Draw and label a simplified diagram in which you show an **ATP**, **ADP**, and **AMP** molecule. How are they similar? How are they different?

15) Draw and label a simplified diagram of the **ATP/ADP cycle** (see fig. 8.11).

16) (caption of fig. 8.11): Energy released by_____reactions (_____) in the cell is used to _____ADP, regenerating_____. Chemical _____ _____ energy stored in _____ drive most _____.