Name _____ Class _____ Date _____

Section 1: Chemical Energy and ATP

Study Guide A

KEY CONCEPT

All cells need chemical energy.

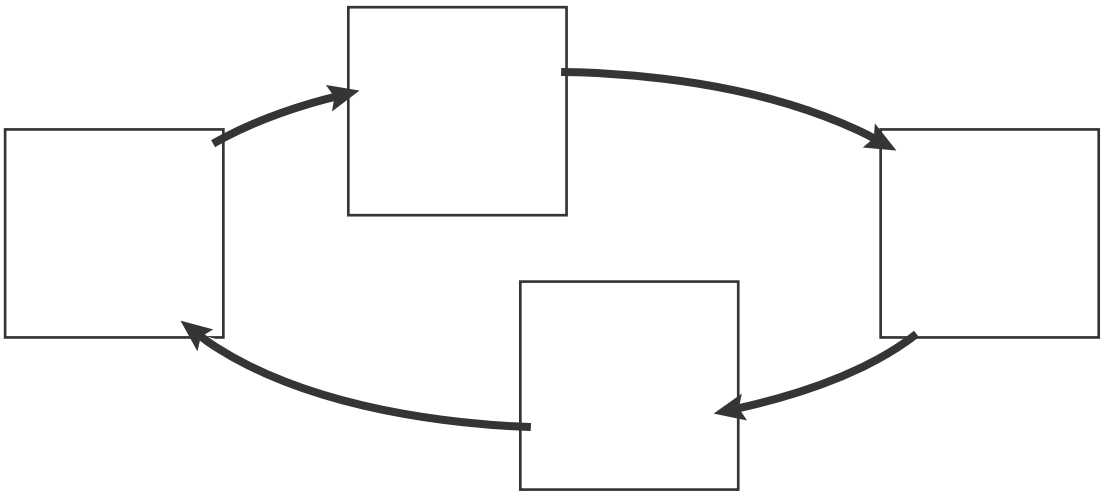
VOCABULARY

ATP	ADP	chemosynthesis

MAIN IDEA: The chemical energy used for most cell processes is carried by ATP.

Circle the word or phrase that best completes the statement.

1. All cells use adenosine triphosphate (ATP) for energy. ATP is a *molecule / organelle* that transfers energy from the breakdown of *ADP / food molecules* to cell processes.
2. ATP is a *high-energy / low-energy* molecule that is converted into *higher-energy / lower-energy* ADP when a phosphate group is removed and energy is released.
3. ADP is converted back into ATP by the addition of a *phosphate group / food molecule*.
4. Put the letter of the appropriate statement into each box of the cycle diagram below to show the relationship between ATP and ADP.
   a. High-energy adenosine triphosphate (ATP)
   b. Lower-energy adenosine diphosphate (ADP)
   c. Energy added from breakdown of carbon-based molecules, phosphate added
   d. Phosphate removed, energy released



MAIN IDEA: Organisms break down carbon-based molecules to produce ATP.

Put the letter for each of the following six statements into the appropriate list to identify the roles of different types of molecules when they are broken down to make ATP.

a. molecules least likely to be broken down

b. molecules most commonly broken down

c. molecules that store most of the energy in a person's body

d. triglyceride yields about 146 ATP

e. glucose yields about 36 ATP

f. store about the same amount of energy as carbohydrates

	Type of Molecule	**Role in ATP Production**
5.	Carbohydrates	• • • 4 calories per mg (4 Calories per gram)
6.	Lipids	• • • 9 calories per mg (9 Calories per gram)
7.	Proteins	• • • 9 calories 4 calories per mg (4 Calories per gram)

MAIN IDEA: A few types of organisms do not need sunlight and photosynthesis as a source of energy.

Circle the word or phrase that best completes the statement.

8. Chemosynthesis is a process by which some organisms use *chemical energy / light energy* instead of *chemical energy / light energy* to make energy-storing carbon-based molecules.