The Muscular System: Muscle Metabolism

1. List the three roles of ATP in muscle contraction:

   1. _____

   2. _____

   3. _____

2. The potential energy in ATP is released when the terminal high-energy bond is broken by a process called _____.

   Write the end products of this process: ATP (+ H_2O) → _____

3. Rebuilding ADP into ATP with a new source of energy is carried out by a process called _____.

   Write the equation for this process: _____ → ATP (+ H_2O)

4. List the three processes used to synthesize additional ATP when ATP supplies are low:

   1. _____

   2. _____

   3. _____

5. An immediate source of energy is _____ (CP), but the supplies are limited and rapidly depleted.

   One molecule of CP produces ___ ATP.

6. Glucose is a major source of energy for synthesizing ATP. List the two sources of glucose:

   1. _____

   2. _____

7. _____ is the process that breaks down glucose.

   Name two products of the breakdown of glucose:

   1. _____

   2. _____

If oxygen is not available, pyruvic acid is converted to _____ acid, which is the end product of _____ respiration.

8. If oxygen is available, the process is known as _____ respiration.

Name two sources of oxygen:

1. _____

2. _____

The aerobic pathway consists of glycolysis + _____ + _____. The net result of one glucose molecule is ___ ATP.

9. The process of restoring the depleted energy reserves after exercise is called _____.

Name four processes that occur during this time:

1. _____

2. _____

3. _____

4. _____

10. Put the following characteristics under the correct fiber type:

- Krebs cycle and oxidative phosphorylation
- uses glycolysis
- fatigue rapidly
- high endurance
- few capillaries
- many capillaries
- much myoglobin
- little myoglobin
- long-distance runner
- sprinter
- light in color—large diameter
- red in color—small diameter

Red Slow-Twitch Fibers	White Fast-Twitch Fibers
