Nutrition – Class 1

The Body's Energy System

Quiz Answer Key

1. According to the lesson, food provides more than calories because it also delivers:
A. Information, signals, and building materials
B. Only heat and energy
C. Instructions for muscles only
D. Extra fuel for emergencies
(Answer: A)

2. In the lesson, the body was compared to a construction site because:
A. Food builds houses in the body
B. The body uses the materials it receives to build and repair itself
C. Muscles act like construction workers only during exercise
D. Digestion only happens in the stomach
(Answer: B)

3. Which three nutrients are known as the macronutrients?
A. Vitamins, minerals, and water
B. Fiber, glucose, and electrolytes
C. Carbohydrates, proteins, and fats
D. Calcium, iron, and zinc
(Answer: C)

4. According to the lesson, what is the main job of proteins?
A. Providing the fastest fuel source
B. Carrying oxygen through the blood
C. Regulating body temperature
D. Building and repairing body structures
(Answer: D)

5. Which macronutrient was described as especially useful for long-term energy storage?
A. Fat
B. Protein
C. Carbohydrates
D. Water
(Answer: A)

6. What does the term "metabolic flexibility" mean?
A. The body only uses one fuel source at a time
B. The body can shift between different fuel systems when needed
C. The body stores all fuel as body fat
D. The body avoids using stored energy
(Answer: B)

7. In the "Running an Energy Economy" section, glucose was compared to:
A. A long-term retirement account
B. Emergency savings

C. Money in your pocket for quick use
D. A locked safe
(Answer: C)

8. According to the lesson, micronutrients are important because they:
A. Provide all of the body's energy
B. Support thousands of important jobs throughout the body
C. Replace proteins and fats
D. Function only during exercise
(Answer: B)

9. Which type of fiber behaves somewhat like a sponge and mixes with water?
A. Insoluble fiber
B. Roughage fiber
C. Structural fiber
D. Soluble fiber
(Answer: D)

10. According to the lesson, what is often more important than one single meal?
A. Eating perfectly every day
B. Repeated patterns and choices over time
C. Counting every calorie
D. Avoiding all processed foods
(Answer: B)

Home Activities – Answer Key

Activity 1 – Food Information Detective

There are many possible correct answers because students will choose different foods. The goal is not perfect nutrition labeling. The goal is helping students think like "Food Information Detectives" and recognize that food is more than calories.

Students should look for ideas such as:
- Foods often contain a blend of carbohydrates, protein, and fat
- Less processed foods often bring more vitamins, minerals, water, fiber, and helpful nutrients
- Highly processed foods may still contain calories and energy, but often provide fewer helpful "instructions"
- Foods with shorter ingredient lists are often closer to real food
- Students should think about whether food looks recognizable and closer to nature

Example responses:

Apple
Main macronutrient: Mostly carbohydrates
Processed: Real food
Ingredients: One (apple)
Would great-great-grandparents recognize it?: Yes
Helpful information: Fiber, water, vitamins, plant nutrients

Cheese Stick
Main macronutrients: Protein and fat
Processed?: Moderately processed

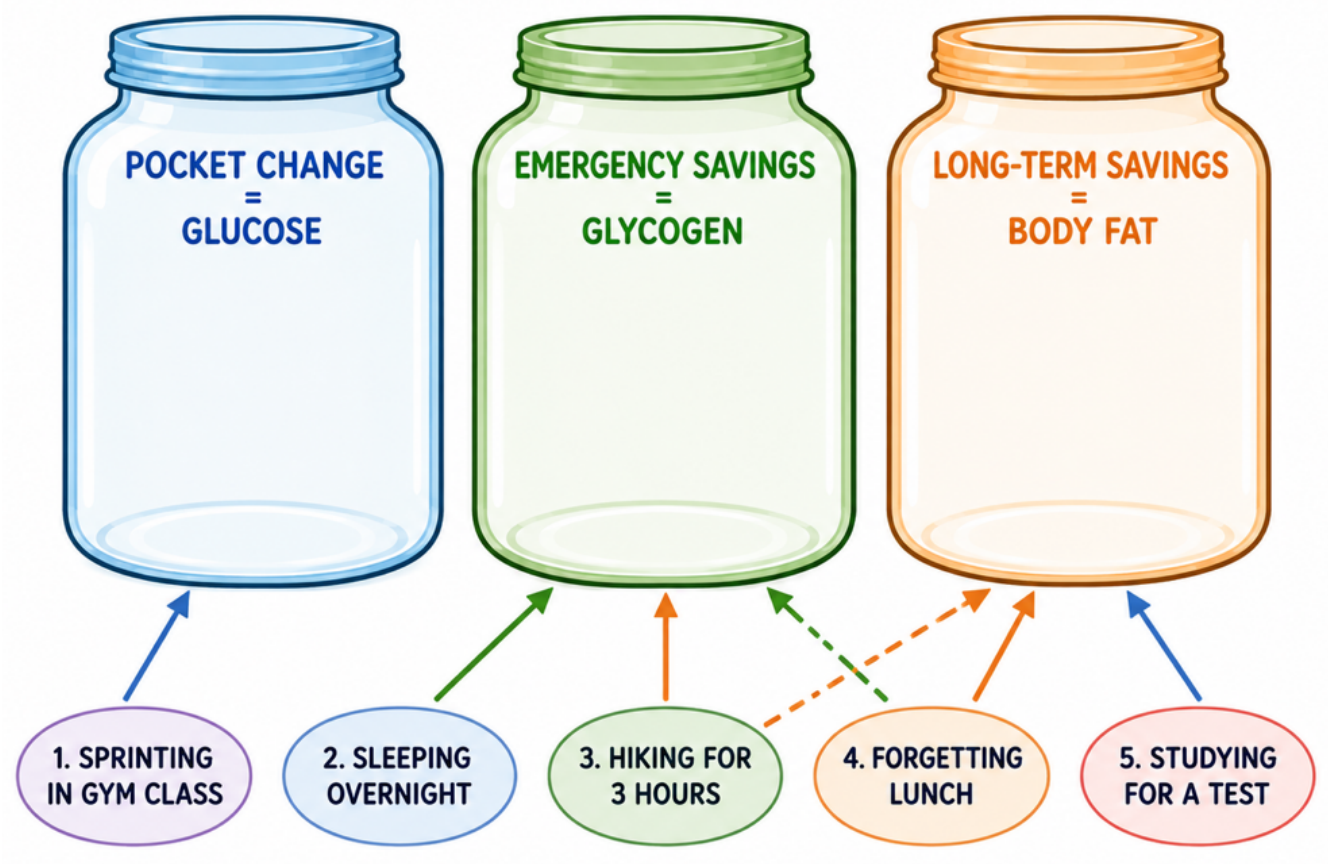
Ingredients: A few ingredients
Would great-great-grandparents recognize it?: Probably yes
Helpful information: Protein, calcium, minerals

Brightly Colored Snack Cake
Main macronutrients: Mostly carbohydrates and fat
Processed?: Highly processed
Ingredients: Long ingredient list
Would great-great-grandparents recognize it?: Maybe not
Helpful information: Mostly calories and energy, fewer helpful nutrients

Sample paragraph response:
The apple seemed to bring the most helpful information because it contained fiber, water, vitamins, and nutrients along with energy. It also looked very close to how food appears in nature. Foods closer to real food often bring more helpful instructions for the body.

Teaching Note: Students are not expected to decide whether foods are "good" or "bad." The goal is recognizing patterns and understanding that food is usually a package containing energy plus information.

Activity #2: The Energy Economy Game



There may be more than one reasonable answer for some situations because the body often uses several fuel systems together. The body is flexible. It does not use only one fuel source all the time. The body is constantly switching, blending, storing, and adjusting based on what is happening.

The goal is to help students think about which fuel system might be used *most* in each situation.

1. Sprinting in gym class → Pocket Change (Glucose)
Short bursts of activity need fast energy right away. Glucose is quick-access fuel that the body can use immediately.

2. Sleeping overnight → Emergency Savings (Glycogen)
While sleeping, you are not eating, but your brain and body still need fuel. The liver slowly releases stored glycogen during the night.

3. Hiking for 3 hours → Emergency Savings (Glycogen) and Long-Term Savings (Body Fat)
Longer activities often begin using glycogen and gradually rely more on body fat as time passes.

4. Forgetting lunch → Emergency Savings (Glycogen), then possibly Long-Term Savings (Body Fat)
The body first uses stored fuel that is easy to access. If enough time passes without food, the body may increasingly use stored fat.

5. Studying for a test → Pocket Change (Glucose)
The brain uses a lot of glucose, especially during thinking, learning, and concentration.