

## ANSWERS AND EXPLANATIONS FOR THE POST-TEST FOR ENERGY METABOLISM

1. A calorie is a convenient way of measuring the energy supplied by food and used up in voluntary and involuntary activity. A kilocalorie is the amount of energy necessary to raise the temperature of one kilogram of water one degree centigrade.
2. Proteins and carbohydrates provide 4 kilocalories per gram, while fats provide 9 kilocalories per gram.
3. Empty-calorie foods are those high in sugar and/or fat which supply large amounts of calories but little if any of the essential nutrients.
4. Two examples of empty-calorie foods are candy bars and soft drinks.
5. True. Energy in food is found in chemical bonds that hold nutrients together. This food energy is ultimately released as heat through chemical processes occurring in the body.
6. False. Carbohydrates release the same amount of energy per unit weight as proteins and about one-half the amount released by a similar amount of fat.
7. True. A calorie is a convenient way of measuring the amount of energy released from food.
8. False. Water does not supply any calories. Empty-calorie foods supply large amounts of calories but few essential nutrients.
9. False. Rapid movement burns up more calories than does slow movement. Although the differences may appear to be small judged on a short term basis, over the long term a significantly larger number of calories will be used up with rapid movement as opposed to slow movement.
10. True. Total energy needs are related to level of physical activity. Very active people require more energy than do less active.
11. True. Energy needs are determined by the sum of energy needed for involuntary and voluntary activities.
12. False. Although intense mental work can leave you feeling fatigued, it does not require as many calories as hard manual work does.
13. True. Breathing is one of the functions contributing to the basal energy requirements of the body.
14. (a) Water supplies no calories. White bread which consists primarily of carbohydrate and protein supplies 80 calories in one serving. Margarine, consisting primarily of fat, supplies 45 calories in a one teaspoon serving but more calories per gram of material than does white bread.
15. The same. Every calorie is the same as every other calorie. Calories from cake supply the same amount of energy to your body as do a similar amount of calories from soup.

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|-----|---------|----------|----------|
| 16. | 1. High | 6. Low   | 11. High |
|     | 2. Low  | 7. High  | 12. High |
|     | 3. High | 8. High  | 13. Low  |
|     | 4. High | 9. Low   | 14. High |
|     | 5. Low  | 10. High | 15. High |

17. <u>Food</u>	<u>Calories</u>
Whole Milk (one cup)	150
Skim Milk (one cup)	90
Cottage Cheese (1/2 cup)	110
Butter (2 tablespoons)	270
Hamburger Patty (3 ounces)	300
Peanut Butter (2 tablespoons)	168
Orange (one small)	60
Watermelon (one cup)	60
Baked beans (one cup)	280
Corn-on-the-Cob (one ear)	80
Biscuit	115
Bread (one slice white)	80
Muffin (plain, small)	115
Corn flakes (one cup)	94
Spaghetti (one cup, cooked)	140

18. Factors influencing the caloric requirements of the body include age, sex, size, activity, and rate of growth.

19. Involuntary activity includes such functions as beating of the heart, breathing, maintaining muscle and body temperature, the movement of compounds into and out of body cells, and digestion. Such activity accounts for 50 to 65 percent of total energy requirements.

20. Involuntary activities account for the largest amount of our energy needs, 50 to 65 percent of total requirements.

21. Voluntary activity includes all activity over which you have conscious control as opposed to involuntary activities which go on all the time without you consciously controlling or being aware of them.

22. Three specific voluntary activities would be sitting, standing, and running. Other examples would be eating, playing the piano, etc.

23. The more we engage in voluntary activity, the more active we are, and the more calories we need to keep weight constant. Inactive individuals require fewer calories than active individuals.

24. One pound of fat is equivalent to 3500 calories. In order to lose two pounds a week, 7000 fewer calories than the level required for maintenance must be consumed each week. This means that 1000 fewer calories (7000 calories - 7 days) must be consumed each day. Therefore, if a man could maintain his present weight on an intake of 3500 calories per day, he could lose two pounds a week by reducing his intake to 2500 calories.

25. One pound of fat is equivalent to 3500 calories. In order to gain one pound per week, she must increase her dietary intake by 3500 calories or by 500 calories per day.

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