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Name:_____ Class:_____ Date:_____

Chapter 01

1. Minerals are nonessential nutrients and provide 4 kilocalories per gram.
   a. true
   b. false

ANSWER: b

2. Fat-soluble vitamins include:
   a. vitamins C, B, and E.
   b. vitamins C, A, and D.
   c. vitamins A, D, E, and K.
   d. vitamins B, D, and E.
   e. vitamins B, D, E, and C.

ANSWER: c

3. Phytochemicals are found in all protein-rich foods, including chicken, eggs, and fish.
   a. true
   b. false

ANSWER: b

4. Iron deficiency is a form of malnutrition.
   a. true
   b. false

ANSWER: a

5. According to the National Health and Nutrition Examination Survey, the majority of Americans are meeting recommendations for fruits and vegetables.
   a. true
   b. false

ANSWER: b

6. Which of the following is NOT considered an essential nutrient?
   a. phytochemicals
   b. proteins
   c. fats
   d. carbohydrates
   e. water

ANSWER: a

7. A nutrient that cannot be made by the body in sufficient quantities and that must be obtained from food is a/an:
   a. organic nutrient.
   b. inorganic nutrient.
   c. essential nutrient.

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d. phytochemical.
e. functional nutrient.

ANSWER: c

8. Nutrition is the study of :
a. factors affecting food choices.
b. processes involved in the delivery of the chemical components of food throughout the body.
c. how the chemical components of food affect the cells.
d. how the chemical components of food affect health and disease states.
e. All of the above

ANSWER: e

9. Which nutrients often cooperate with proteins to facilitate chemical reactions?
a. alcohol
b. carbohydrates
c. lipids
d. minerals
e. vitamins

ANSWER: d

10. Which disease state is often associated with chronic overconsumption?
a. type 1 diabetes
b. type 2 diabetes
c. iron deficiency
d. scurvy

ANSWER: b

11. Westernized diets are generally high in _____.
a. calcium
b. fiber
c. potassium
d. sodium
e. vitamin D

ANSWER: d

12. Nutrients are classified into macronutrients and micronutrients. All of the following are macronutrients EXCEPT:
a. sodium.
b. water.
c. proteins.
d. iron.

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e. sodium and iron.

ANSWER: e

13. Which of the following macronutrients is the preferred fuel for the brain and red blood cells?
    a. proteins
    b. lipids
    c. water
    d. carbohydrates
    e. proteins and lipids

ANSWER: d

14. Macronutrients primarily supply _____ in our bodies.
    a. energy
    b. a large portion of structural components
    c. nerve impulses
    d. a and b
    e. b and c
    f. a and c

ANSWER: d

15. Homeostasis is the process by which the body:
    a. facilitates chemical reactions with proteins.
    b. maintains a stable internal environment in the face of external stresses.
    c. maintains its external structure.
    d. transmits nerve impulses.

ANSWER: b

16. John and his wife are celebrating their first wedding anniversary. Their dinner consists of 55 grams of carbohydrates, 36 grams of protein, 27 grams of fat, and 18 grams of alcohol. What is the total caloric value of their meal?
    a. 634 kilocalories
    b. 733 kilocalories
    c. 778 kilocalories
    d. 877 kilocalories
    e. 1,008 kilocalories

ANSWER: b

17. Sarah is making a pound cake for a bake sale. Of the 2,400 total kilocalories for the entire cake, 30% come from fat. How many grams of fat are there in the cake?
    a. 30 grams
    b. 60 grams

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c. 80 grams
d. 100 grams
e. 240 grams

ANSWER: c

18. David is a football player consuming a high-calorie diet. His daily caloric intake is set at 4,500 kilocalories with the following macronutrient distribution: 45% carbohydrate, 18% fat, and the rest from protein. How many grams of protein is David's diet providing? (Round your answer to the nearest whole number.)

a. 103 grams
b. 203 grams
c. 316 grams
d. 416 grams
e. 506 grams

ANSWER: d

19. What is the standard unit used to measure food energy?

a. kilograms
b. kilocalories
c. pounds
d. newtons
e. grams

ANSWER: b

20. Micronutrients are those that are required in small quantities. Which of the following is NOT a micronutrient?

a. vitamin D
b. iodine
c. fiber
d. vitamin K
e. zinc

ANSWER: c

21. Consider the 10 leading causes of death in the United States. Which of the following lists includes diet-related causes within the 10 leading causes?

a. heart disease, pneumonia, stroke, cancer
b. liver disease, cancer, influenza, stroke
c. tuberculosis, diabetes, stroke, cancer
d. heart disease, stroke, cancer, diabetes
e. liver disease, pneumonia, influenza, diabetes

ANSWER: d

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22. Which of the following diseases is NOT related to diet?
    a. stroke
    b. heart disease
    c. cancer
    d. diabetes
    e. pneumonia

ANSWER: e

23. Which of the following is not a water-soluble vitamin?
    a. riboflavin
    b. niacin
    c. lycopene
    d. folate

ANSWER: c

24. Minerals are classified into "major" and "trace" minerals. Which of the following lists includes only contains major minerals?
    a. calcium, iron, zinc, phosphorus
    b. iron, selenium, sodium, magnesium
    c. copper, chromium, fluoride, iodine
    d. potassium, sodium, magnesium, calcium
    e. magnesium, manganese, molybdenum, chloride

ANSWER: d

25. The standard that represents the average nutrient intake estimated to meet the daily requirements of 50% of healthy individuals is called the:
    a. Recommended Dietary Allowance.
    b. Adequate Intake.
    c. Acceptable Macronutrient Distribution Range.
    d. Estimated Average Requirement.
    e. Estimated Energy Requirement.

ANSWER: d

26. The standard that represents the average nutrient intake estimated to meet the daily requirements of nearly 98% of healthy individuals is called the:
    a. Recommended Dietary Allowance.
    b. Adequate Intake.
    c. Acceptable Macronutrient Distribution Range.
    d. Estimated Average Requirement.
    e. Estimated Energy Requirement.

ANSWER: a

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27. Compared with the Estimated Average Requirement, the Recommended Dietary Allowances for nutrients are set at _____ level.

a. a slightly lower
b. a much lower
c. the same
d. a slightly higher
e. a much higher

ANSWER: e

28. The standard that provides recommendations for healthy ranges of energy-yielding macronutrients is termed the:

a. Recommended Dietary Allowance.
b. Adequate Intake.
c. Acceptable Macronutrient Distribution Range.
d. Estimated Average Requirement.
e. Tolerable Upper Intake Level.

ANSWER: c

29. Linda takes calcium and vitamin D supplements but is worried about increasing her risk for kidney stones. Which of the following standards will provide Linda with the information necessary to determine the maximum amount of nutrients that would be safe for her to consume without the risk of side effects?

a. Recommended Dietary Allowance
b. Adequate Intake
c. Acceptable Macronutrient Distribution Range
d. Estimated Average Requirement
e. Tolerable Upper Intake Level

ANSWER: e

30. The Acceptable Macronutrient Distribution Range recommends that carbohydrates contribute _____ of daily calories.

a. less than 10%
b. 15%–25%
c. 30%–40%
d. 45%–65%
e. greater than 70%

ANSWER: d

31. Based on the Acceptable Macronutrient Distribution Range, what is the recommendation for protein intake?

a. less than 5%
b. 10%–35%
c. 40%–50%

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d. 55%–60%
e. greater than 65%

ANSWER: b

32. According to the Acceptable Macronutrient Distribution Range, 20% to 35% of the total daily caloric intake should come from fat. If Marcus is on a 3500-kilocalorie diet, how many kilocalories should he obtain from dietary fat?
a. 400–905 kilocalories
b. 500–1005 kilocalories
c. 600–1115 kilocalories
d. 700–1225 kilocalories
e. 800–1355 kilocalories

ANSWER: d

33. It is likely that intake of a nutrient is both adequate and safe if:
a. intake is above the RDA.
b. intake for the nutrient falls between the RDA and UL.
c. intake is above the EAR and under the RDA.
d. intake is above the UL.
e. intake is below the EAR and above the UL.

ANSWER: b

34. The risk of adverse effects associated with intake of a nutrient:
a. decreases at levels below the RDA.
b. decreases at levels above the UL.
c. increases at levels below the RDA and above the UL.
d. increases at levels above the RDA.
e. increases within the AI range.

ANSWER: c

35. What is the correct sequence of steps in following the scientific method to conduct research?
a. make observations, conduct experiment, propose hypothesis, develop a theory
b. make observations, propose hypothesis, conduct experiment, develop a theory
c. propose hypothesis, make observations, develop a theory, conduct experiment
d. conduct experiment, develop a theory, make observations, propose hypothesis
e. develop a theory, conduct experiment, make observations, propose hypothesis

ANSWER: b

36. Consider an epidemiological study that investigates the relationship between fish intake and cancer risk. Which of the following statements is TRUE about this study design?
a. Subjects in the study will be randomly assigned to an experimental group and a control group.

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b. The findings of this study may suggest a relationship between fish intake and cancer risk.
c. There is no intervention involved in this type of study.
d. The results of the study can be used to establish a cause-and-effect relationship between fish intake and cancer risk.
e. The findings of this study may suggest a relationship between fish intake and cancer risk. There is no intervention involved in this type of study.

ANSWER: e

37. An animal study is being conducted to determine the effect of vitamin C on the development of common cold. The researcher gives one group of rats the vitamin C pills, and the other group of rats gets the "dummy" pill (placebo). The rats that received the placebo would be called the:
a. dummy group.
b. double-blind group.
c. intervention group.
d. experimental group.
e. control group.

ANSWER: e

38. A study is conducted to see if a daily exercise intervention affects blood pressure among people with pre-hypertension. One hundred participants are recruited to participate, and half are randomly assigned to participate in the intervention while the others serve as a control group. What study design is being used?
a. epidemiological study
b. randomized controlled trial
c. animal experiment
d. placebo study
e. None of these.

ANSWER: b

39. The effect of food on a person's genes is known as:
a. the placebo effect.
b. phytochemicals.
c. epidemiology.
d. cell studies.
e. nutritional genomics.

ANSWER: e

40. Which of the following is not true about the National Health and Nutrition Examination Survey?
a. Participants chosen to participate in the study must travel to the state capital to visit the Mobile Examination Center.
b. Blood, urine, and DNA samples are routinely collected at the NHANES Mobile Examination Center.
c. Each year, a representative sample of 5000 Americans from across the United States is selected to participate in NHANES.

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d. Dietary information is collected by conducting a 24-hour recall survey.
e. In-home health interviews are used as part of the NHANES protocol.

ANSWER: a

41. A program of studies to systematically assess the health and nutritional status of adults and children in the United States is the:
a. Health Interview Survey.
b. Continuing Survey of Food Intakes of Americans.
c. Nutrition Surveillance System.
d. National Health and Nutrition Examination Survey (NHANES).
e. Mobile Examination Center Survey.

ANSWER: d

42. According to findings of the National Health and Nutrition Examination Survey (NHANES):
a. about 80% of Americans do not consume enough fruit and vegetables to meet current recommendations.
b. more than 90% of Americans do not consume enough red and orange vegetables.
c. highly processed or ultra-processed foods provide nearly 60% of adults' daily calories and 70% of children's.
d. about 90% of adults and children exceed limits for sodium.
e. All of these are correct.

ANSWER: e

43. Susan wants to enhance her immunity during the flu season. Which of the following would be the LEAST credible source of information?
a. advice from a registered dietitian
b. guidelines on flu prevention on the website yourhealth.com
c. CDC guidelines on their website
d. a recent peer-reviewed article on zinc from the *American Journal of Clinical Nutrition*
e. flu-prevention strategies provided by your doctor

ANSWER: b

44. What is the key premise of the "developmental origins hypothesis"? How does maternal nutrition affect health of the offspring?

ANSWER: The developmental origins hypothesis states that certain diseases originate from conditions during pregnancy and infancy. Poor nutrition during pregnancy can negatively affect health of the child throughout life. Also, inadequate nutrition can permanently affect the way the child responds to food throughout his or her life. A balanced diet is vital at the time of conception and during pregnancy in order for the mother to gain adequate weight and ensure the health of the fetus.

45. What factors influence your daily food choices?

ANSWER: This will vary based on the students' responses as to which factors influence their own food choices.

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Acceptable responses may reference that food choices are influenced by a combination of factors including, but not limited to, health goals, convenience, cultural upbringing, and emotional state.

46. List the four macronutrients and identify two major functions of each.

ANSWER: The four macronutrients are carbohydrates, proteins, fats, and water. The primary function of carbohydrates and fats is to provide energy; proteins serve as a structural component in every cell and tissue, and water provides a medium for cell reaction and other regulatory functions. Further, carbohydrates are important components of DNA and RNA, contributors to satiety, and sources of fiber; proteins are required for fluid balance; fats are vital for hormone synthesis, temperature regulation, and shock absorption and are important in absorption and transport of fat-soluble vitamins; and water helps to control body temperature.

47. What are phytochemicals? In which foods are they commonly found? Describe two of their functions in promoting health and preventing disease.

ANSWER: Phytochemicals are compounds found in plant foods that are physiologically active and beneficial to human health. They are typically found in plant foods such as vegetables, fruits, whole grains, legumes, nuts, tea, cocoa, herbs, and spices. Two major functions of phytochemicals would be their anti-inflammatory and antioxidant properties.

48. What causes malnutrition? Describe the two forms of malnutrition with examples.

ANSWER: Malnutrition is caused by inadequate, excessive, or unbalanced intake of calories and/or essential nutrients. The two forms of malnutrition would be undernutrition (starvation, protein-energy malnutrition) and overnutrition (obesity). Overnutrition encompasses excessive intake of calories relative to needs but can also be accompanied by an imbalance between nutrient needs and intakes. This is particularly true in the case of "Westernized" diets, which are high in processed foods and generally low in nutrients.

49. What is the purpose of using a placebo in experimental studies?

ANSWER: The purpose of using a placebo is to eliminate perceived effects (known as the "placebo effect") in which people taking an experimental drug feel better simply because they take a pill and therefore have an expectation that they will feel better. By comparing people who receive a treatment with those who do not receive it, researchers can determine if the treatment has a true effect outside of people's expectations.

50. What are the five values included in the Dietary Reference Intakes (DRI)? Describe each of these standards in establishing recommendations for nutrient intake.

ANSWER: The five values included in the DRIs are (1) Estimated Average Requirement (EAR)—the average nutrient intake level estimated to meet the daily requirements of 50% of healthy individuals for different sexes and life-stage groups; (2) Recommended Dietary Allowance (RDA)—the recommended nutrient intake levels that meet the daily needs and decrease risks of chronic disease in 98% of healthy people for different sexes and life-stage groups; (3) Adequate Intake (AI)—estimated value for recommended daily nutrient intake level used when there is insufficient evidence to determine a specific RDA; (4) Tolerable Upper Level (UL)—the maximum amount of nutrient allowed that has been proven to have no risk of side effects; and (5) Chronic Disease Risk Reduction (CDRR) – the nutrient intake level that is expected to reduce chronic disease risk in an apparently healthy population.

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51. Describe the steps involved in the scientific method of conducting a study. Discuss the reasons why following these specific series of steps will result in a well-designed experimental study.

ANSWER: The scientific method involves the following steps: (1) Observation – identifying a phenomenon or problem; (2) Question – ask questions about the observations we make; (3) Hypothesis – propose a testable explanation for the observation; (4) Experiment – develop an experiment to test your hypothesis; (5) Analysis – interpret results by comparing with predictions to accept, reject, or modify hypothesis.

Following these steps ensures a systematic, unbiased approach to conducting a study. This approach allows for replication, accuracy, and reliable conclusions. It minimizes errors, controls variables, and provides a logical framework that enhances the credibility and validity of the experimental study.

52. What are the nutrition-related objectives of Healthy People 2030? How will these objectives promote health and prevent disease in today's obesity-promoting environment?

ANSWER: Healthy People 2030's nutrition-related goals encourage the consumption of a variety of nutrient-dense foods from all food groups, with a focus on whole grains, fruits, vegetables, low-fat dairy, and lean protein sources. It also advises Americans to consume only the calories they need and to limit saturated and trans fats, cholesterol, added sugars, salt, and alcohol. In today's obesity-promoting environment, these goals help shift behaviors and environments toward healthier lifestyles, ultimately reducing the risk of chronic disease and improving population health.

53. Imagine you are planning a research study to investigate the relationship between fiber intake and blood cholesterol levels. How would your study be different if you chose to use an epidemiological research design rather than a randomized controlled trial?

ANSWER: Epidemiological research studies will observe and analyze existing patterns of fiber intake and cholesterol levels in a large population without manipulating variables. These studies will identify associations but do not prove causation due to potential confounding factors. In contrast, a randomized controlled trial (RCT) would involve actively assigning participants to different levels of fiber intake, controlling other variables, and measuring cholesterol outcomes over time. This experimental approach allows for stronger conclusions about cause and effect, whereas epidemiological studies are more useful for identifying trends and generating hypotheses.

54. Imagine you see a news article with the heading, "The truth is out: Egg consumption harms health." How might you use the internet to evaluate such a claim? How will you know if what you read on the internet is credible?

ANSWER: To evaluate the claim, it is best to use reputable sources such as government health websites (e.g., CDC, NIH), peer-reviewed journals, and university or hospital-affiliated sites. Look for scientific studies, expert opinions, and whether the article cites credible evidence. To assess credibility, check the author's qualifications, the website's domain (e.g., .gov, .edu, .org), publication date, and whether the information is supported by current research. Avoid relying on sensational headlines or non-expert blogs.

55. Name the six classes of nutrients. Out of the six nutrients, name the three nutrients that contain energy and list their caloric value per gram. Using the calories per gram information, calculate the calories in a fast-casual

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Chicken Avocado Sandwich that contains 49 grams fat, 80 grams carbohydrates, and 46 grams protein. Work must be shown to earn any credit.

ANSWER: The six classes of nutrients are:

1. Carbohydrates
2. Proteins
3. Lipids (Fats)
4. Vitamins
5. Minerals
6. Water

The three nutrients that provide energy are:
Carbohydrates: 4 calories/gram
Proteins: 4 calories/gram
Lipids: 9 calories/gram

Calculation for Chicken Avocado Sandwich:
Fat: 49 g × 9 cal/g = 441 calories
Carbohydrates: 80 g × 4 cal/g = 320 calories
Protein: 46 g × 4 cal/g = 184 calories
Total Calories = 441 + 320 + 184 = 945 calories
Final Answer: 945 calories

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