

Test Bank

Scientific American: Nutrition for a Changing World, First Edition

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Chapter 1

The Science and Scope of Nutrition

Multiple Choice Questions

1. Minerals are non-essential nutrients and provide 4 kilocalories per gram.

A. true

B. false

Answer: B

Type: Knowledge

Difficulty: Easy

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographics 1.3 and 1.4)

Keyword: nutrients

2. Fats are similar to carbohydrates and are composed of carbon, hydrogen, and oxygen.

A. true

B. false

Answer: A

Type: Knowledge

Difficulty: Easy

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographics 1.3 and 1.4)

Keyword: nutrients

3. Water-soluble vitamins include vitamins C, B, and E.

A. true

B. false

Answer: B

Type: Knowledge

Difficulty: Easy

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographics 1.3 and 1.4)

Keyword: nutrients

4. Phytochemicals are found in all protein-rich foods, including chicken, eggs, and fish.

A. true

B. false

Answer: B

Type: Knowledge

Difficulty: Medium

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographics 1.3 and 1.4)

Keyword: nutrients

5. Iron-deficiency is considered to be a form of malnutrition.

A. true

B. false

Answer: A

Type: Knowledge

Difficulty: Medium

Learning Objective: Explain the connection between nutrition and chronic disease (Infographic 1.2)

Keyword: nutrients

6. According to the National Health and Nutrition Examination Survey, the majority of Americans are getting their recommended servings of whole grains, fruits, and vegetables.

A. true

B. false

Answer: B

Type: Knowledge

Difficulty: Medium

Learning Objective: Describe reliable sources of nutrition information (Infographic 1.10)

Keyword: nutrients

7. How many classes of nutrients do we know of?

A. 2

B. 3

C. 4

D. 5

E. 6

Answer: E

Type: Knowledge

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keyword: nutrients

8. Which of the following is NOT considered a nutrient?

A. phytochemicals

B. proteins

C. fats

D. carbohydrates

E. water

Answer: A

Type: Knowledge

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, classes of nutrients

9. Essential nutrients are those that

- A. are found in all animal-derived foods.
- B. the body cannot produce and must be supplied through food.
- C. are found in fortified foods.
- D. are sold in health food stores as supplements.
- E. are found in green leafy vegetables.

Answer: B

Type: Knowledge

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, essentiality of nutrients

10. 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.
- D. phytochemical.
- E. functional nutrient.

Answer: C

Type: Application

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, essentiality of nutrients

11. All of the following statements about carbohydrates are true, EXCEPT

- A. they are composed of carbon, hydrogen, and oxygen.
- B. they are a major source of energy in the body.
- C. they are categorized into simple and complex carbohydrates.
- D. they provide more calories than protein.
- E. they are a component of DNA and RNA.

Answer: D

Type: Application

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, carbohydrates

12. The composition of proteins is different from that of carbohydrates due to the presence of

- A. carbon.
- B. hydrogen.
- C. nitrogen.
- D. oxygen.
- E. None of the above.

Answer: C

Type: Knowledge

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, proteins, composition of nutrients

13. What is the primary form of fat in our bodies?

- A. cholesterol
- B. triglycerides
- C. phospholipids
- D. lipoproteins
- E. omega-3 fatty acids

Answer: B

Type: Knowledge

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, fats, lipids

14. The carbohydrate family includes

- A. sugar, starch, and fiber.
- B. starch, calcium, and fiber.
- C. fiber, sugar, and sulfur.
- D. sugar, water, and starch.
- E. starch, fiber, and sterol.

Answer: A

Type: Application

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, carbohydrates

15. Nutrients are classified into macronutrients and micronutrients. All of the following are macronutrients, EXCEPT

- A. sodium.
- B. water.
- C. protein.
- D. iron.
- E. A and D

Answer: E

Type: Application

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, macronutrients, micronutrients

16. Which of the following macronutrients does NOT provide energy?

- A. water
- B. lipids
- C. carbohydrates
- D. proteins
- E. All of them provide energy.

Answer: A

Type: Application

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, macronutrients

17. 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. A and B

Answer: D

Type: Application

Difficulty: Medium

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.3)

Keywords: nutrients, macronutrients, carbohydrates, energy

18. Which of the following foods is rich in proteins?

- A. legumes
- B. oils
- C. vegetables
- D. fruits
- E. water

Answer: A

Type: Application

Difficulty: Easy

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.3)

Keywords: nutrients, macronutrients, proteins

19. Which of the following foods contains the most carbohydrates per gram?

- A. chicken
- B. beef
- C. butter
- D. milk
- E. egg

Answer: D

Type: Application

Difficulty: Medium

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.3)

Keywords: nutrients, macronutrients, carbohydrates

20. 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

Type: Application

Difficulty: Medium

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.3)

Keywords: nutrients, macronutrients, food energy, kilocalories

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

- A. 30 grams
- B. 60 grams
- C. 80 grams
- D. 100 grams
- E. 240 grams

Answer: C

Type: Application

Difficulty: Medium

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.3)

Keywords: nutrients, macronutrients, food energy, kilocalories

22. David is a football player consuming a high-calorie diet. His daily caloric intake is set at 4,500 kilocalories with the macronutrient distribution as follows: 45% carbohydrates, 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

Type: Application

Difficulty: Hard

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.3)

Keywords: nutrients, macronutrients, food energy, kilocalories

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

- A. kilograms
- B. kilocalories
- C. pounds
- D. newtons
- E. grams

Answer: B

Type: Knowledge

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, food energy, calories

24. Gram for gram, which nutrient(s) provide(s) the least energy?

- A. protein
- B. lipids
- C. carbohydrates
- D. alcohol
- E. A and C

Answer: E

Type: Knowledge

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, food energy, caloric values

25. 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

Type: Application

Difficulty: Easy

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, micronutrients

26. Of the 10 leading causes of death in the United States, how many are related to diet?

A. 1

B. 2

C. 3

D. 4

E. 5

Answer: D

Type: Knowledge

Difficulty: Easy

Learning Objective: Explain the connection between nutrition and chronic disease (Infographic 1.2)

Keywords: nutrition, disease risk, causes of death

27. Which of the following diseases is NOT related to diet?

A. stroke

B. heart disease

C. cancer

D. diabetes

E. pneumonia

Answer: E

Type: Knowledge

Difficulty: Easy

Learning Objective: Explain the connection between nutrition and chronic disease (Infographic 1.2)

Keywords: nutrition, disease risk, causes of death

28. How many water-soluble and fat-soluble vitamins do we know of?

A. 10 and 4, respectively

B. 10 and 3, respectively

C. 4 and 10, respectively

D. 3 and 10, respectively

E. 10 and 5, respectively

Answer: A

Type: Knowledge

Difficulty: Medium

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.4)

Keywords: nutrients, micronutrients, vitamins

29. Which of the following is a water-soluble vitamin?

- A. vitamin A
- B. vitamin C
- C. vitamin D
- D. vitamin E
- E. vitamin K

Answer: B

Type: Knowledge

Difficulty: Easy

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.4)

Keywords: nutrients, micronutrients, vitamins

30. Minerals are classified into “major” and “trace” minerals. Which of the following lists only contains major minerals?

- A. Calcium, iron, zinc, phosphorus
 - B. Iron, selenium, sodium, magnesium
 - C. Copper, chromium, fluoride, iodine
 - D. Potassium, sodium, magnesium, calcium
- Magnesium, manganese, molybdenum, chloride

Answer: D

Type: Knowledge

Difficulty: Hard

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.4)

Keywords: nutrients, micronutrients, minerals

31. 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 Requirements.
- E. Estimated Energy Requirement.

Answer: D

Type: Knowledge

Difficulty: Easy

Learning Objective: Summarize the purpose of the Dietary Reference Intake values (Infographic 1.5)

Keywords: nutrient intakes, reference values, Estimated Average Requirements

32. 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 Requirements.
- E. Estimated Energy Requirement.

Answer: A

Type: Knowledge

Difficulty: Easy

Learning Objective: Summarize the purpose of the Dietary Reference Intake values (Infographic 1.5)

Keywords: nutrient intakes, reference values, Recommended Dietary Allowance

33. Compared with the Estimated Average Requirements, 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

Type: Application

Difficulty: Medium

Learning Objective: Summarize the purpose of the Dietary Reference Intake values (Infographic 1.5)

Keywords: nutrient intakes, reference values, EAR, RDA

34. 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 Requirements.
- E. Tolerable Upper Intake Level.

Answer: C

Type: Knowledge

Difficulty: Easy

Learning Objective: Summarize the purpose of the Dietary Reference Intake values (Infographic 1.5)

Keywords: nutrient intakes, reference values, AMDR

35. 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 Requirements
- E. Tolerable Upper Intake Level

Answer: E

Type: Application/Analysis

Difficulty: Medium

Learning Objective: Distinguish between the different types of DRI values, and what each represents (Infographic 1.6)

Keywords: nutrient intakes, DRI, Tolerable Upper Intake Level

36. Based on the Acceptable Macronutrient Distribution Range, what is the recommendation for carbohydrate intake?

- A. less than 10%
- B. 15%–25%
- C. 30%–40%
- D. 45%–65%
- E. greater than 70%

Answer: D

Type: Knowledge

Difficulty: Easy

Learning Objective: Distinguish between the different types of DRI values, and what each represents (Infographic 1.6)

Keywords: nutrient intakes, reference values, AMDR, carbohydrates

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

- A. less than 5%
- B. 10%–35%
- C. 40%–50%
- D. 55%–60%
- E. greater than 65%

Answer: B

Type: Knowledge

Difficulty: Easy

Learning Objective: Distinguish between the different types of DRI values, and what each represents (Infographic 1.6)

Keywords: nutrient intakes, reference values, AMDR, proteins

38. According to the Acceptable Macronutrient Distribution Range, 20% to 35% of the total caloric intake should come from fat. If Marcus is on a 3,500 kilocalorie diet, how many kilocalories should he obtain from dietary fat?

- A. 400–905 kcal
- B. 500–1005 kcal
- C. 600–1115 kcal
- D. 700–1225 kcal
- E. 800–1355 kcal

Answer: D

Type: Application

Difficulty: Medium

Learning Objective: Distinguish between the different types of DRI values, and what each represents (Infographic 1.6)

Keywords: nutrient intakes, reference values, AMDR, fats

39. What is the correct sequence of steps in following the scientific method to conduct research?

- A. make observations, conduct experiment, propose hypothesis, and develop a theory
- B. make observations, propose hypothesis, conduct experiment, and develop a theory
- C. propose hypothesis, make observations, develop a theory, and conduct experiment
- D. conduct experiment, develop a theory, make observations, and propose hypothesis
- E. develop a theory, conduct experiment, make observations, and propose hypothesis

Answer: B

Type: Knowledge

Difficulty: Hard

Learning Objective: Understand/explain the basis of the scientific method and how it is used in nutrition research (Infographic 1.8)

Keywords: nutrition research, scientific method, research study

40. Which of the following statements is NOT true about epidemiological studies?

- A. Subjects are randomly assigned to an experimental group and a control group.
- B. Such studies can assess interactions between genetic, behavioral, and environmental factors.
- C. Their main purpose is to observe the variables in a population.
- D. The results of the study cannot be used to establish cause and effect.
- E. There is no intervention involved in this type of study.

Answer: A

Type: Knowledge

Difficulty: Hard

Learning Objective: Describe three types of experimental design and the primary advantages of each (Infographic 1.9)

Keywords: nutrition research, epidemiologic studies

41. An animal study is being conducted to determine the effect of vitamin C on the incidence 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

Type: Application

Difficulty: Medium

Learning Objective: Describe three types of experimental design and the primary advantages of each (Infographic 1.9)

Keywords: nutrition research, randomized controlled trial, control group

42. 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

Type: Application

Difficulty: Medium

Learning Objective: Describe reliable sources of nutrition information (Infographic 1.10)

Keywords: nutrition information, reliable sources, credible information

Short-Answer Questions

43. 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 for the mother to gain adequate weight and ensure the health of the fetus.

Type: Knowledge

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: maternal nutrition, child health

44. What are the factors that influence your daily food choices?

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

Type: Application

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: food choices, factors influencing dietary intake

45. What is a nutrient? How many classes of nutrients do we know of? Identify the primary function of each nutrient.

Answer: Nutrients are chemical substances obtained from food that are essential for body function; they are vital for metabolism, growth, development, reproduction, and tissue maintenance and repair. We know of six classes of nutrients. The primary function of carbohydrates and fats is to provide energy, protein serves as the structural component in every cell and tissue, water provides a medium for cell reaction and other regulatory functions, vitamins and minerals are necessary for metabolism and for proper growth and development.

Type: Knowledge

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, functions of nutrients

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 structural component in every cell and tissue, water provides a medium for cell reaction and other regulatory functions. Further, carbohydrates are important components of DNA and RNA, proteins are required for fluid balance, fats are vital for hormone synthesis, and water helps to control body temperature.

Type: Application

Difficulty: Medium

Learning Objective: Define and identify the major macronutrients and micronutrients (Infographic 1.3)

Keywords: nutrients, macronutrients, food energy, kilocalories

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.

Type: Knowledge/Application

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, phytochemicals, foods

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).

Type: Knowledge/Application

Difficulty: Medium

Learning Objective: Define the scope and science of nutrition (Infographic 1.1)

Keywords: nutrients, malnutrition, undernutrition, overnutrition

49. What are the four values included in the Dietary Reference Intake (DRI)? Describe each of these standards in establishing recommendations for nutrient intake?

Answer: The four values included in the DRI are: (1) Estimated Average Requirements (EARs) – the average nutrient intake level estimated to meet the daily requirements of 50% of healthy individuals for the 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; and (4) Tolerable Upper Level (UL) – the maximum amount of nutrient allowed that has been proven to have no risk of side effects.

Type: Knowledge/Application

Difficulty: Medium

Learning Objective: Distinguish between the different types of DRI values, and what each represents (Infographic 1.6)

Keywords: nutrient intakes, DRI

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

Answer: The purpose of using a placebo is to eliminate 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.

Type: Knowledge

Difficulty: Medium

Learning Objective: Understand/explain the basis of the scientific method and how it is used in nutrition research (Infographic 1.8)

Keywords: nutrition research, scientific method, experimental study, placebo

Essay Questions

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: Answers will vary.

Type: Knowledge/Application

Difficulty: Hard

Learning Objective: Understand/explain the basis of the scientific method and how it is used in nutrition research (Infographic 1.8)

Keywords: nutrition research, scientific method, research study

52. What are the nutrition-related objectives of Healthy People 2020? How will these objectives promote health and prevent disease in today's obesity-promoting environment?

Answer: Answers will vary.

Type: Application

Difficulty: Hard

Learning Objective: Describe reliable sources of nutrition information (Infographic 1.10)

Keywords: nutrition information, Healthy People 2020