Understanding Nutrition 16th edition Whitney Test Bank

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Name:_____ Class:_____ Date:_____

Chapter 01: An Overview of Nutrition

1. Which statement about nutrition's role in a person's life is FALSE?
   a. Nutrition is the science of the nutrients in foods and their actions within the body.
   b. Nutrition is the study of human behaviors related to food and eating.
   c. Careless food choices can contribute to chronic disease.
   d. Chronic diseases progress slowly.
   e. A diet is defined as a restrictive food plan designed for weight loss.

ANSWER: e

2. Your classmate prefers to consume strawberries rather than other fruits. Based on what you've learned about influences on food choices, what would be the most likely reason your classmate prefers strawberries?
   a. Strawberries are cheap.
   b. He likes the flavor and taste of strawberries the most.
   c. Strawberries are a convenient snack.
   d. Strawberries are a nutritionally rich food.
   e. Eating strawberries is a habit.

ANSWER: b

3. At a party with friends, Amal drinks wine and eats hors d'oeuvres, even though she is not hungry. This is an example of a food choice based on ____.
   a. established habits
   b. social interaction
   c. emotional turmoil
   d. negative association
   e. comfort eating

ANSWER: b

4. A person who eats a granola bar from a vending machine is most likely making a food choice based on: ____.
   a. Established habit
   b. Easy availability
   c. Body image
   d. Environmental concerns
   e. Cultural values

ANSWER: b

5. Which individual is making a food choice based on values?
   a. A woman who avoids gluten due to allergies
   b. A child who spits out his mashed potatoes because they taste too salty
   c. A teenager who mindlessly eats potato chips while watching television
   d. A man who eats oatmeal each day without exception
   e. A Catholic woman who fasts on Good Friday to honor religious custom

ANSWER: e

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6. Why should a health-care professional ask a person about their drug history before making nutrition recommendations?
   a. To assess for possible interactions that lead to nutrient deficiencies
   b. To identify conditions with a genetic component
   c. To identify diseases that interfere with nutrient absorption
   d. To assess for possible drug abuse of misuse
   e. To rule out the possibility of suspected nutrition problems

ANSWER: a

7. Ang is a movie fan and always eats a big bucket of buttery popcorn at the theater. His food choice is most likely based on ____.
   a. regional cuisine
   b. personal values
   c. Ethnic value
   d. positive association
   e. functional value

ANSWER: d

8. Which of the following is an example of an ultra-processed food?
   a. Skim milk
   b. Swiss cheese
   c. Chicken nuggets
   d. Sunflower seeds
   e. Apple juice

ANSWER: c

9. Which of the following does NOT represent one of the six classes of nutrients?
   a. water
   b. lipids
   c. phytochemicals
   d. carbohydrates
   e. protein

ANSWER: c

10. The RDA is set higher than the EAR to meet the needs of most healthy people.
   a. True
   b. False

ANSWER: True

11. Which is the simplest nutrient?

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a. Minerals
b. Water
c. Protein
d. Carbohydrates
e. Vitamins

ANSWER: a

12. Estimated Average Requirements (EARs) provide different amounts based on sex and age.
a. True
b. False

ANSWER: True

13. Calories or kcalories are a measure of _____ energy.
a. heat
b. potential
c. surface
d. work
e. light

ANSWER: a

14. Which nutrient has the greatest energy density?
a. Protein
b. Water
c. Carbohydrate
d. Fat
e. Vitamins

ANSWER: d

15. Which of the following statements about essential nutrients is FALSE?
a. They must be obtained from food.
b. They may be referred to as more than just "necessary" nutrients.
c. They cannot be made in sufficient quantities by the body.
d. They meet the body's physiological needs.
e. There are about 100 nutrients essential for the human body.

ANSWER: e

16. Which substance contributes energy, but is not considered a nutrient because it does not sustain life?
a. Fats
b. Sugar
c. Artificial sweeteners
d. Alcohol

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e. Phytochemicals

ANSWER: d

17. What happens when the body uses energy-yielding nutrients?
    a. The bonds between the atoms break and release energy.
    b. The body converts them into storage compounds.
    c. A person's energy stores are depleted.
    d. The amount of water in the body decreases.
    e. A person's body mass increases.

ANSWER: a

18. Which energy-yielding nutrients are found in part of the structural component of muscles and help regulate digestion?
    a. fats
    b. alcohols
    c. proteins
    d. carbohydrates
    e. vitamins and minerals

ANSWER: c

19. The international unit for measuring food energy is _____.
    a. kilojoules
    b. kilograms
    c. kilometers
    d. kilonewtons
    e. kiloliters

ANSWER: a

20. Which of the following statements accurately describes vitamins?
    a. Vitamins are inorganic and do not provide energy.
    b. Vitamins are indestructible.
    c. Almost every action in the body requires the assistance of vitamins.
    d. Vitamins A, D, E, and K are water-soluble vitamins.
    e. Cooking vegetables at high temperatures helps maintain the vitamins.

ANSWER: c

21. Each of how many total vitamins has its own special dietary role to play?
    a. 8
    b. 13
    c. 16
    d. 23

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e. 26

ANSWER: b

22. Which of the following statements about minerals is FALSE?
    a. Minerals are found in bones and teeth.
    b. Minerals influence fluid balance and distribution.
    c. There are six minerals known to be essential to human nutrition.
    d. Minerals are inorganic and do not provide energy.
    e. Lead is a mineral and an environmental contaminant.

ANSWER: c

23. Which essential nutrient provides the environment in which nearly all the body's activities take place?
    a. proteins
    b. carbohydrates
    c. water
    d. alcohol
    e. vitamins

ANSWER: c

24. Which of the following terms is defined as the science of how nutrients affect the activities of genes and how genes affect the activities of nutrients?
    a. Genetic counseling
    b. Nutritional genomics
    c. Genetic metabolomics
    d. Nutritional genetics
    e. Biochemical nutrition

ANSWER: b

25. Research always begins with _____.
    a. a problem or a question
    b. an experiment
    c. a theory
    d. a prediction
    e. interpretations

ANSWER: a

26. When conducting research, an educated guess like, "Diets rich in fiber always lead to good health," is called a _____.
    a. theory
    b. prediction
    c. hypothesis

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d. correlation
e. deduction

ANSWER: c

27. Which of the following best describes randomization?
a. repetition of an experiment and getting the same results
b. process of choosing members of experimental and control groups without bias
c. personal account of an experience
d. experimentation on subjects who do know to which group they've been assigned
e. knowledge that experimental results were based in fact

ANSWER: b

28. What is a weakness of an epidemiological study?
a. Findings on some human beings cannot be generalized to all human beings.
b. Results from animal studies cannot be applied to human beings.
c. Cause and effect cannot be proven.
d. Codes of ethics prevent certain treatments.
e. The list of possible causes of disease can be narrowed.

ANSWER: c

29. If a person consumes 50% of their daily kilocalories from carbohydrates and 30% from protein, what percentage of their daily kilocalories will come from fat?
a. 10%
b. 20%
c. 30%
d. 40%
e. 50%

ANSWER: b

30. Researchers benefit from a large sample size because _____.
a. chance variation is less likely to affect the results
b. any placebo effect is eliminated
c. it increases the likelihood of double-blind results
d. the control group will be more like the experimental group
e. experimenter bias is less likely to have an effect

ANSWER: a

31. Your research findings suggest "the less vitamin D, the less likelihood of depression." What do your findings suggest?
a. no correlation
b. a positive correlation

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c. a negative correlation
d. a placebo effect
e. validity

ANSWER: b

32. Which of the following statements describes a double-blind experiment?
a. The experimental and control groups take turns getting each treatment.
b. Neither subjects nor researchers know which subjects are in the control group and which are in the experimental group.
c. Neither group of subjects knows whether they are in the control or experimental group, but the researchers do know.
d. Both subject groups know whether they are in the control or experimental group, but the researchers do not know.
e. Neither the subjects nor the persons having contact with the subjects know the true purpose of the experiment.

ANSWER: b

33. Which term describes the process in which a panel of scientists rigorously evaluates a research study to ensure that the scientific method was followed?
a. peer review
b. systematic review
c. research validity
d. meta-analysis
e. peer replication

ANSWER: a

34. To be accepted into the body of nutrition knowledge, research findings must stand up to rigorous, repeated testing in experiments conducted by other researchers. This is called
a. validity
b. correlation
c. replication
d. randomization
e. anecdotal evidence

ANSWER: c

35. Which part of a research article defines key terms, study design, subjects, and procedures?
a. references
b. introduction
c. abstract
d. methods
e. results

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ANSWER: d

36. You have been asked to help a top nutrition researcher conduct human double-blind experiments on zinc. After the subjects take their seats in the laboratory, you distribute all the zinc pill bottles to individuals seated on the left side of the room and all the placebo pill bottles to individuals seated on the right side of the room. The researcher instantly informs you that there are two errors in your research practice. What steps should you have taken to conduct your experiment correctly?

a. You should have given zinc to individuals on the right side and placebo to individuals on the left side and then told them what they were getting.
b. You should have distributed the bottles after randomly assigning the subjects and then told them what they were getting.
c. You should have told the subjects which group they were in, while preventing yourself from knowing the contents of the pill bottles.
d. You should have prevented yourself from knowing what was in the pill bottles and distributed the bottles randomly to the subjects.
e. You should have allowed the subjects to decide whether they take zinc or the placebo, and then given them the opposite of what they requested.

ANSWER: d

37. Which type of article provides a quantitative summary of the evidence?

a. Systematic review
b. Meta-analysis
c. Case study
d. Clinical trial
e. Cohort study

ANSWER: b

38. How many grams of carbohydrate are in a meal that is 50% carbohydrate and contains 600 calories?

a. 50
b. 75
c. 150
d. 300
e. 33

ANSWER: b

39. The Estimated Average Requirement (EAR) for a nutrient meets the needs of about _____ of the population.

a. 5%
b. 25%
c. 50%
d. 75%
e. 98%

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ANSWER: c

40. Which of the following statements best describes the Recommended Dietary Allowance (RDA) for a nutrient?
    a. It is set more than twice as high as the average person needs.
    b. It is the minimum amount that the average person needs in her/his diet.
    c. It is designed to meet the needs of nearly all people.
    d. It is designed to prevent deficiency diseases of about half of the general population.
    e. It is reflective of current dietary preferences and trends.

ANSWER: c

41. The Recommended Dietary Allowance (RDA) for a nutrient meets the needs of about _____ of the population.
    a. 5%
    b. 25%
    c. 50%
    d. 75%
    e. 98%

ANSWER: e

42. Which of the following statements accurately describes nutrient intakes?
    a. Higher nutrient intakes are always safer than lower intakes.
    b. Nutrient intakes below the EAR decrease the risk of deficiency.
    c. A typical nutrient intake falling between the RDA and the EAR is almost always adequate.
    d. Nutrient intakes above the RDA are required to be safe.
    e. Nutrient intakes above the UL put an individual at risk of toxicity.

ANSWER: e

43. Which of the following is defined as the maximum daily amount of a nutrient that appears safe for most people and beyond which there is an increased risk of adverse side effects?
    a. EER
    b. UL
    c. AI
    d. RDA
    e. DRI

ANSWER: b

44. Which of the following statements about the Estimated Energy Requirement (EER) is FALSE?
    a. It is the average dietary energy intake that will maintain energy balance in a person with a healthy body weight and level of physical activity.
    b. EER is measured in kcalories per day.

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c. Food energy is needed to sustain a healthy and active life.
d. The UL for EER is based on a person's age, sex, weight, and height.
e. Any dietary intake in excess of energy needs results in weight gain.

ANSWER: d

45. What is the Acceptable Macronutrient Distribution Range (AMDR) for carbohydrates?
a. 5 to 10%
b. 15 to 20%
c. 25 to 40%
d. 45 to 65%
e. 70 to 80%

ANSWER: d

46. It is not necessary for a person to meet the RDA for every nutrient every day.
a. True
b. False

ANSWER: True

47. Which of the following statements accurately describes Dietary Reference Intakes?
a. They are used to treat people with diet-related disorders.
b. They assess the adequacy of all required nutrients.
c. They aid in the planning and evaluation of diets for healthy people.
d. They are used to assess the adequacy of vitamins and minerals only.
e. They can be used diagnose diet-related disorders.

ANSWER: c

48. Ana is extremely thin, is losing muscle tissue, and is becoming prone to infections. Which term best describes Ana's condition?
a. undernutrition
b. overnutrition
c. nutrient overdose
d. anemia
e. subclinical deficiency

ANSWER: a

49. Which of the following is a strength of epidemiological studies?
a. Can narrow down the list of possible causes
b. Can prove cause and effect
c. Can control variables
d. Can use treatments without ethical concerns
e. Can generalize findings

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ANSWER: a

50. Physical signs and symptoms of a nutrient deficiency can be revealed by
    a. Laboratory tests
    b. Diet history
    c. Health history
    d. Family history
    e. Anthropometric measures

ANSWER: e

51. You are a health care professional tasked with taking anthropometric measurements of a client. Which of the following would you measure?
    a. body weight
    b. diet history
    c. blood iron level
    d. cholesterol levels
    e. serum electrolytes

ANSWER: a

52. Which statement accurately describes physical exams as a nutrition assessment tool?
    a. Hair and posture can provide clues to nutrient imbalances.
    b. Physical symptoms typically reflect deficiency in one particular nutrient.
    c. Unlike other assessment techniques, exams yield firm results.
    d. Physical exams cannot detect nutrient toxicity.
    e. Exams can reveal covert changes in the body.

ANSWER: a

53. Which of the following reflects the correct sequence of stages in the development of a nutrient deficiency?
    a. declining nutrient stores, abnormal functions within the body, and overt signs
    b. abnormal functions within the body, declining nutrient stores, and overt signs
    c. abnormal functions within the body, overt signs, and declining nutrient stores
    d. declining nutrient stores, overt signs, and abnormal functions within the body
    e. overt signs, abnormal functions, and declining nutrient stores

ANSWER: a

54. A diet history provides clues to _____ deficiencies.
    a. subclinical
    b. primary
    c. secondary
    d. covert
    e. anecdotal

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ANSWER: a

55. Which of the following defines a subclinical deficiency?
    a. a primary nutrient deficiency
    b. a nutrient deficiency caused by something like a disease condition or drug reaction that reduces absorption, accelerates use, hastens excretion, or destroys the nutrient
    c. a deficiency in the early stages, before the outward signs have appeared
    d. a deficiency that exhibits conflicting outward signs, requiring laboratory diagnosis
    e. an iron deficiency

ANSWER: c

56. The lowest continuing intake of a nutrient that will maintain a specified criterion of adequacy is called a(n)
    a. minimum
    b. requirement
    c. allowance
    d. recommendation
    e. average

ANSWER: b

57. Which of the following statements about progress toward the Healthy People 2030 goals is FALSE?
    a. The objective to meet physical activity has been achieved.
    b. The objective to meet muscle-strengthening guidelines has been achieved.
    c. Trends in overweight individuals have worsened.
    d. Trends in obese individuals have improved.
    e. The objective to eat more fruits and individuals has shown no improvement.

ANSWER: c

58. Most nutrient recommendations cannot be met through food alone and require the use of dietary supplements.
    a. True
    b. False

ANSWER: False

59. Since minerals and water do not contain carbon, they are classified as
    a. Nonnutrients
    b. Micronutrients
    c. Inorganic
    d. Organic
    e. Essential

ANSWER: c

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60. Of the top seven causes of death in the United States, how many are linked with diet?
    a. 1
    b. 2
    c. 4
    d. 5
    e. 7

ANSWER: c

61. When there is insufficient data to determine the RDA of a nutrient, the EAR is used instead.
    a. True
    b. False

ANSWER: False

62. The Acceptable Macronutrient Distribution Range for fat is 20 to 35 percent kilocalories.
    a. True
    b. False

ANSWER: True

63. What is the most prominent risk factor in the United States, contributing to one of every six deaths each year?
    a. poor dietary habits
    b. tobacco use
    c. alcohol consumption
    d. physical inactivity
    e. unsafe driving

ANSWER: b

64. Approximately what percentage of people in the United States are overweight or obese?
    a. 10%
    b. 20%
    c. 40%
    d. 60%
    e. 80%

ANSWER: d

65. What is the Acceptable Macronutrient Distribution Range for protein?
    a. 5 to 30 percent kilocalories
    b. 10 to 35 percent kilocalories
    c. 15 to 40 percent kilocalories
    d. 20 to 45 percent kilocalories
    e. 25 to 50 percent kilocalories

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ANSWER: b

66. A dietitian is working with a client who was born in Jamaica. Many of the foods this client consumes are unfamiliar to the dietitian. What is the best way for the dietitian to use cultural competence in this scenario?
    a. Educate the client about typical foods in the standard American diet.
    b. Ask the client about traditional Jamaican foods to determine where they fit.
    c. Encourage the client to share meals with people who eat the standard American diet.
    d. Educate the client about food groups and where standard American foods fit.
    e. Refer the client to a colleague who knows more about Jamaican foods.

ANSWER: b

67. It is appropriate to think of the RDA as the minimum amount of a nutrient required for most healthy people.
    a. True
    b. False

ANSWER: False

68. Which type of study is the most reliable source for preventing bias?
    a. Case control
    b. Personal anecdote
    c. Blind Experiment
    d. Epidemiological study
    e. Double-blind experiment

ANSWER: e

69. Which title is given to a person who has a minimum of a bachelor's degree from an accredited university, has completed a supervised practice program, and has passed a national examination administered by the Academy of Nutrition and Dietetics?
    a. medical doctor
    b. registered dietitian nutritionist
    c. certified nutritionist
    d. certified nutrition therapist
    e. registered nutritional consultant

ANSWER: b

70. Physical signs and symptoms of a nutrient deficiency are always categorized as
    a. Primary
    b. Secondary
    c. Overt
    d. Covert
    e. Subclinical

ANSWER: c

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71. What effect can cooking have on the mineral content of food?
    a. Cooking can transform minerals for inorganic to organic compounds.
    b. Minerals can be drawn out of food during processing or cooking.
    c. Minerals can be turned into their active forms by the cooking process.
    d. Cooking can increase the mineral content of food.
    e. Cooking can allow minerals to yield energy.

ANSWER: b

72. Vitamins can only function in the human body if they are consumed
    a. With fat
    b. In water
    c. Intact
    d. Slowly
    e. daily

ANSWER: c

73. A healthy 150-pound body contains about how many pounds of water?
    a. 10
    b. 30
    c. 60
    d. 90
    e. 100

ANSWER: d

74. A healthy 150-pound body contains about how many pounds of fat?
    a. 5 to 25
    b. 10 to 35
    c. 15 to 40
    d. 20 to 45
    e. 25 to 50

ANSWER: d

75. Essential nutrients are those that
    a. the body cannot make for itself in sufficient quantity
    b. Contain hydrogen and carbon
    c. Yield energy when consumed
    d. Can be destroyed by light, heat, and chemical agents
    e. Are inorganic and therefore indestructible

ANSWER: a

76. Which mineral displaces other minerals and disrupts functions in the body?

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a. Zinc
b. Calcium
c. Copper
d. Lead
e. manganese

ANSWER: d

77. What step follows if a hypothesis is supported in the scientific method?
a. Develop a theory
b. Identify a problem to be solved
c. Design a study
d. Draw conclusions
e. Formulate a tentative solution

ANSWER: a

78. A tomato is composed primarily of
a. fiber
b. water
c. protein
d. fructose
e. cellulose

ANSWER: b

79. Water is classified as an energy-yielding nonnutrient
a. True
b. False

ANSWER: False

80. Phytochemicals are categorized as organic micronutrients.
a. True
b. False

ANSWER: False

81. A calorie is a measure of heat energy.
a. True
b. False

ANSWER: True

82. A case-control study is an example of an experimental study.
a. True
b. False

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ANSWER: False

83. Vitamins are categorized as nonnutrient compounds found in plants.
    a. True
    b. False
ANSWER: False

84. A systematic review provides a qualitative summary of the evidence.
    a. True
    b. False
ANSWER: True

85. There are 40 nutrients known to be essential to humans.
    a. True
    b. False
ANSWER: True

86. The number of kilocalories required to increase the temperature of 1 kg of water 1°C is 10.
    a. True
    b. False
ANSWER: False

87. There are 21 essential minerals in the human diet.
    a. True
    b. False
ANSWER: False

88. Which title is bestowed on an individual who specializes in providing nutrition services through organized community efforts?
    a. dietetic technician
    b. registered dietitian
    c. certified nutritionist
    d. dietetic technician, registered
    e. public health dietitian
ANSWER: e

89. Which title is given to a person who has a minimum of an associate's degree from an accredited university and assists registered dietitians?
    a. dietetic clerk
    b. nutritional assistant
    c. dietetic technician
    d. nutrition porter

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e. public health dietitian

ANSWER: c

90. The motive for people who tend to prefer foods they grew up eating is most likely related to their ____.

a. values
b. body image
c. ethnic heritage
d. negative association
e. economy

ANSWER: c

91. An apple is composed primarily of _____.

a. fats
b. Water and carbohydrates
c. proteins
d. phytochemicals
e. vitamins and minerals

ANSWER: b

92. Which DRI is based on the level of nutrient intake that researchers associate with a low risk of a chronic disease?

a. AI
b. AMDR
c. CDRR
d. EAR
e. RDA

ANSWER: c

93. Which of the following is NOT a category of the Dietary Reference Intake (DRI)?

a. Estimated Average Requirements (EAR)
b. Recommended Dietary Allowances (RDA)
c. Adequate Intakes (AI)
d. Tolerable Upper Intake Levels (UL)
e. Anthropometric Measurements (AM)

ANSWER: e

94. Which is a strength of laboratory-based studies?

a. It cannot apply results from test tubes or animals to human beings.
b. It can determine the effects of a variable.
c. Results from animal studies can be applied to human beings.
d. The list of possible causes of disease can be expanded.

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e. It can control variables that may influence the prevention of a disease.

ANSWER: b

95. For those who do not smoke or drink alcohol excessively, the one choice that can influence chronic disease risks more than any other is _____.

a. diet
b. avoiding toxins
c. hand washing
d. physical activity
e. safe sex

ANSWER: a

96. Which of the following statements about nutrient recommendations worldwide is FALSE?

a. Fewer than 20 nations have nutrient standards similar to those in the United States.
b. Standards in other countries may reflect differences in data interpretation.
c. Food habits and physical activities of people in other countries affect their published nutrient standards.
d. Some countries use recommendations developed by the Food and Agriculture Organization and the World Health Organization.
e. Nutrient recommendations from international groups are sufficient to maintain health in healthy people worldwide.

ANSWER: a

97. What is the purpose of the Healthy People program?

a. to establish the DRI
b. to identify national trends in food consumption
c. to identify leading causes of death in the united states
d. to set goals for the nation's health over the next 10 years
e. to decrease health care costs

ANSWER: d

98. Ask a question about nutrition that could be studied with an epidemiological or experimental study. Identify which type of study you would use and why.

ANSWER: Answers will vary. What is the effect of a high protein diet vs. low protein diet on sleep. A laboratory-based animal study could be used. Researchers could have two different groups of mice: one fed high protein and the other fed low protein. Both groups would receive the same number of kcalories. The researchers would observe the time of sleep in both groups.

99. The choices a person makes regarding food are highly personal. List and describe five factors that influence a person’s food choices.

ANSWER: Preferences: As you might expect, the number one reason most people choose certain foods is taste—they like the flavor. Two widely shared preferences are for the sweetness of sugar and the

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savoriness of salt. High-fat foods also appear to be a universally common preference.
Habit: People sometimes select foods out of habit. They eat cereal every morning, for example, simply because they have always eaten cereal for breakfast. Eating a familiar food and not having to make any decisions can be comforting.
Ethnic Heritage and Regional Cuisines: Among the strongest influences on food choices are ethnic heritage and regional cuisines. People tend to prefer the foods they grew up eating. Every country, and in fact every region of a country, has its own typical foods and ways of combining them into meals. These cuisines reflect a unique combination of local ingredients and cooking styles.
Marketing: Food companies spend billions of dollars building brand loyalty and enticing busy customers with convenience foods.
Social Interactions: Most people enjoy companionship while eating. It's fun to go out with friends for a meal or share a snack when watching a movie together. Meals are often social events, and sharing food is part of hospitality. Social customs invite people to accept food or drink offered by a host or shared by a group—regardless of hunger signals.
Availability, Convenience, and Economy: People often eat foods that are accessible, quick and easy to prepare, and within their financial means. Consumers who value convenience frequently eat out, bring home ready-to-eat meals, or have food delivered.
Positive and Negative Associations: People tend to like particular foods associated with happy occasions—such as hot dogs at ball games or cake and ice cream at birthday parties. By the same token, people can develop aversions and dislike foods that they ate when they felt sick or that they were forced to eat in negative situations. Similarly, children learn to like and dislike certain foods when their parents use foods as rewards or punishments.
Emotions: Emotions guide food choices and eating behaviors. Some people cannot eat when they are upset. Others may eat in response to a variety of emotional stimuli—for example, to relieve boredom or depression or to calm anxiety.
Values: Food choices may reflect people's religious beliefs, political views, or environmental concerns.
Body Weight and Image: Sometimes people select certain foods and supplements that they believe will improve their physical appearance and avoid those they believe might be detrimental. Such decisions can be beneficial when based on sound nutrition and fitness knowledge, but decisions based on fads or carried to extremes undermine good health.
Nutrition and Health Benefits: Many consumers make food choices they believe will improve their health.

100. Name and describe the energy-yielding nutrients. How is the energy measured? How does the body use energy?

ANSWER: The energy-yielding nutrients are carbohydrates, fat, and protein, which are measured in calories or kcalories. Because fat provides the most energy, it has the highest energy density—9 kcal/g. Carbohydrates and protein each yield 4 kcal/g.
When the body uses carbohydrate, fat, or protein to fuel its activities, the bonds between the nutrient's atoms break. As the bonds break, they release energy. Some of this energy is released as heat, but some is used to send electrical impulses through the brain and nerves in order to synthesize body compounds and to move muscles. Thus, the energy from foods supports all of the body's movements from quiet thought to vigorous sports. If the body does not use these nutrients to fuel its current activities, it converts them into storage compounds, to be used between meals and overnight when fresh energy supplies run low. If more energy is consumed than expended, the result is an increase in energy stores and weight gain.

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101. Describe the double-blind technique and why it is important to research studies. Include a discussion of the importance of controls.

ANSWER: *Double Blind*: When both the subjects and the researchers do not know which subjects are in which group, the study is called a "double-blind experiment." Being fallible human beings and having an emotional and sometimes financial investment in a successful outcome, researchers might record and interpret results with a bias in the expected direction. To prevent such bias, the pills are coded by a third party, who does not reveal to the experimenters which subjects are in which group until all results have been recorded.
Controls: Research studies include control groups, which are similar in all possible respects to the experimental group, except for the treatment. This is accomplished through randomization. Ideally, the control group receives a placebo while the experimental group receives the studied treatment.

102. Compare and contrast the four categories of Dietary Reference Intakes (DRIs).

ANSWER: Estimated Average Requirements (EAR): The committee reviews hundreds of research studies to determine the requirement for a nutrient—how much is needed in the diet. The committee selects a different criterion for each nutrient based on its roles in supporting various activities in the body and in reducing disease risks.
An examination of all the available data reveals that each person's body is unique and has its own set of requirements. Men differ from women, and needs change as people grow from infancy through old age. For this reason, the committee clusters its recommendations for people into groups based on sex and age. Even so, the exact requirements for people of the same sex and age are likely to be different. Using this information, the committee determines an Estimated Average Requirement (EAR) for each nutrient—the average amount that appears sufficient for half the population.
Recommended Dietary Allowances (RDA): Once a nutrient requirement is established, the committee must decide what intake to recommend for everybody—the Recommended Dietary Allowance (RDA). The EAR is probably closest to everyone's need. If people consumed exactly the average requirement of a given nutrient each day, however, approximately half of the population would develop deficiencies of that nutrient. Recommendations are therefore set greater than the EAR to meet the needs of most healthy people.
Adequate Intakes (AI): For some nutrients, such as vitamin K, there is insufficient scientific evidence to determine an EAR (which is needed to set an RDA). In these cases, the committee establishes an Adequate Intake (AI) instead of an RDA. An AI reflects the average amount of a nutrient that a group of healthy people consumes. Like the RDA, the AI may be used as nutrient goals for individuals.
Tolerable Upper Intake Levels (UL): The recommended intakes for nutrients are generous, yet they may not be sufficient for every individual for every nutrient. Nevertheless, it is probably best not to exceed these recommendations by very much or very often. Individual tolerances for high doses of nutrients vary, and somewhere beyond the recommended intake is a point beyond which a nutrient is likely to become toxic. This point is known as the Tolerable Upper Intake Level (UL).

103. Why are the EER and AMDR such important metrics?

ANSWER: Estimated Energy Requirement (EER): The energy recommendation—the Estimated Energy Requirement (EER)—represents the average dietary energy intake (kcalories per day) that will maintain energy balance in a person who has a healthy body weight and level of physical activity.

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Balance is key to the energy recommendation. Enough food energy is needed to sustain a healthy and active life, but too much can lead to weight gain and obesity. Because any amount in excess of energy needs will result in weight gain, no upper level for energy has been determined.
Acceptable Macronutrient Distribution Ranges (AMDR)
People don't eat energy directly; they derive energy from foods containing carbohydrates, fats, and proteins. Each of these three energy-yielding nutrients contributes to the total energy intake, and those contributions vary in relation to one another. The DRI committee has determined that the composition of a diet that provides adequate energy and nutrients and reduces the risk of chronic diseases is 45 to 65% of kcalories from carbohydrate, 20 to 35% of kcalories from fat, and10 to 35% of kcalories from protein.

104. Explain how the four assessment methods are used to detect energy and nutrient deficiencies and excesses.

ANSWER: To prepare a nutrition assessment, a registered dietitian (or registered dietitian nutritionist); dietetic technician, registered; or other trained health care professional uses historical information, anthropometric measurements, physical examinations, and laboratory tests.
One step in evaluating nutrition status is to obtain information about a person's history with respect to health status, socioeconomic status, drug use, and diet. The health history reflects a person's medical record and may reveal a disease that interferes with the person's ability to eat or the body's use of nutrients. The person's family history of major diseases is also noteworthy, especially for conditions such as heart disease that have a genetic tendency to run in families. Economic circumstances may show a financial inability to buy foods or inadequate kitchen facilities in which to prepare them. Social factors such as marital status, ethnic background, and educational level also influence food choices and nutrition status. A drug history, including all prescribed and over-the-counter medications, may highlight possible interactions that lead to nutrient deficiencies.
A second technique that may help to reveal nutrition problems is taking anthropometric measures such as height and weight. The assessor compares a person's measurements with standards specific for sex and age or with previous measures on the same individual.
A third nutrition assessment technique is a physical examination looking for clues to poor nutrition status. Visual inspection of the hair, eyes, skin, posture, tongue, and fingernails can provide such clues. In addition, information gathered from an interview can help identify symptoms. The examination requires skill because many physical signs and symptoms reflect more than one nutrient deficiency or toxicity—or even nonnutrition conditions. Like the other assessment techniques, a physical examination alone does not yield firm conclusions. Instead, physical examinations reveal possible imbalances that must be confirmed by other assessment techniques, or they confirm results from other assessment measures.
A fourth way to detect a developing deficiency, imbalance, or toxicity is to take samples of blood or urine, analyze them in the laboratory, and compare the results with normal values for a similar population. Laboratory tests are most useful in uncovering early signs of malnutrition before symptoms appear. In addition, they can confirm suspicions raised by other assessment methods.

105. Imagine that you are in charge of *What We Eat in America*, a national nutrition survey. Some people have suggested eliminating the survey because of budget constraints. How would you respond?

ANSWER: National nutrition surveys gather information about the population's dietary, nutritional, and related health status. The data provide valuable information on several nutrition-related conditions, such as growth retardation, heart disease, and nutrient deficiencies. National nutrition surveys often oversample high-risk groups (low-income families, pregnant women, adolescents, the elderly,

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African Americans, and Mexican Americans) to glean an accurate estimate of their health and nutrition status. The resulting wealth of information from the national nutrition surveys is used for a variety of purposes. For example, Congress uses this information to establish public policy on nutrition education, food assistance programs, and regulation of the food supply. Scientists use the information to establish research priorities. The food industry uses these data to guide decisions in public relations and product development. The Dietary Reference Intakes and other major reports that examine the relationships between diet and health depend on information collected from these nutrition surveys. These data also provide the basis for developing and monitoring national health goals.

106. How are risk factors for chronic diseases determined? What do they mean?

ANSWER: Factors that increase or reduce the risk of developing chronic diseases can be identified by analyzing statistical data. A strong association between a risk factor and a disease means that when the factor is present, the likelihood of developing the disease increases. It does not mean that all people with the risk factor will develop the disease. Similarly, a lack of risk factors does not guarantee freedom from a given disease. On the average, though, the more risk factors in a person's life, the greater that person's chances of developing the disease. Conversely, the fewer risk factors in a person's life, the better the chances for good health.

107. Imagine that a friend tells you she was watching her favorite morning news program on television and saw a segment featuring a story on "surprising new findings" about the health benefits of a new over-the-counter product. She found the product at her local drugstore and shows you the package. What advice would you give her regarding her latest discovery?

ANSWER: Consumers get much of their nutrition information from Internet websites, television news, and magazine articles, which have heightened awareness of how diet influences the development of diseases. Consumers benefit from news coverage of nutrition when they learn to make lifestyle changes that will improve their health. Sometimes, however, popular reports mislead consumers and create confusion. They often tell a lopsided story quickly instead of presenting the integrated results of research studies or a balance of expert opinions.

Tight deadlines and limited understanding sometimes make it difficult to provide a thorough report. Hungry for the latest news, the media often report scientific findings quickly and prematurely—without benefit of careful interpretation, replication, or peer review. Usually, the reports present findings from a single, recently released study, making the news current and controversial. Consequently, the public receives diet and health news fast, but not always in perspective. Reporters may twist inconclusive findings into "meaningful discoveries" when pressured to write catchy headlines and sensational stories.

As a result, "surprising new findings" sometimes seem to contradict one another, and consumers may feel frustrated and betrayed. Occasionally, the reports are downright false, but more often the apparent contradictions are simply the normal result of science at work. A single study contributes to the big picture, but when viewed alone, it can easily distort the image. To be meaningful, the conclusions of any study must be presented cautiously within the context of other research findings. Additionally, there are eight red flags revealing nutrition quackery on product packages or in marketing materials. These include the word "natural," quick and easy fixes, the promise of satisfaction, the idea that one product does everything, the notion of being time-tested or brand new, paranoid accusations, personal testimonials, and meaningless jargon.

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108. Imagine that a friend is contemplating a change in college major. He has always had an interest in healthy living and knows he does not want to work in an office setting. You think he should consider becoming a registered dietitian. What would you tell him about the necessary training and career possibilities?

ANSWER: A registered dietitian nutritionist (RDN) has the educational background necessary to deliver reliable nutrition advice and care. To become an RDN, a person must earn an undergraduate degree requiring about 60 credit hours in nutrition, food science, and other related subjects; complete a year's clinical internship or the equivalent; pass a national examination administered by the Academy of Nutrition and Dietetics; and maintain up-to-date knowledge and registration by participating in required continuing education activities, such as attending seminars, taking courses, or conducting research.

Dietitians perform a multitude of duties in many settings in most communities. They work in the food industry, pharmaceutical companies, home health agencies, long-term care institutions, private practice, public health departments, research centers, education settings, fitness centers, and hospitals. Depending on their work settings, dietitians can assume a number of different job responsibilities and positions. In hospitals, administrative dietitians manage the foodservice system; clinical dietitians provide client care; and nutrition support team dietitians coordinate nutrition care with other health-care professionals. In the food industry, dietitians conduct research, develop products, and market services.

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