**Question Bank**

**Chapter 4**

**Income and the Importance of Substitution**

**Think Break Questions** (from Book: pp. 66, 68, 70, 72)

1. In Figure 4.3, what would have to occur for the *intermediate* utility level to be the highest that could be reached? What would this imply for point E?

2. Under the above scenario, would the combinations A or B be chosen? Why or why not?

3. The slope of the isonutrient line is determined by how much of the nutrient is in each food (i.e. the nutrient conversion coefficients, the αs). Using Figure 4.4, show how to reach the nutrient target by consuming a different food with a higher nutrient content even at the low budget isocost. What does this imply about needing more money to reach the nutrient target?

4. What happens to this graph (Fig. 4.5) if income increases?

5. What happens to this graph (Fig. 4.5) if the nutrient level increases?

6. What does the graph (Fig. 4.5) look like if the isocost and isonutrient lines do not intersect? (There are two possible cases). What are the implications of these two cases?

7. Think through My Plate and provide examples of foods you think may have steep Engel curves and foods that may have less steep (more elastic) Engel curves across the food groups.

8. Does a steep Engel curve mean that income does not affect consumption? If not, what does it mean?

9. Suppose there is some recommended intake of food one in the lower panel of Figure 4.6. Will it be easier to reach the recommended level when income increases if the Engel curve is steep or flat?

**Multiple Choice Questions**

1. In the opening conversation, Margaret is wearing a new hat.

a. True

b. False

2. Substitution is a not a critical concept in economics and nutrition because one food cannot usually be purchased in the place of another.

a. True

b. False

3. The fundamentals components of the two foods and one nutrient model of consumer choices are

a. the food budget relationship, the food nutrient relationship, the recommended nutrient

relationship and the food preference relationship.

b. the food budget relationship, the food nutrient relationship, the nutrient-health relationship

and the food preference relationship.

c. the food nutrient relationship, the budget constraint, the demand function, and the

recommended nutrient intake line.

4. The feasible choice set is defined as

a. the choices that are less than or equal to a nutrient recommendation constraint.

b. the choices do not violate the budget constraint.

5. The budget constraint when there are two goods (e.g., foods) allows for substitution between the goods without violating the budget constraint.

a. True

b. False

6. The isocost line shows the

a. tradeoff between the consumption of goods (e.g., foods) holding cost constant.

b. tradeoff between the consumption of nutrients holding cost constant.

c. a and b.

7. Opportunity cost in economics refers to

a. how much you pay to participate in an opportunity.

b. the cost associated with a foregone alternative.

c. none of the above.

8. As income increases the isocost line shifts out but the feasible choice set shrinks

a. True

b. False

9. Assuming only two goods, an increase in the price of a good or a decrease in income rotates the isocost line in.

a. True

b. False

10. The indifference curve shows

a. the different combinations of goods that the consumer is indifferent about with respect to consumption.

b. all the combinations of consumption bundles that provide the same utility level.

c. a and b

11**.** Sam claims that 2 green eggs and 3 slices ofham lie on the same indifference curve as 3 green eggs and 2 slices of ham. Sam therefore gets more utility out of 2 green eggs and 3 slices of ham than 3 green eggs and 2 slices of ham.

a. True

b. False

12. In order to maximize utility subject to a budget constraint, the consumer should always choose the combination of two goods (e.g. foods) where

a. the isocost line intersects the indifference curve.

b. the isocost line is below the indifference curve.

c. the isocost line is above the indifference curve.

d. none of the above

13. The isonutrient line

a. shows the tradeoff between the consumption of goods holding nutrient intake constant.

b. is derived from the nutrient food relationship.

c. a and b

14. An isonutrient line associated with a recommended intake level of a nutrient (e.g., fat)

a. restricts the feasible choice set.

b. can be exceeded by a consumption choice.

c. a and b.

15. By basing food recommendations on average daily intake the feasible recommended choice set is expanded beyond one based on daily food intake recommendations.

a. True

b. False

16. If the isonutrient line lies below the isocost line (i.e. never crosses it), then the feasible choice set is smaller than if the isonutrient line crosses the isocost line.

a. True

b. False

17. When considering two foods, there are multiple combinations of the foods that can lead to the same nutrient intake level and subsequently the same health level.

a. True

b. False

18. An Engel Curve shows the relationship between consumption of a *good* and *income*.

a. True

b. False

19. As income increases the Engel curve will shift out.

a. True

b. False

20. The total Engel curve

a. accounts for all income being spent.

b. takes into account both hedonic and health effect considerations in a food choice.

21. The total Engel curve is always more responsive than a hedonic only Engel curve.

a. True

b. False

22. An elasticity refers to the percentage change in one variable for a one percent change in another variable.

a. True

b. False

23. When a good has an income elasticity between 0 and 1, the good is called

a. inelastic.

b. elastic.

c. essential.

d. a and c.

e. b and c.

24. A luxury good is defined by an income elasticity that is

a. positive.

b. less than one.

c. greater than one.

25. Romaine noodles are often considered an inferior god, meaning that they have an income elasticity that is

a. negative.

b. between 0 and 1.

c. greater than 1.

26. Most foods have the same income elasticity.

a. True

b. False

27. In the closing conversation, JP is troubled by the fact that the analysis in this chapter assumes price is constant.

a. True

b. False

***Short Answer Questions***

1. Assume Michelle and Hillary have each allocated $100 to spend on milk products and meat for a month and they are trying to hit a fat intake target with these two products. **Show graphically and explain** how it may be possible for Michelle to be over the recommended fat intake and Hillary to be under the recommended fat intake associated with these two items though they both spend the exact same amount.

2. Using a graph with indifference curves and the isocost line, show how it may be possible that an increase in income could increase the consumption of both goods. What implication does this have for policies such as food stamps (SNAP)?

3. Using a graph with indifference curves and the isocost line, **show and explain** how the slope of the Engle curve will depend on how much emphasis an individual places on the health versus hedonic effects of a food.

4. Explain in words why knowing the value of different food income elasticities may important for evaluating the effectiveness of an income support program like SNAP

***Discussion Questions***

1. Suppose Department of Health has received support from congress to provide an income subsidy to increase fruit and vegetable consumption in low income areas. However, congress has said that after 3 years if there was no improvement in fruit or vegetable consumption the funding would be discontinued. Researchers at the Department of Health have estimated that the income elasticity for fruit is 0.72 but for vegetables is 0.35. In words, explain what these two numbers mean. Using a graph **show and explain** in words why the implementation of the policy would be more effective if all the money was focused on fruit rather than vegetables if the goal is to have the largest impact in at least one of the two food groups. How much money would it take to have the same impact on vegetable consumption as fruit consumption? Explain.

2. Jared works at Pizza Hut from 5:00 - 9:00 every night. There is Subway right next door. Jared’s budget for dinner is $60 for 9 days. The average price of a personal pizza at Pizza Hut is $12. The average price of a Subway sandwich is $6.00. However, the fat content in an average pizza is 20 grams but of a Subway sandwich is 15 grams. His target fat gram intake for the week is 140 grams. Based on this information answer the following questions (**Show work for all calculations**):

(a) What is the isocost line associated with this problem?

(b) How many times could Jared eat Pizza for dinner? How many times could Jared eat at Subway for dinner?

(c) What is the isonutrient line associated with this problem?

(d) What is the maximum number of nights Jared could eat pizza and reach his fat target? Subway?

(e) If Jared spends his entire food budget and wants to reach his nutrient target how should he allocate his meals between the two restaurants?

(f) **Show graphically and explain** Jared’s situation in part (e) and part (f).