Discussion Questions: Chapter 4

1. Show using indifference curves and a budget line that if preferences are intransitive, standard utility maximization solutions may not result.

2. Suppose three students of Microeconomics meet on the street, each carrying one item (money, tickets, or a coffee percolator). Two of these individuals have intransitive preferences; the other does not.

   a) How many exchanges could take place involving all three people before one would be unwilling to trade?

   b) What would your answer be if only one had intransitive preferences?

Discussion Questions

1. Our analysis of consumer behavior focuses on how to maximize the well-being of individual consumers. What alternative objectives might we consider?

2. How can we analyze commodities that are “bads” (garbage, water pollution)?

3. Name pairs of goods that you consume that are perfect substitutes.

4. Name pairs of goods that you consume that are perfect complements.

5. Can you think of a person who might be satiated in all goods (does not want more of anything)?

6. Discuss the democratic model of “one person–one vote” as a method for the determination of social policy.

7. Why do individuals make consumption decisions that they know they will regret later (e.g., eating too much spicy food)?
Additional Questions and Math Problems

1. Maximizing behavior in the context of school performance (not utility maximization) would imply trying to get straight A’s.
   a) Is maximizing behavior a good assumption in this case?
   b) Can you think of another assumption that may be more appropriate for some individuals when attempting to model school performance behavior?

2. Consider two goods that are perfect substitutes. What is likely to be true about their relative prices? Can you confirm your hypothesis with examples?

3. From the total utility schedule shown below, calculate the marginal utility of each additional unit of X consumed.

<table>
<thead>
<tr>
<th>Units of X</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utility</td>
<td>15</td>
<td>35</td>
<td>50</td>
<td>62</td>
<td>70</td>
<td>74</td>
<td>76</td>
<td>77</td>
</tr>
</tbody>
</table>

5. What information is contained in the slope of an indifference curve? Why are these curves typically convex to the origin?

6. For each of the utility functions below, draw a set of indifference curves showing utility levels $U = 12$, $U = 16$, and $U = 24$.
   a. $U = XY$
   b. $U = X + Y$
   c. $U = X - Y$
   d. What is true about the commodities in (b)?
   e. What about the commodities in (c)?

7. Suppose a consumer has an income of $500 and faces prices $p_X = 5$ and $p_Z = 10$.
   a. Write the equation for the budget constraint.
   b. Draw the budget constraint, placing good X on the horizontal axis. Label it $BC$.
   c. What is the slope of $BC$?
   d. Suppose income decreases to $300. Draw the new budget constraint and label it $RS$.

8. Larry and Teri allocate their consumption between two goods: hats and bats. The price of hats is $4 each and the price of bats is $8 each. For Larry, the marginal utility of the last hat consumed was 8 and the marginal utility of the last bat was 24. For Teri the marginal utility of the last hat was 6 and the marginal utility of the last bat was 12. Which consumer is not maximizing his/her utility? How can you tell? How should he/she change their allocation?

9. Suppose a consumer has income of $120 per period, and faces prices $p_X = 2$ and $p_Z = 3$. Her goal is to maximize her utility, described by the function $U = 10X^{0.5}Z^{0.5}$. Calculate the utility maximizing bundle $(X^*, Z^*)$ using the methods described in Appendix 4B of the Perloff textbook.

10. Confirm that if a consumer’s utility function is described by $U = 2X + Z$, and prices are $p_X = 2$ and $p_Z = 1$, there is no unique utility-maximizing solution regardless of income level. What does this tell you about X and Z as commodities? (Hint: draw a graph showing a budget constraint and indifference curve using the information provided.)
11. Suppose Carmela’s income is $100 per week, which she allocates between sandwiches and books. Sandwiches cost $2 each. Books cost $10 each if she purchases between 1 and 5 books. If she purchases more than 5 books in a week, the price falls to $5 for the 6th book and all subsequent books. Draw the budget constraint. Is it possible that Carmela might have more than one utility-maximizing solution?

12. Gift cards are a popular holiday gift, with between $40 and $45 billion being spent on gift cards annually.
   a. Suppose a consumer is indifferent between receiving a $100 gift card for Best Buy, and $100 in cash. Is the optimal bundle an interior solution or a corner solution?
   b. If a consumer is indifferent between a $100 gift card and $50 cash, where on their budget curve does their indifference curve lie? Show on a graph.

13. What happens to the budget line if the government increases tax on cigarettes but nothing else?