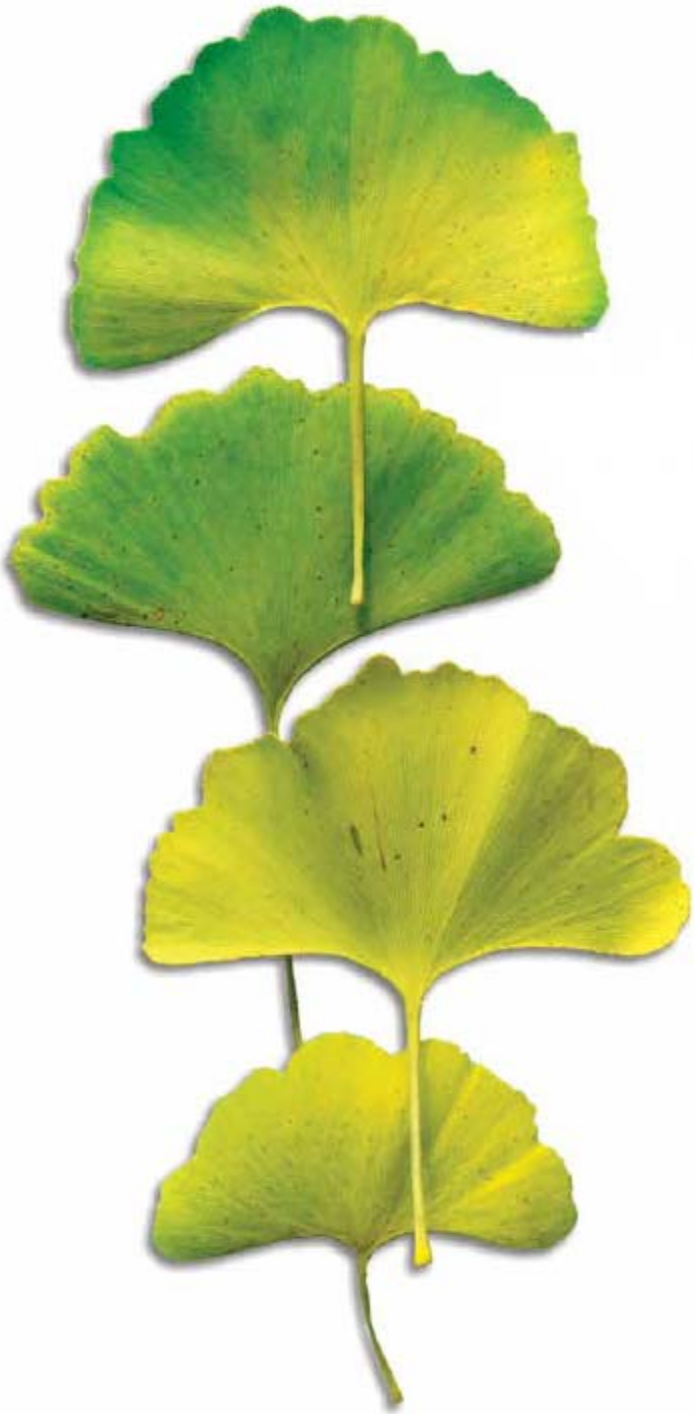
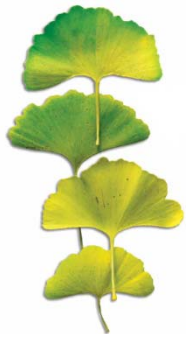


Chapter 3

Rational Consumer Choice

Chapter Outline

- The Opportunity Set or Budget Constraint
- Budget Shifts Due to Price or Income Changes
- Consumer Preferences
- The Best Feasible Bundle
- Appendix:
  - The Utility Function Approach to the Consumer Choice
  - Cardinal versus Ordinal Utility
  - Generating Indifference Curves Algebraically



Budget Limitation

- A ***bundle:*** a particular combination of two or more goods.

- ***Budget constraint:*** the set of all bundles that exactly exhaust the consumer's income at given prices.
  - Its slope is the negative of the price ratio of the two goods.

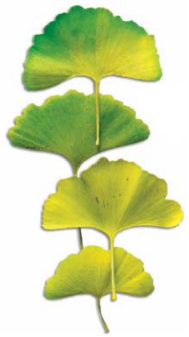
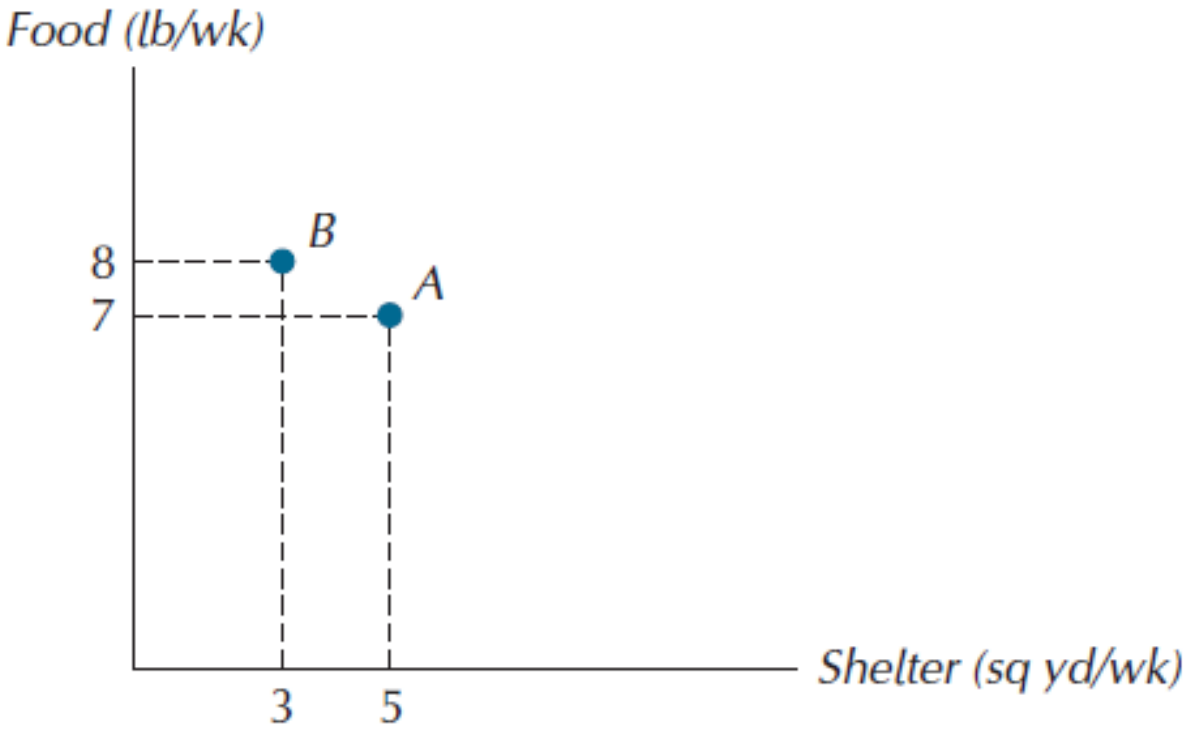


Figure 3.1: Two Bundles of Goods



Affordable vs. Unaffordable

- **Affordable set**, or feasible set: bundles on or below the budget constraint; bundles for which the required expenditure at given prices is less than or equal to the income available.

- **Unaffordable set**, or unfeasible set: bundles that lie outside the budget constraint

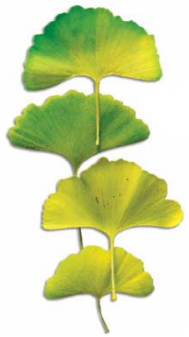
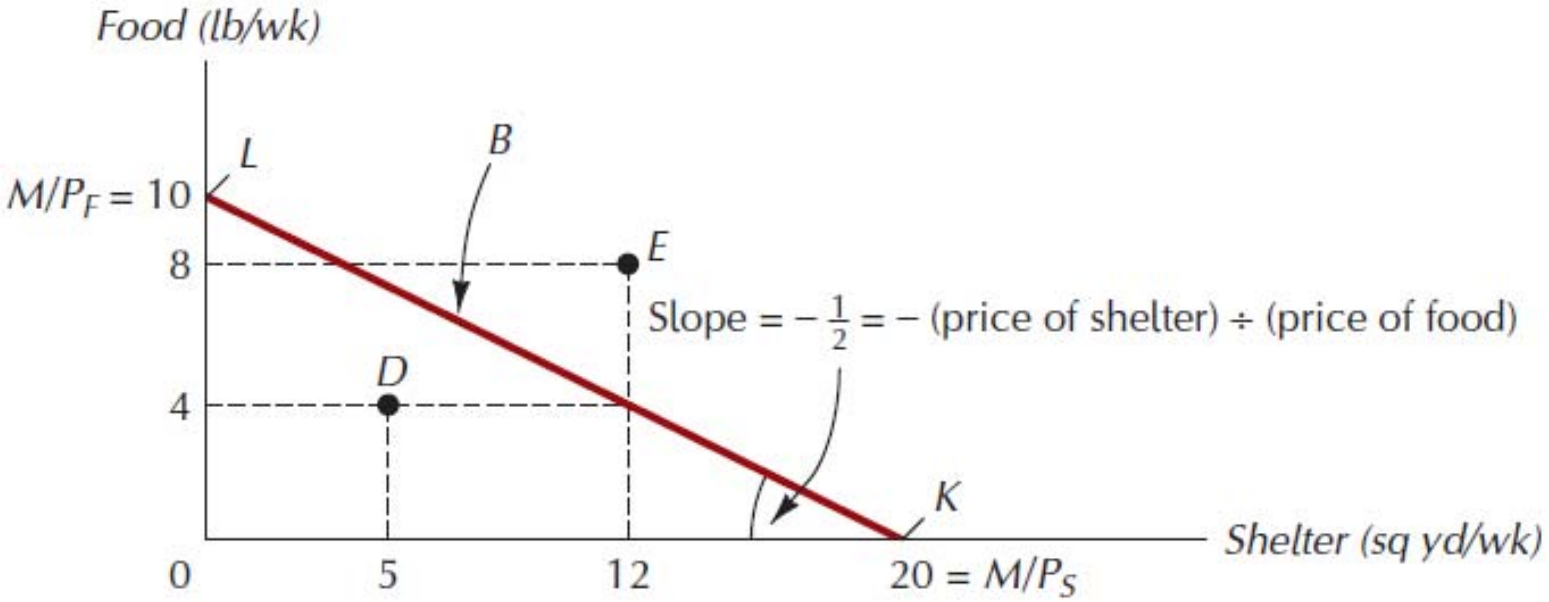
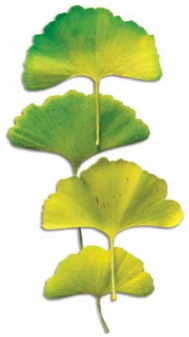


Figure 3.2: The Budget Constraint, or Budget Line





Budget Shifts Due to Price and Income Changes

- If the price of ONLY one good changes…
  - The slope of the budget constraint changes.
- If the price of both goods change by the same proportion…
  - The budget constraint shifts parallel to the original one.
- If income changes ….
  - The budget constraint shifts parallel to the original one.

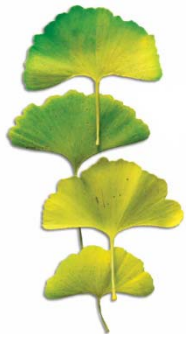
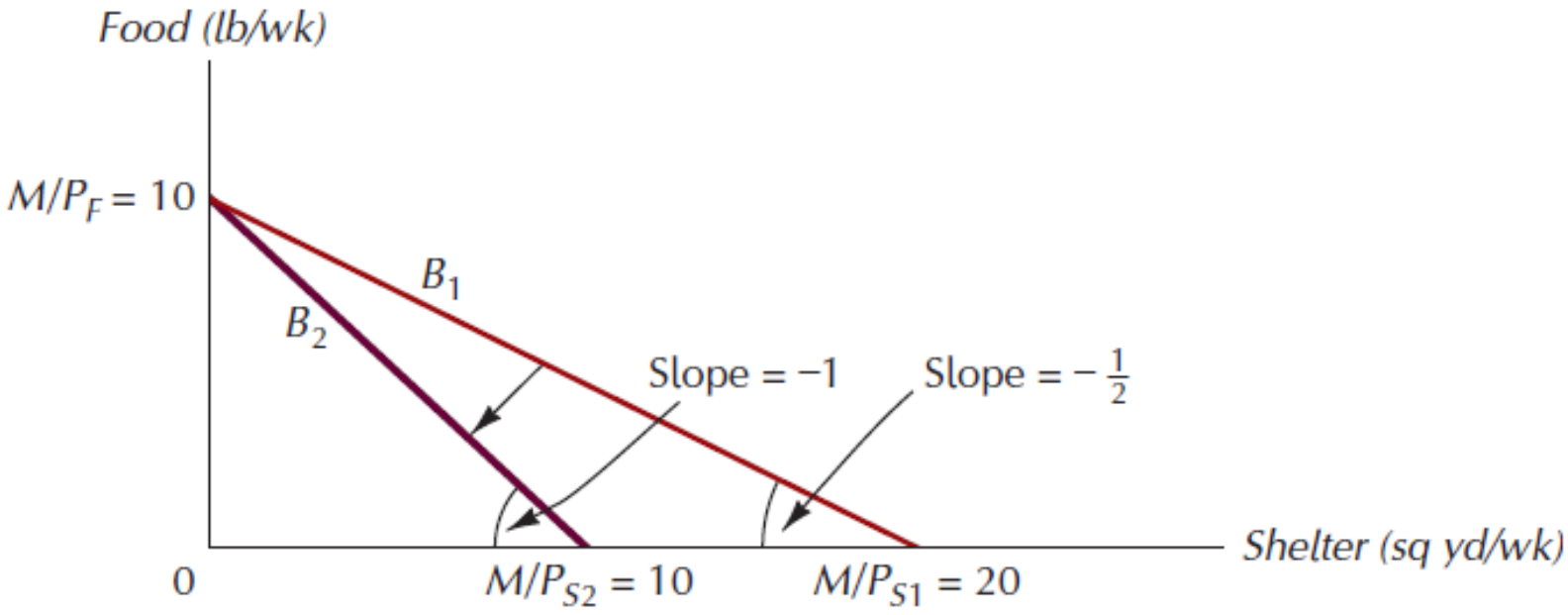


Figure 3.3: The Effect of a Rise in the Price of Shelter



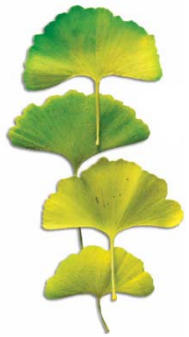
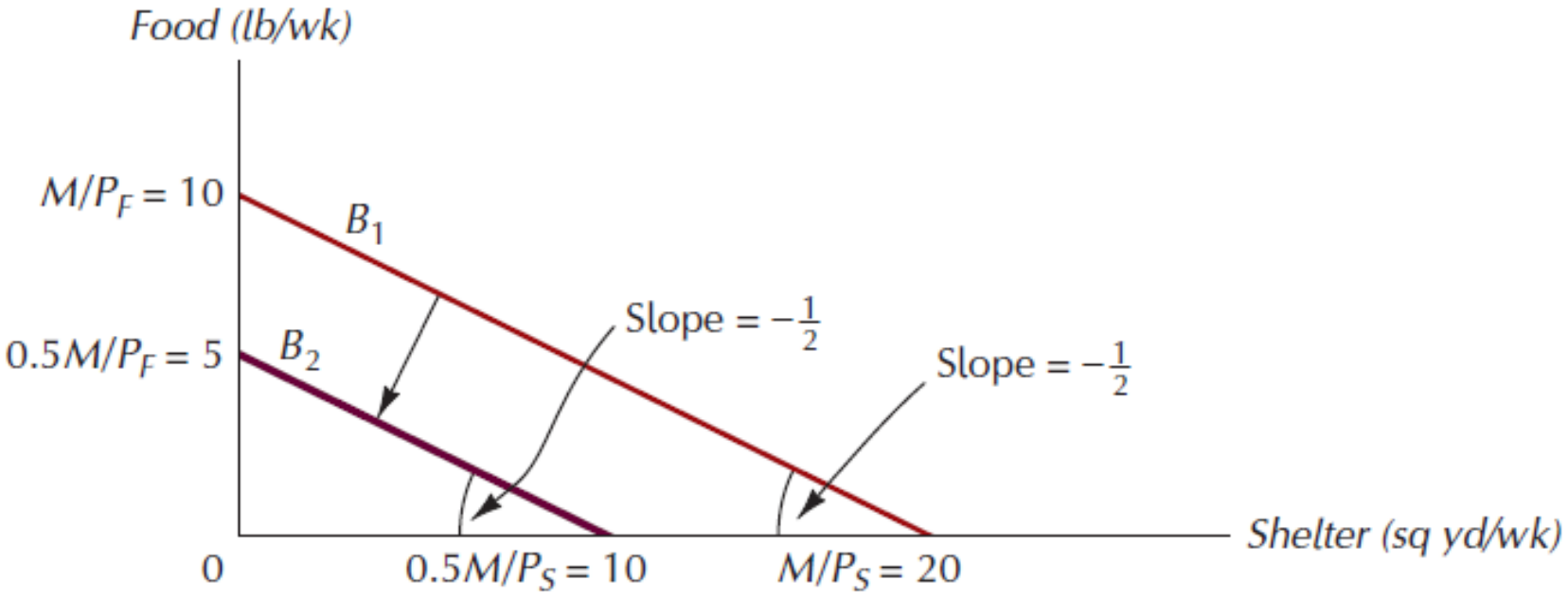
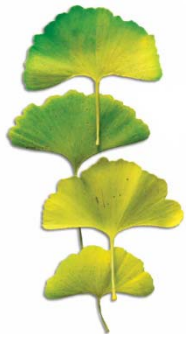


Figure 3.4: The Effect of Cutting Income by Half





Budgets Involving More Than Two Goods

- When we have more than 3 goods, the budget constraint becomes a **hyperplane**, or **multidimensional plane**.
- In this case, view the consumer's choice as one between a good, *X*, and an amalgam of other goods, *Y*. This amalgam is called the **composite good**.
  - The amount of income left after buying good *X*
  - The amount the consumer spends on goods other than good *X*

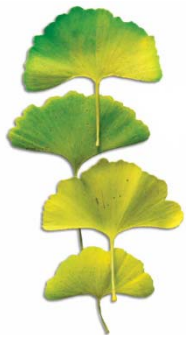


Figure 3.5: The Budget Constraints with the Composite Good

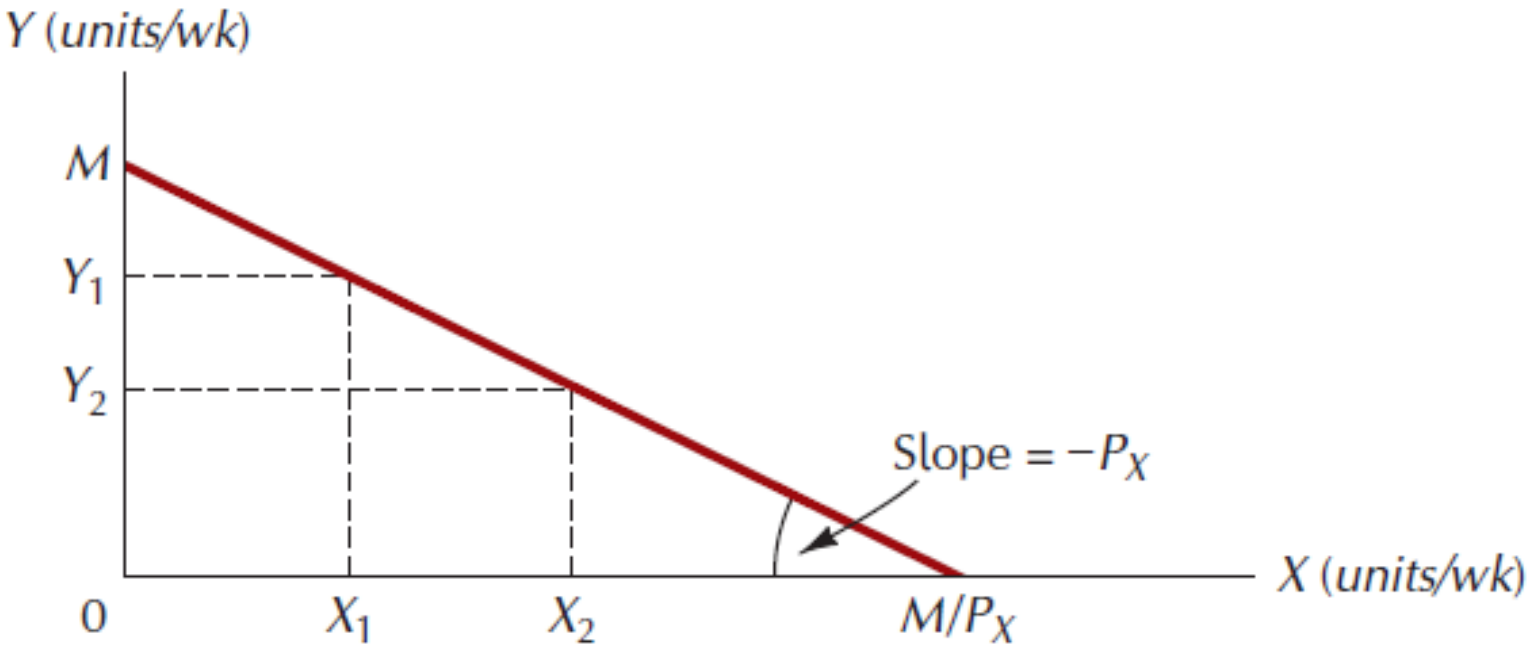


Figure 3.6: A Quantity Discount Gives Rise to a Nonlinear Budget Constraint

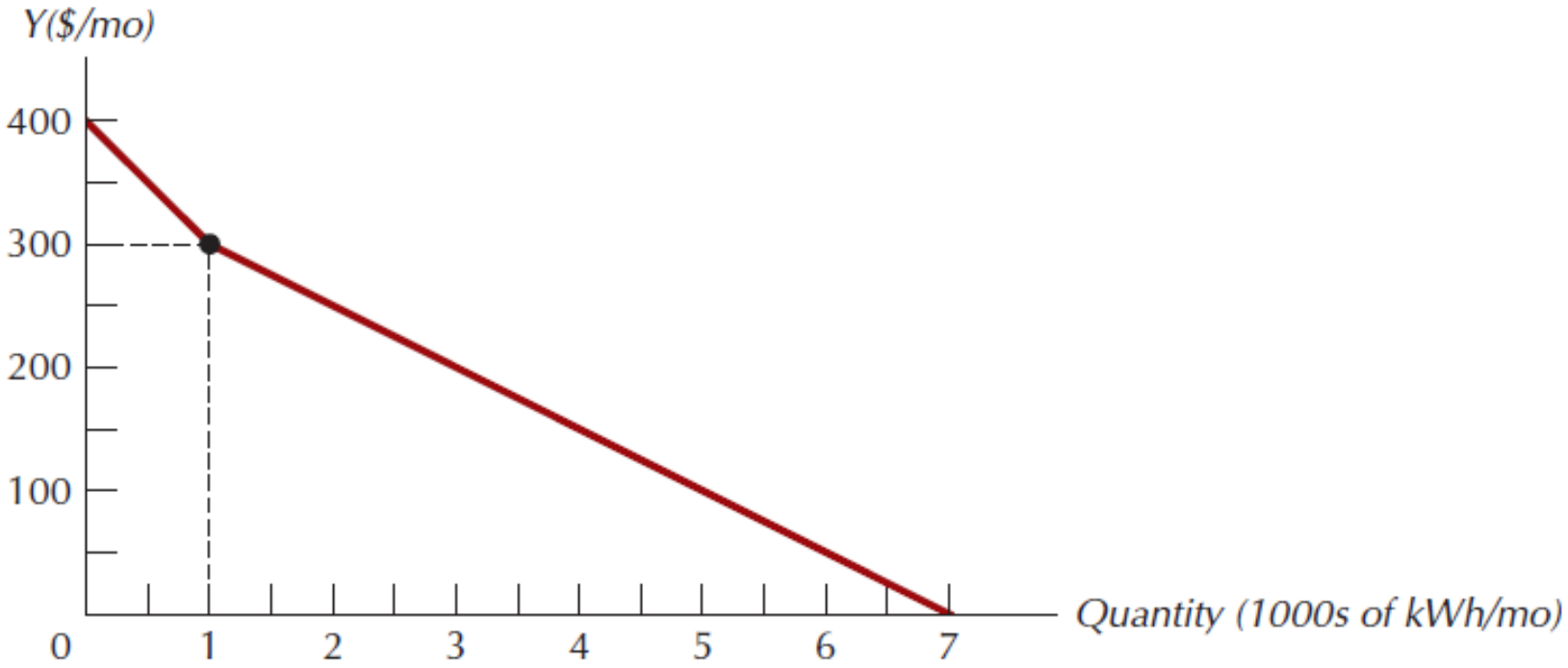
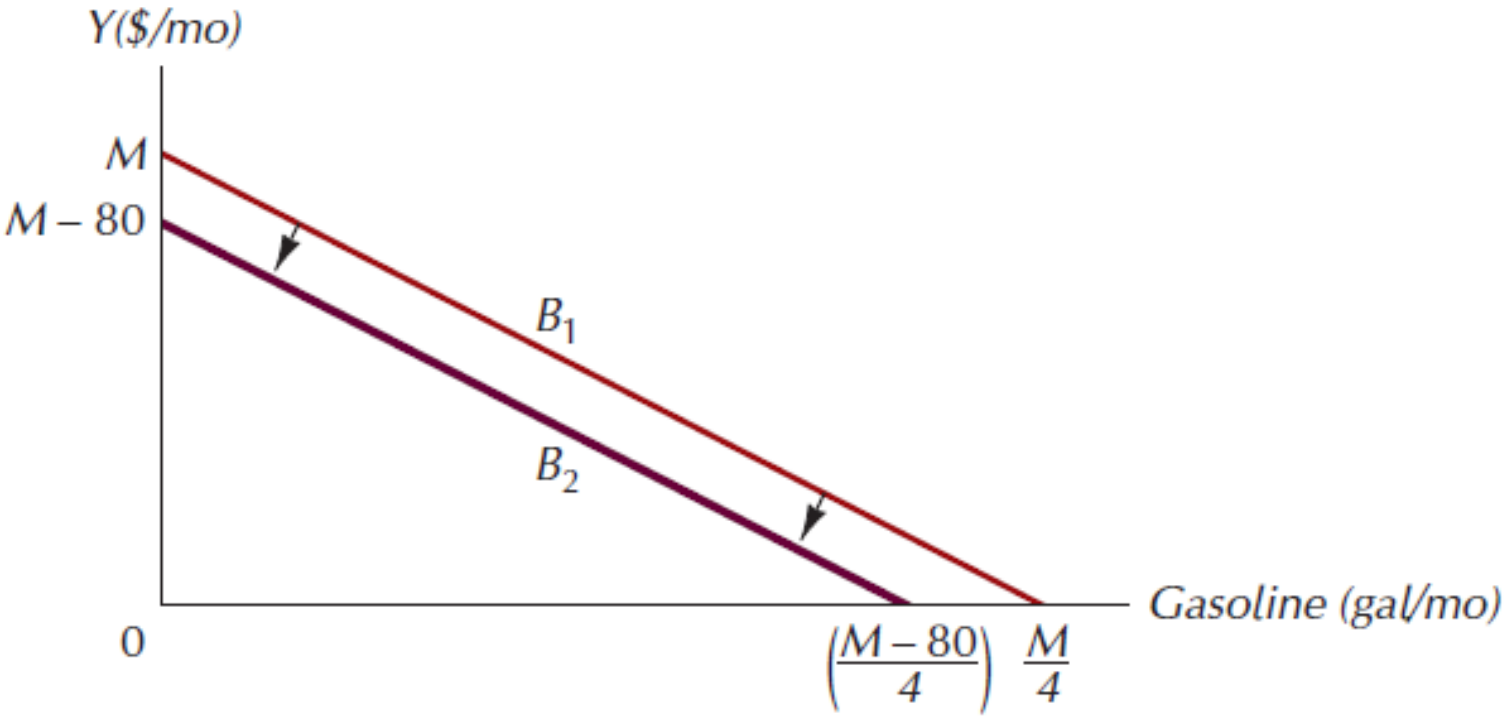
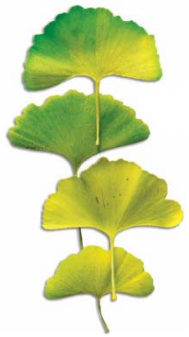


Figure 3.7: Budget Constraints Following Theft of Gasoline, Loss of Cash



Preference Ordering

- **Preference ordering**: a ranking of all possible consumption bundles in order of preference.
  - Differ widely among consumers
  - Four simple properties of preference ordering



Properties of Preference Orderings

- ***Completeness:*** the consumer is able to rank all possible combinations of goods and services.
- ***More-Is-Better:*** other things equal, more of a good is preferred to less.
- ***Transitivity:*** for any three bundles A, B, and C, if he prefers A to B and prefers B to C, then he always prefers A to C.
- ***Convexity:*** mixtures of goods are preferable to extremes.

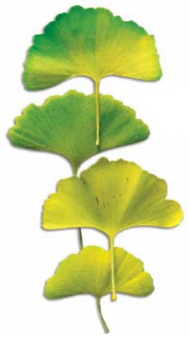
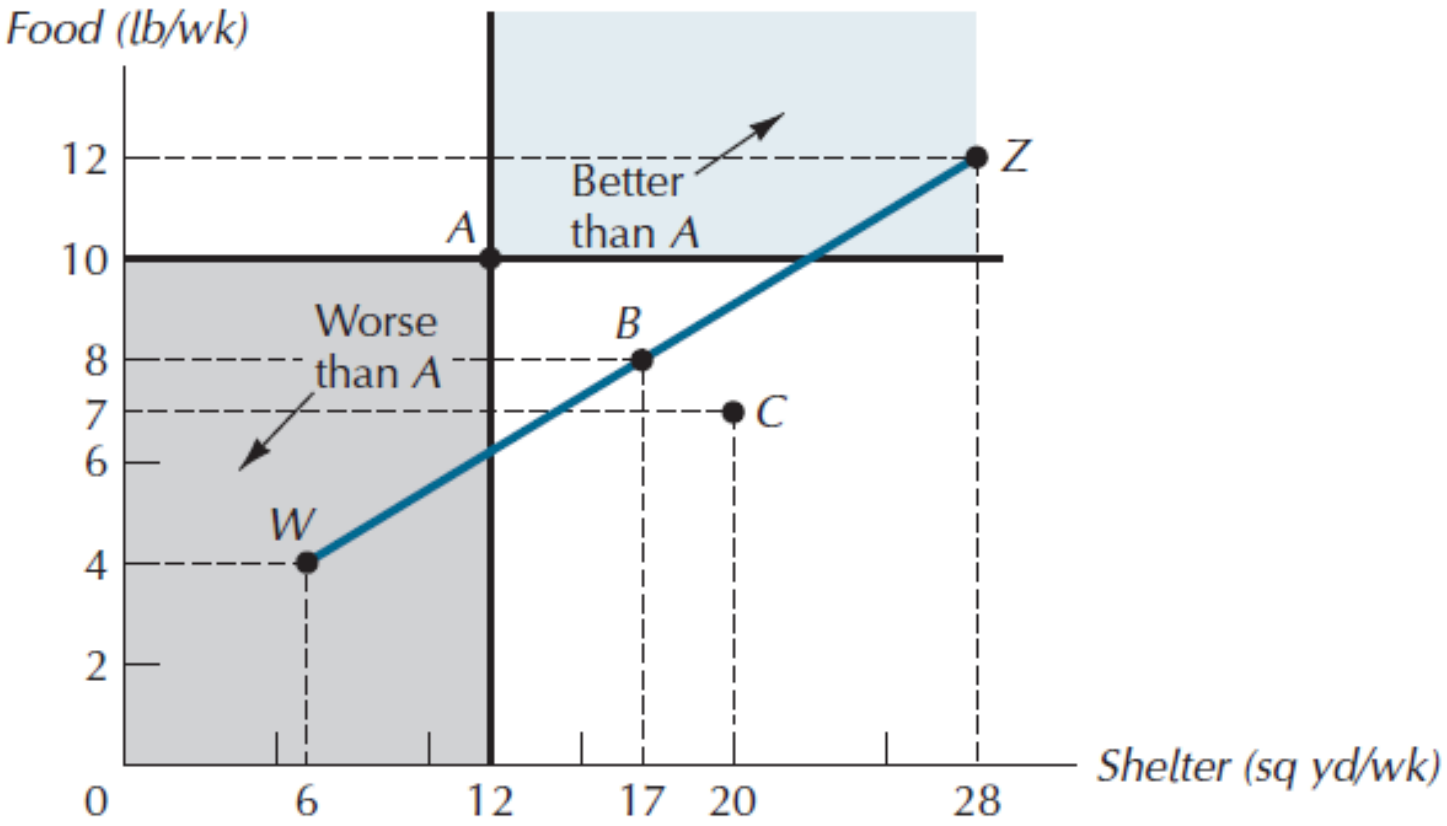


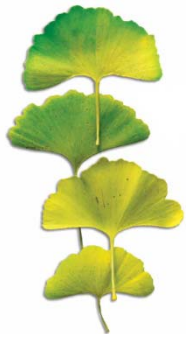
Figure 3.8: Generating Equally Preferred Bundles



Indifference Curves

- ***Indifference curve:*** a set of bundles among which the consumer is indifferent.

- ***Indifference map:*** a representative sample of the set of a consumer's indifference curves, used as a graphical summary of her preference ordering.



Properties of Indifference Curves

- Indifference curves …

1. Are Ubiquitous.
   - Any bundle has an indifference curve passing through it.
2. Are Downward-sloping.
   - This comes from the "more-is-better" assumption.
3. Cannot cross.
4. Become less steep as we move downward and to the right along them.
   - This property is implied by the convexity property of preferences.

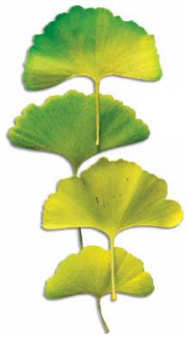


Figure 3.9: An Indifference Curve

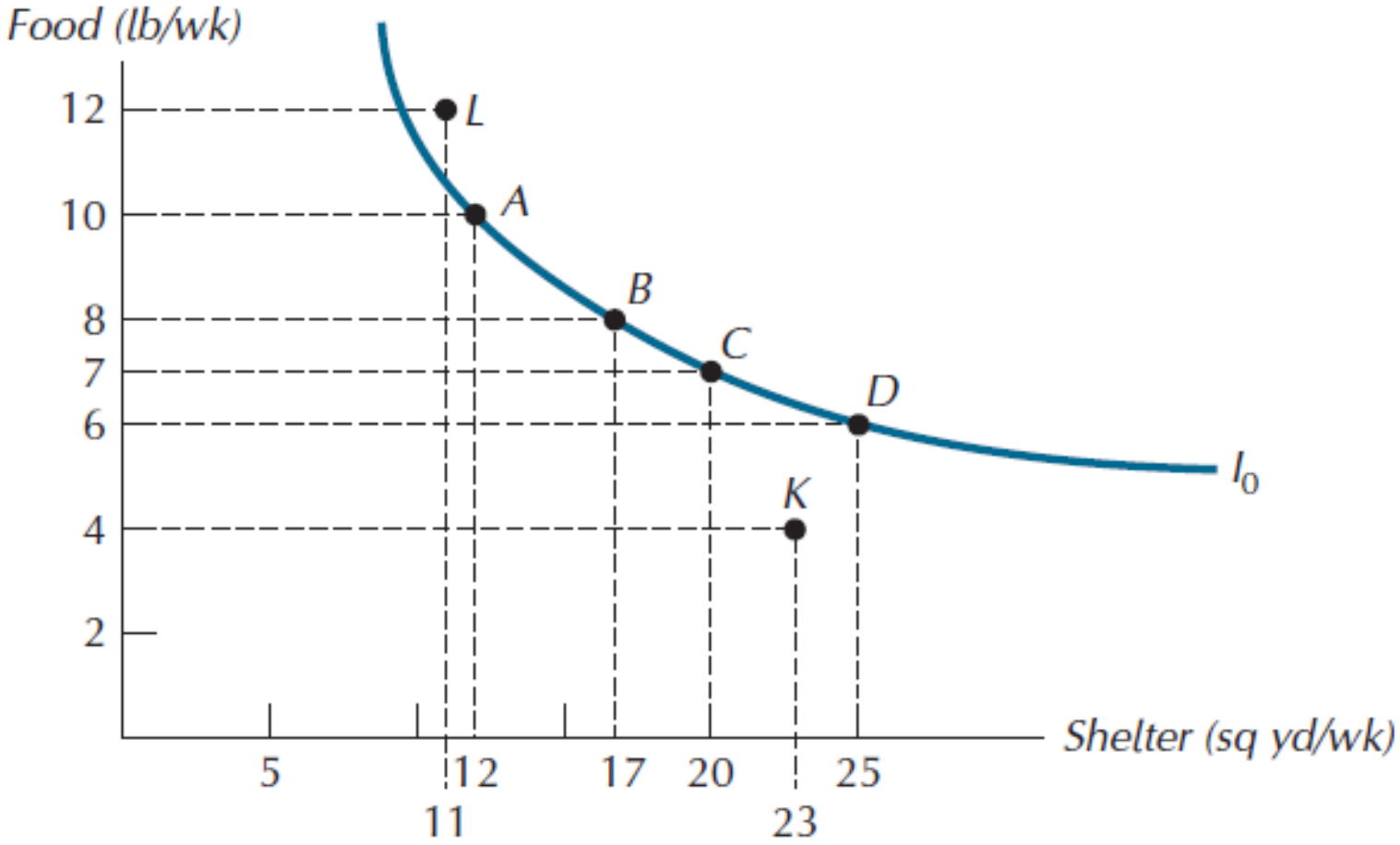


Figure 3.10: Part of an Indifference Map

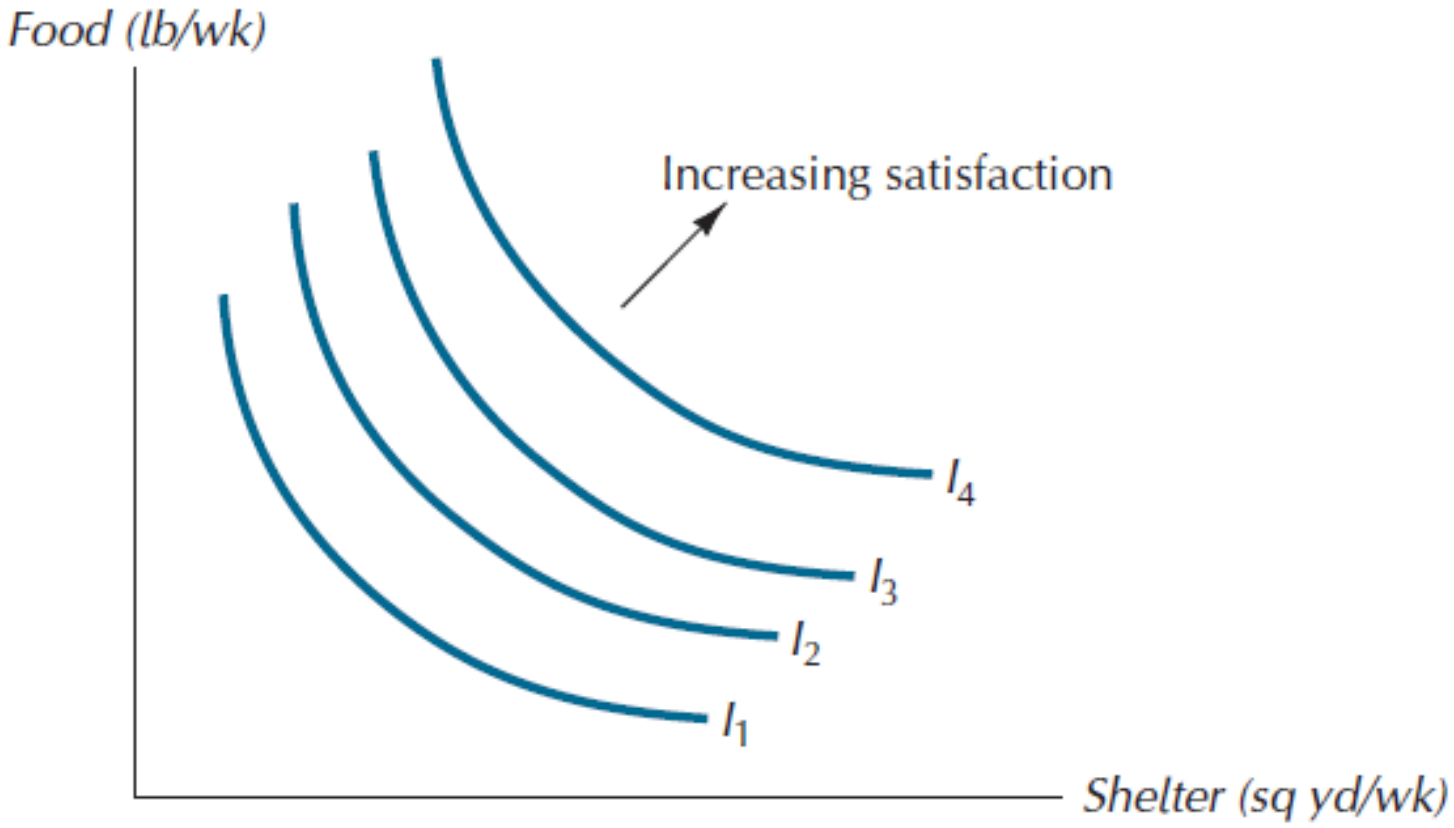
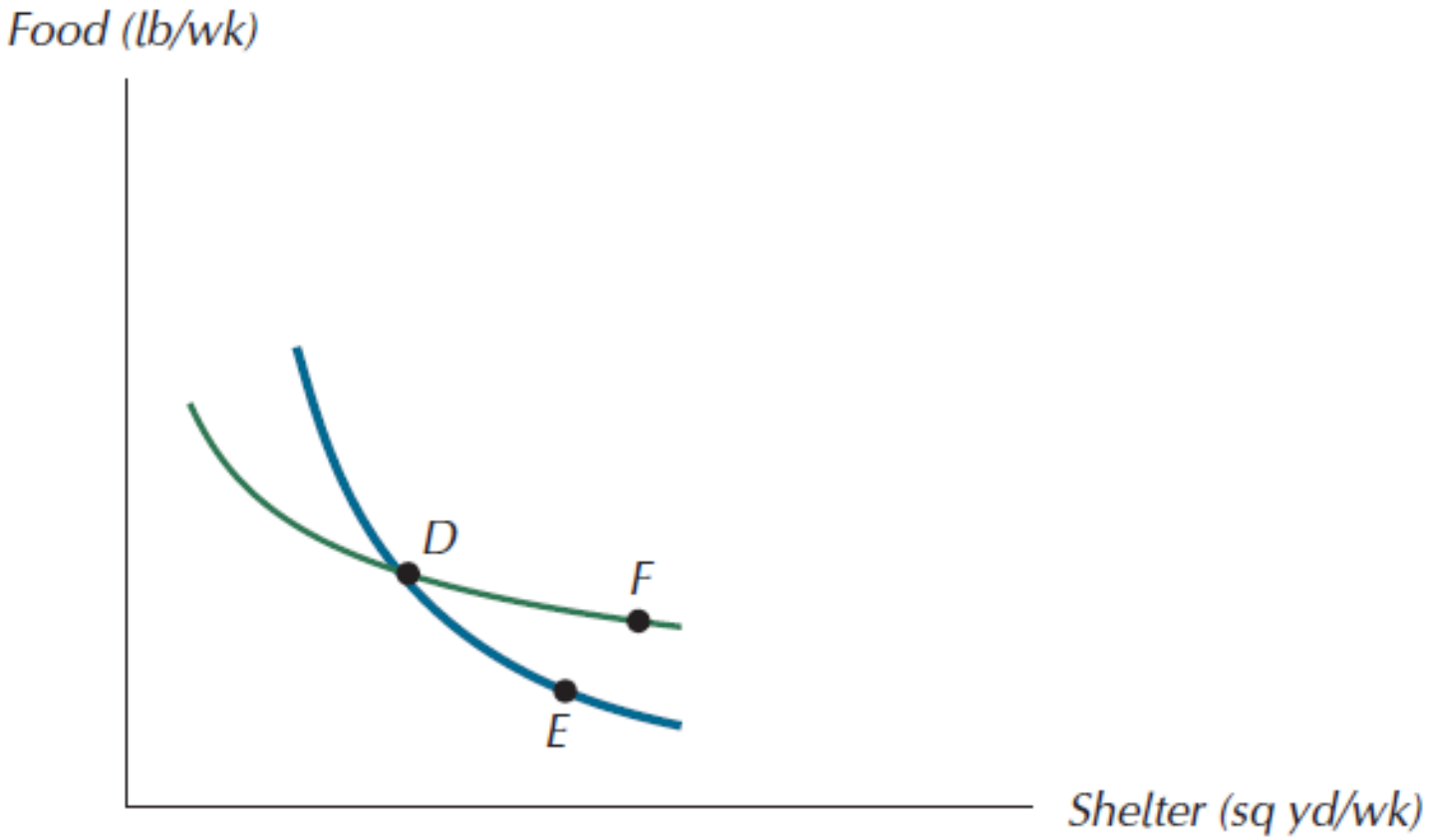


Figure 3.11: Why Two Indifference Curves Do Not Cross



Trade-offs Between Goods

- ***Marginal rate of substitution (MRS):*** the rate at which the consumer is willing to exchange the good measured along the vertical axis for the good measured along the horizontal axis.
  - Equal to the absolute value of the slope of the indifference curve.

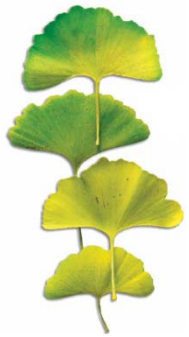


Figure 3.12: The Marginal Rates of Substitution

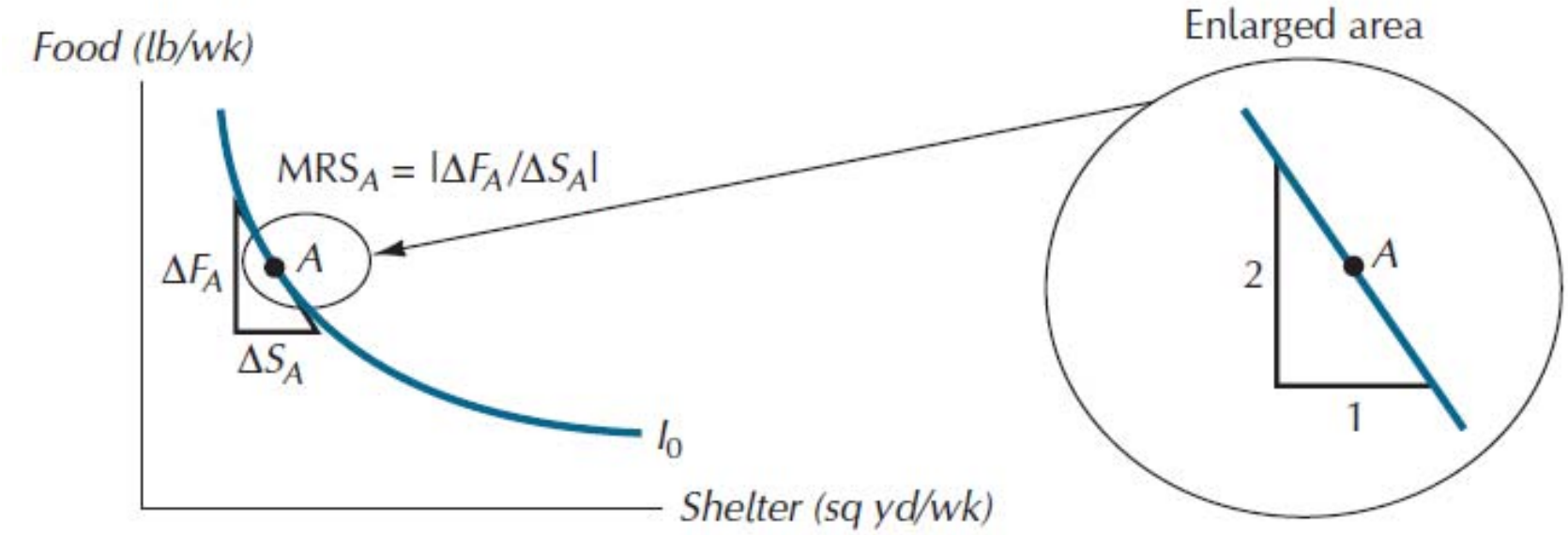


Figure 3.13: Diminishing Marginal Rate of Substitution

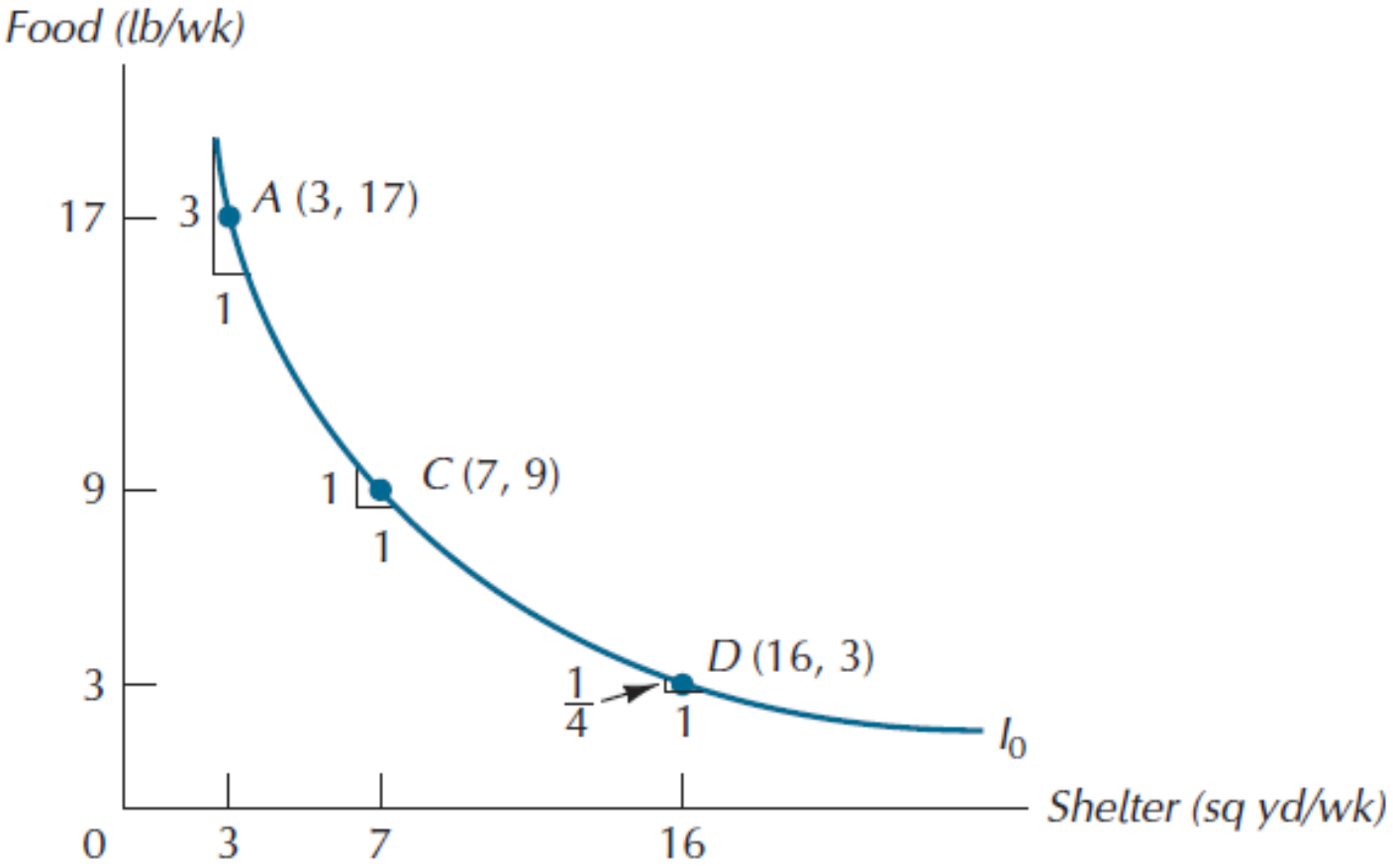
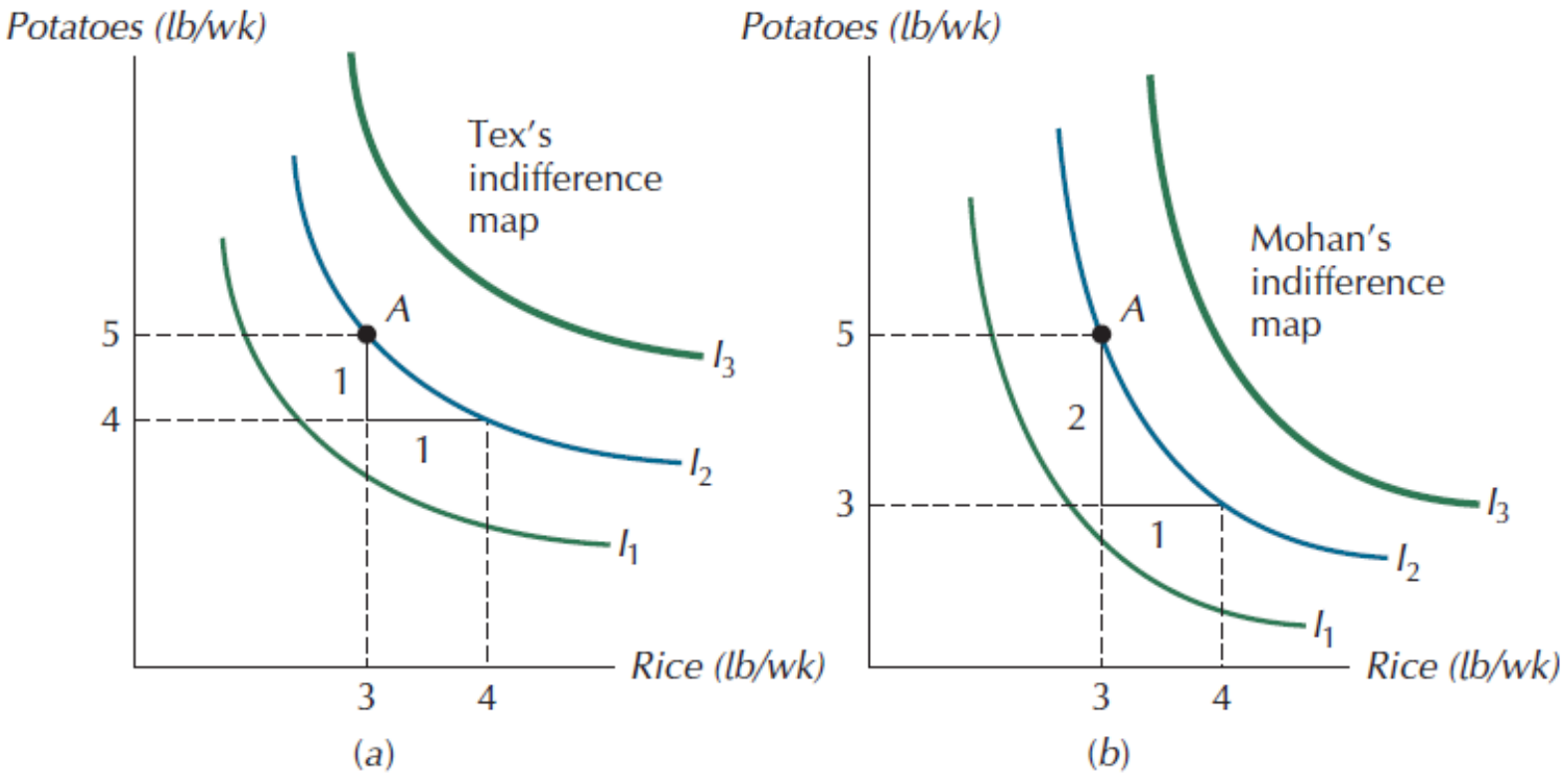


Figure 3.14: People with Different Tastes



The Best Feasible Bundle

- Consumer's Goal: to choose the **best affordable bundle**.
  - The same as reaching the highest indifference curve she can, given her budget constraint.
  - For convex indifference curves..
    - the best bundle will always lie at the point of tangency.

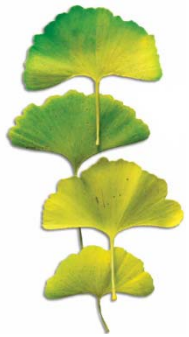
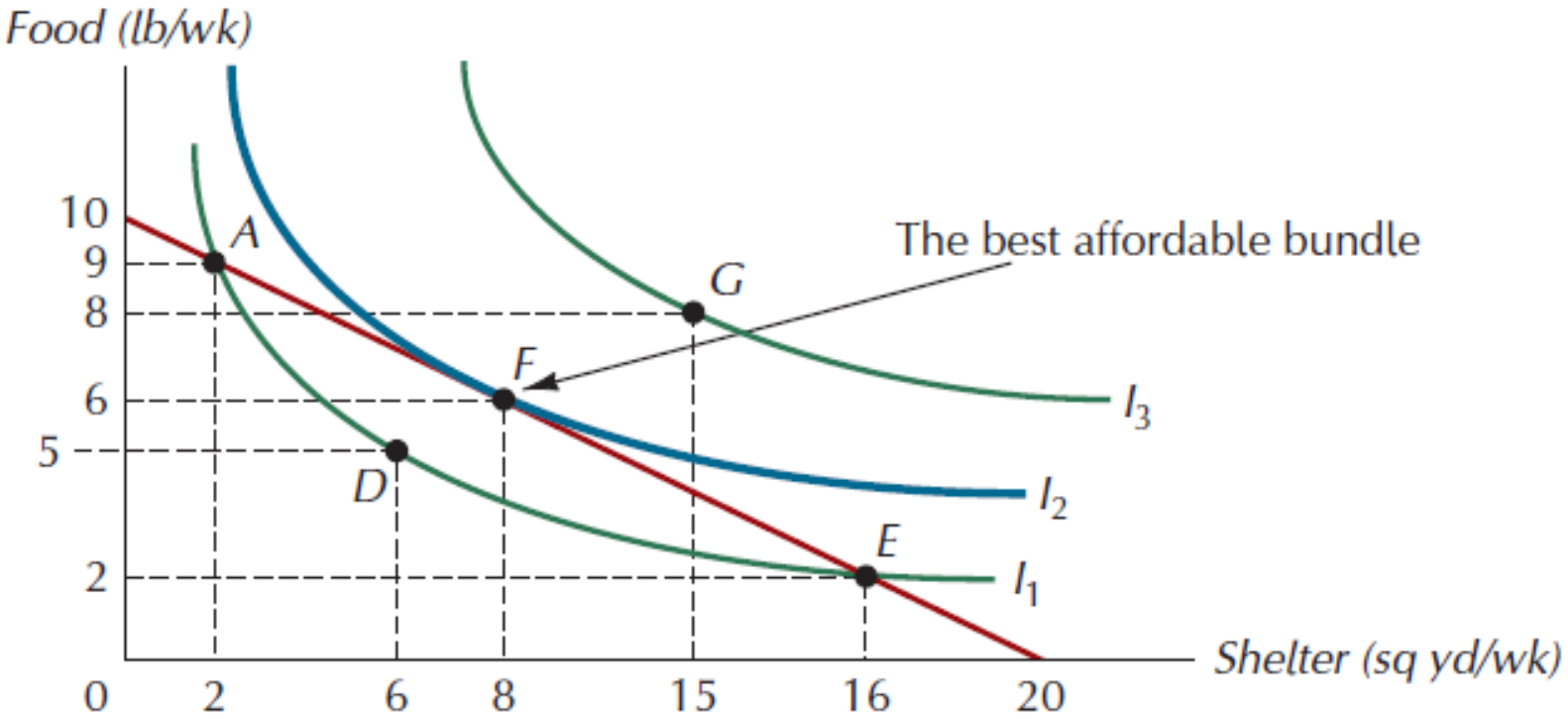


Figure 3.15: The Best Affordable Bundle



Corner Solutions

- ***Corner solution***: in a choice between two goods, a case in which the consumer does not consume one of the goods.

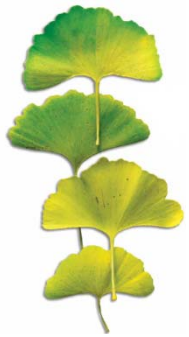


Figure 3.16: A Corner Solution

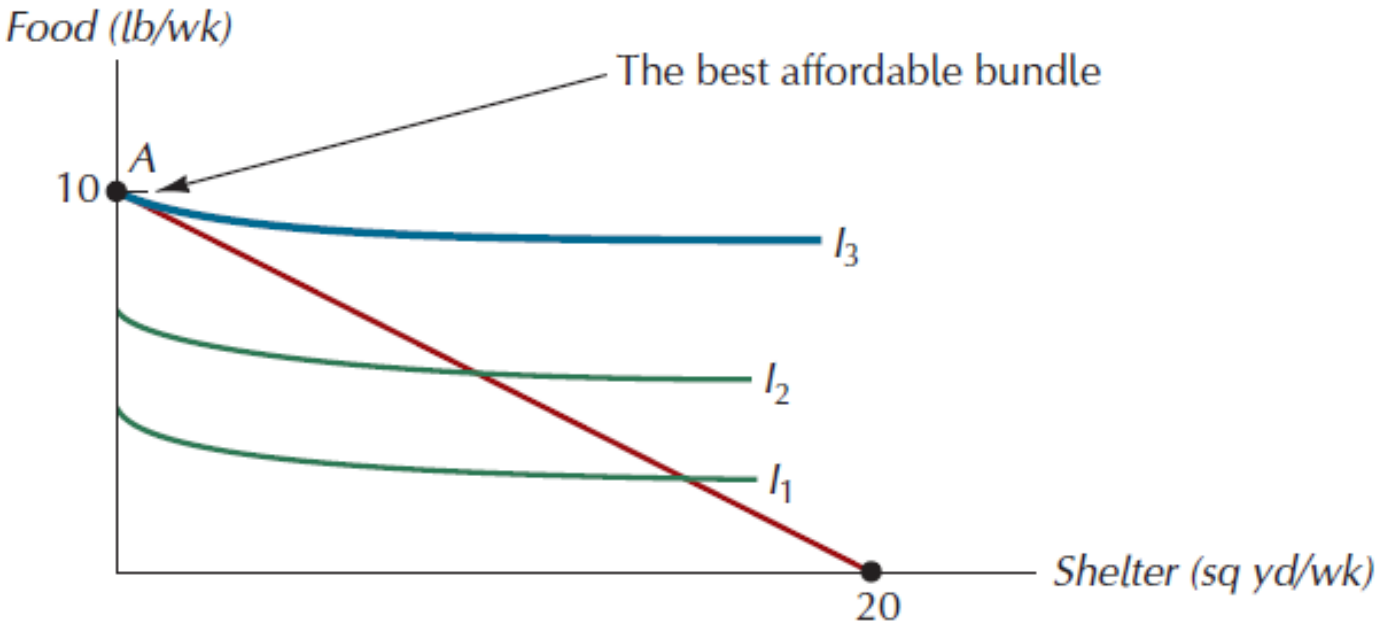
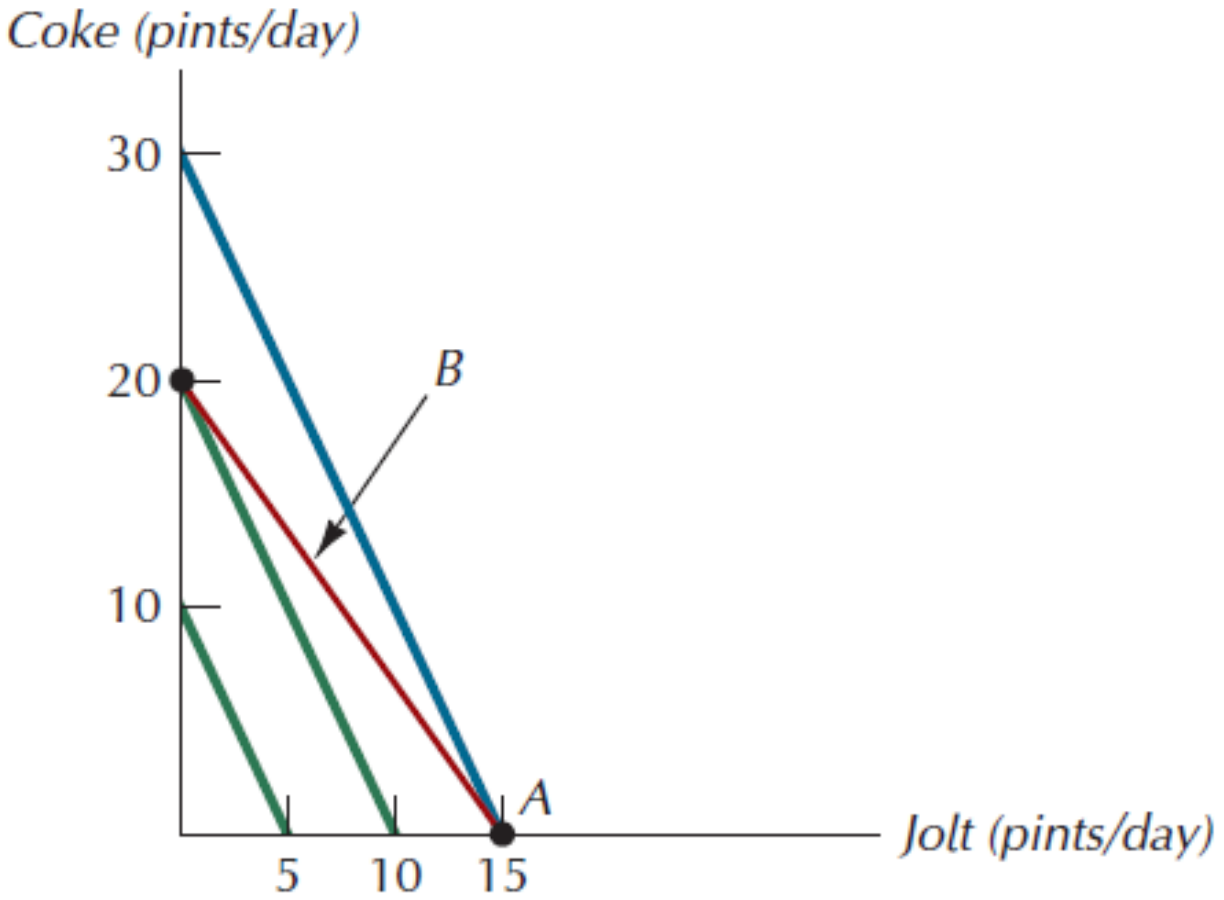


Figure 3.17: Equilibrium with Perfect Substitutes



Cash or Food Stamps?

- Food Stamp Program
  - Objective - to alleviate hunger.
  - How does it work?
    - People whose incomes fall below a certain level are eligible to receive a specified quantity of food stamps.
    - Stamps cannot be used to purchase cigarettes, alcohol, and various other items.
    - The government gives food retailers cash for the stamps they accept.

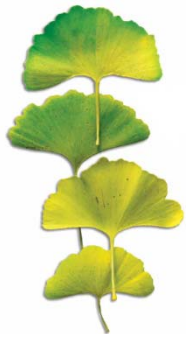


Figure 3.18: Food Stamp Program vs. Cash Grant Program

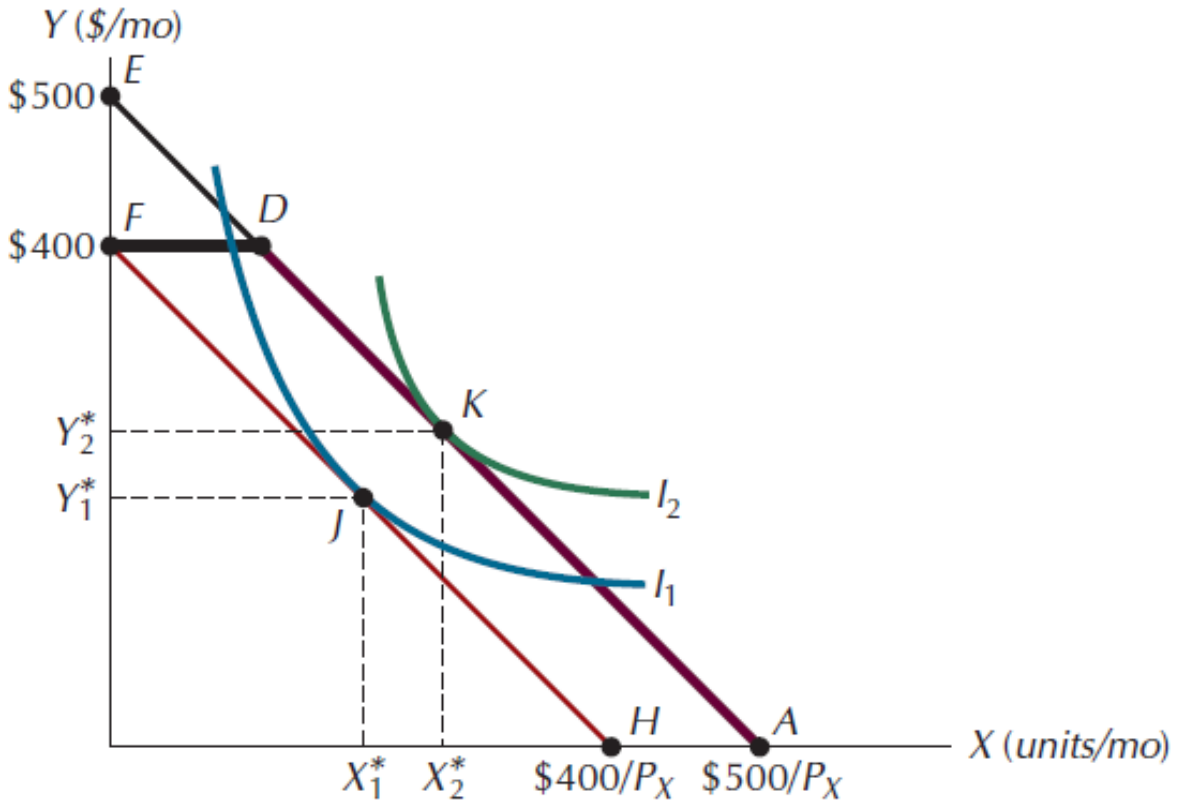
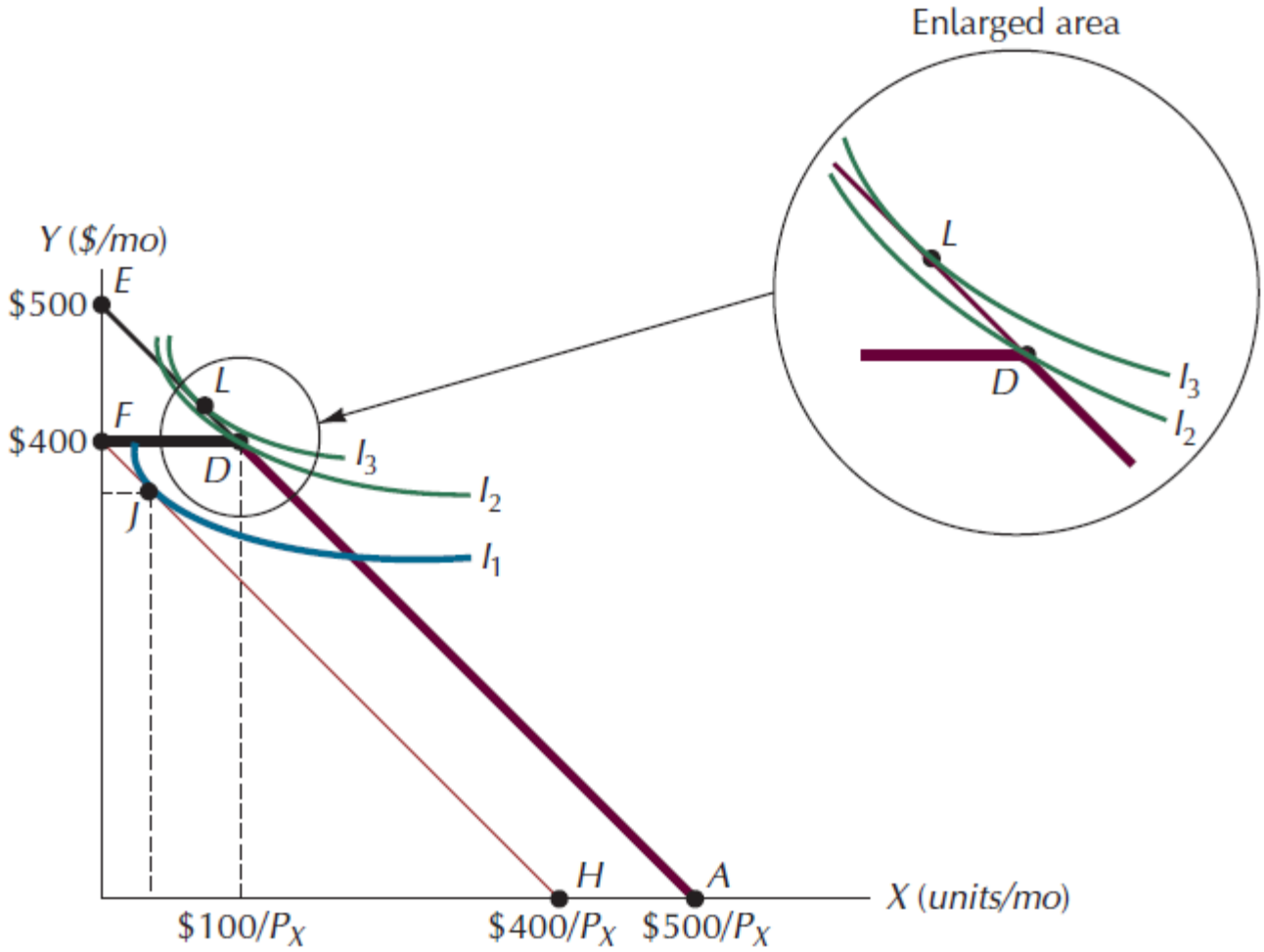


Figure 3.19: Where Food Stamps and Cash Grants Yield Different Outcomes



The Utility Function Approach to Consumer Choice

- Finding the highest attainable indifference curve on a budget constraint is just one way to analyze the consumer choice problem
- In this second approach, we represent the consumer's preference not with an indifference map, but with a *utility function*.

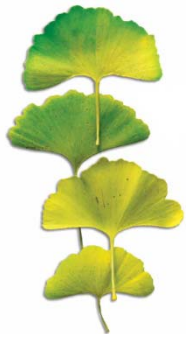


Figure A3.1: Indifference Curves for the Utility Function *U=FS*

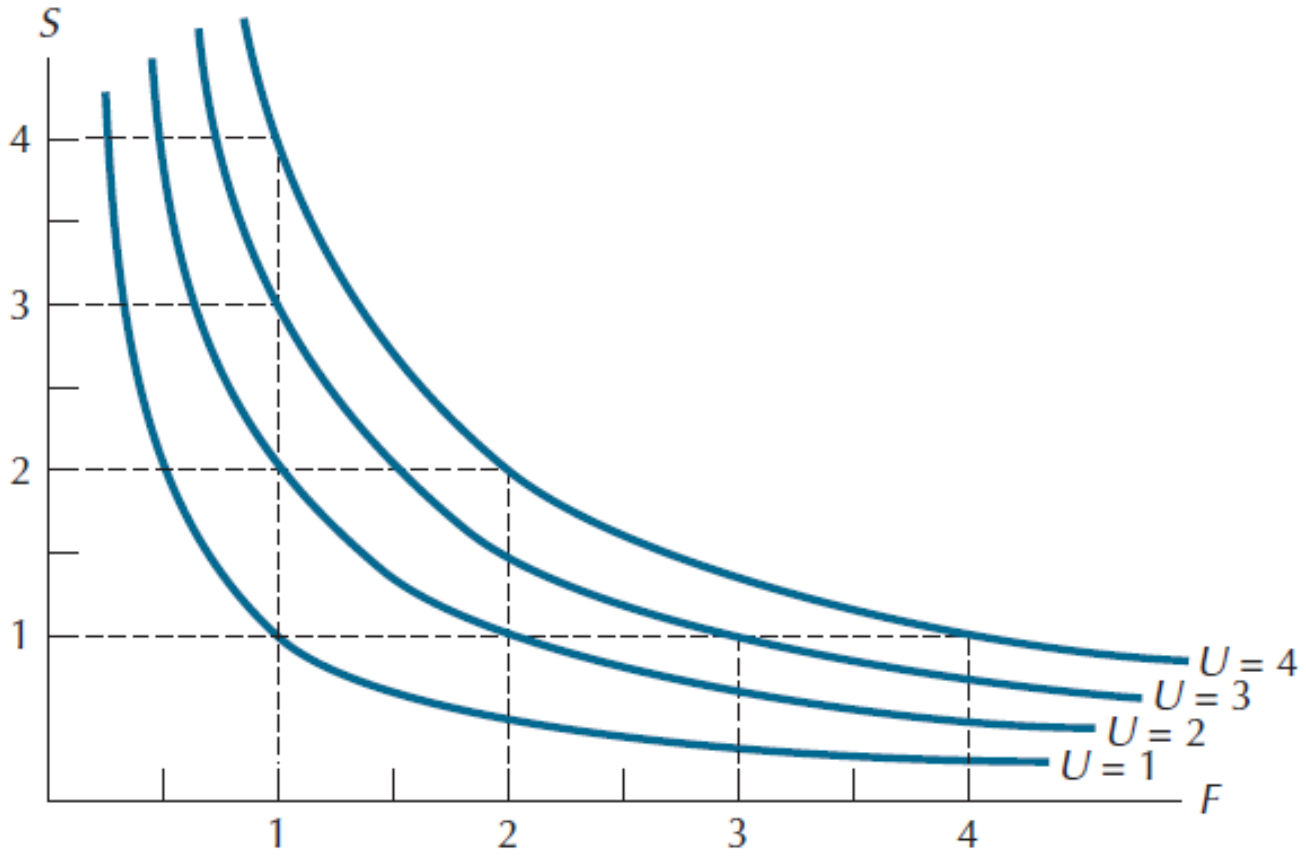


Figure A3.2: Utility Along an Indifference Curve Remains Constant

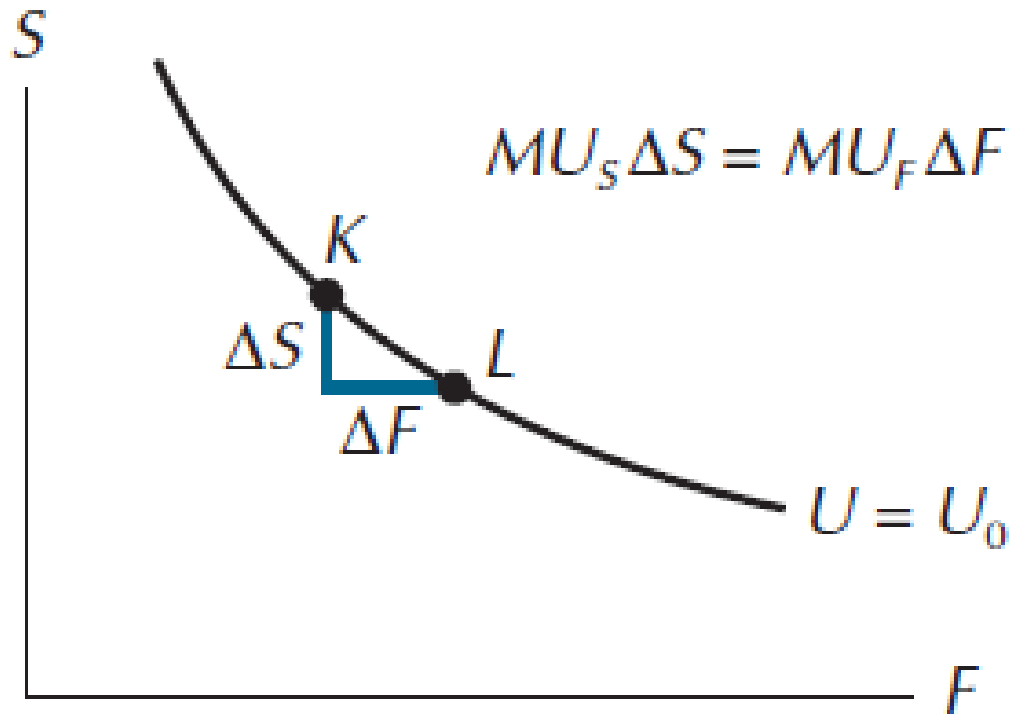


Figure A3.3: A Three-Dimensional Utility Surface

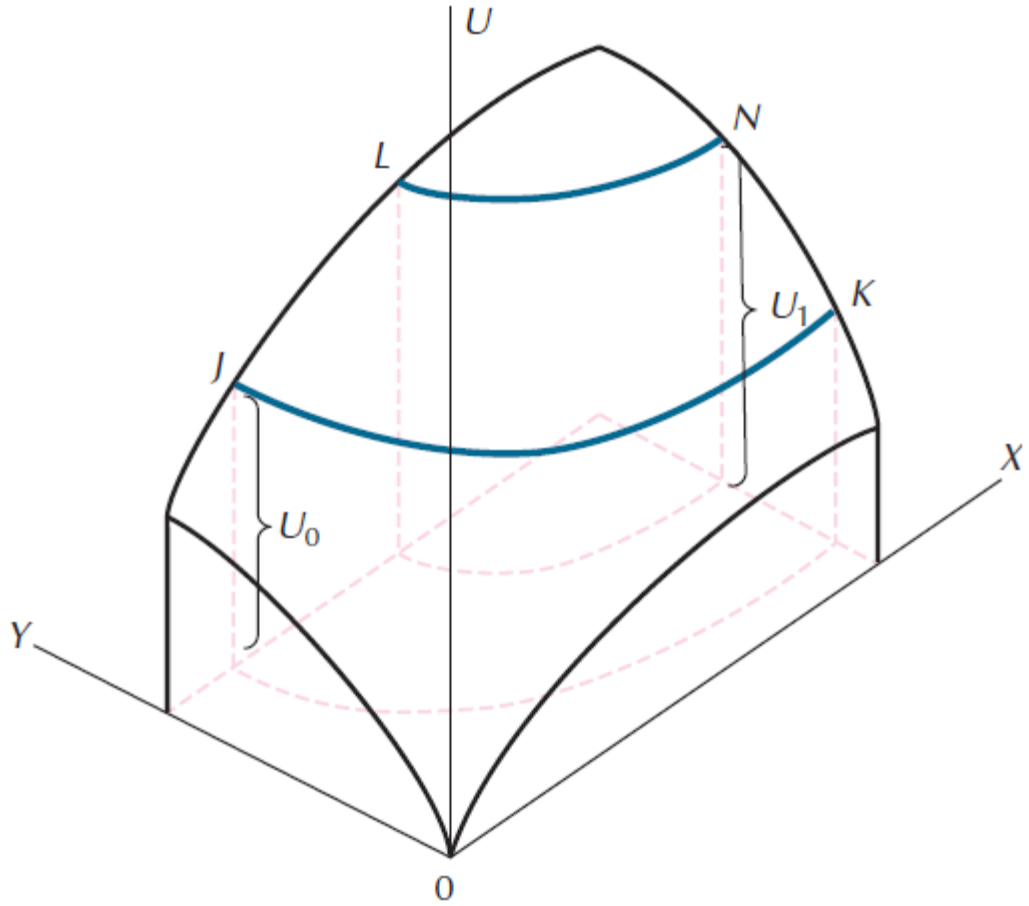


Figure A3.4: Indifference Curves as Projections

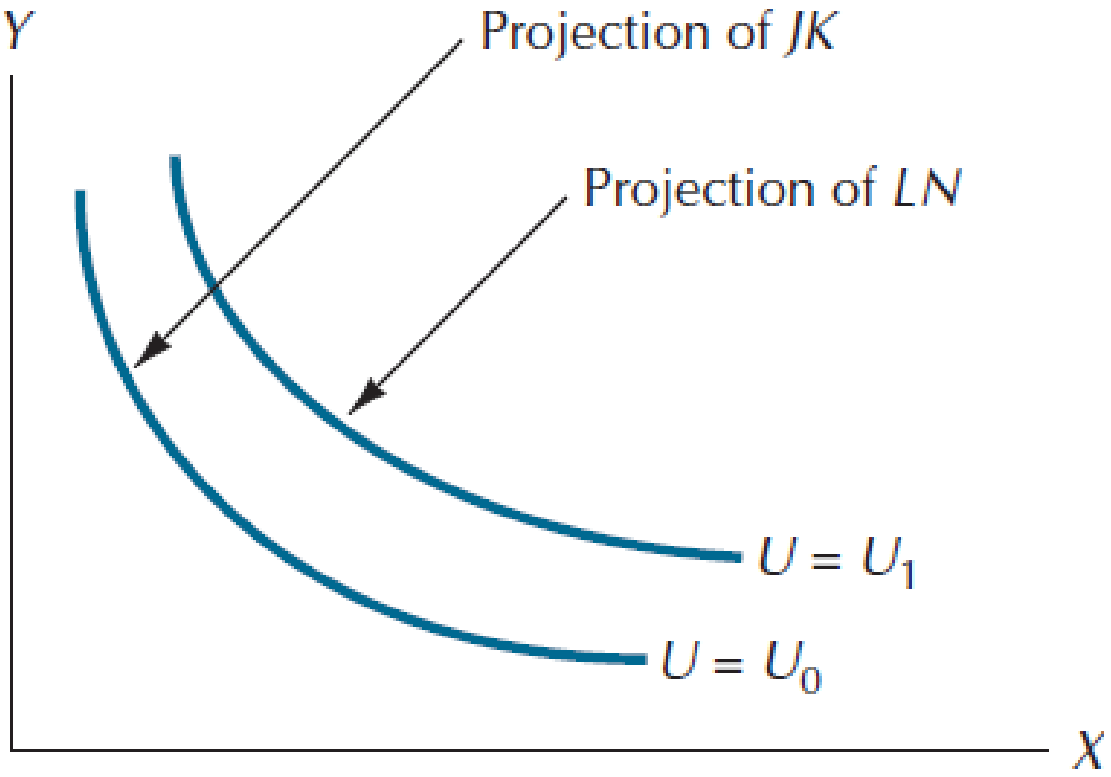


Figure A3.5: Indifference Curves for the Utility Function $U(X,Y)=(2/3)X + 2Y$

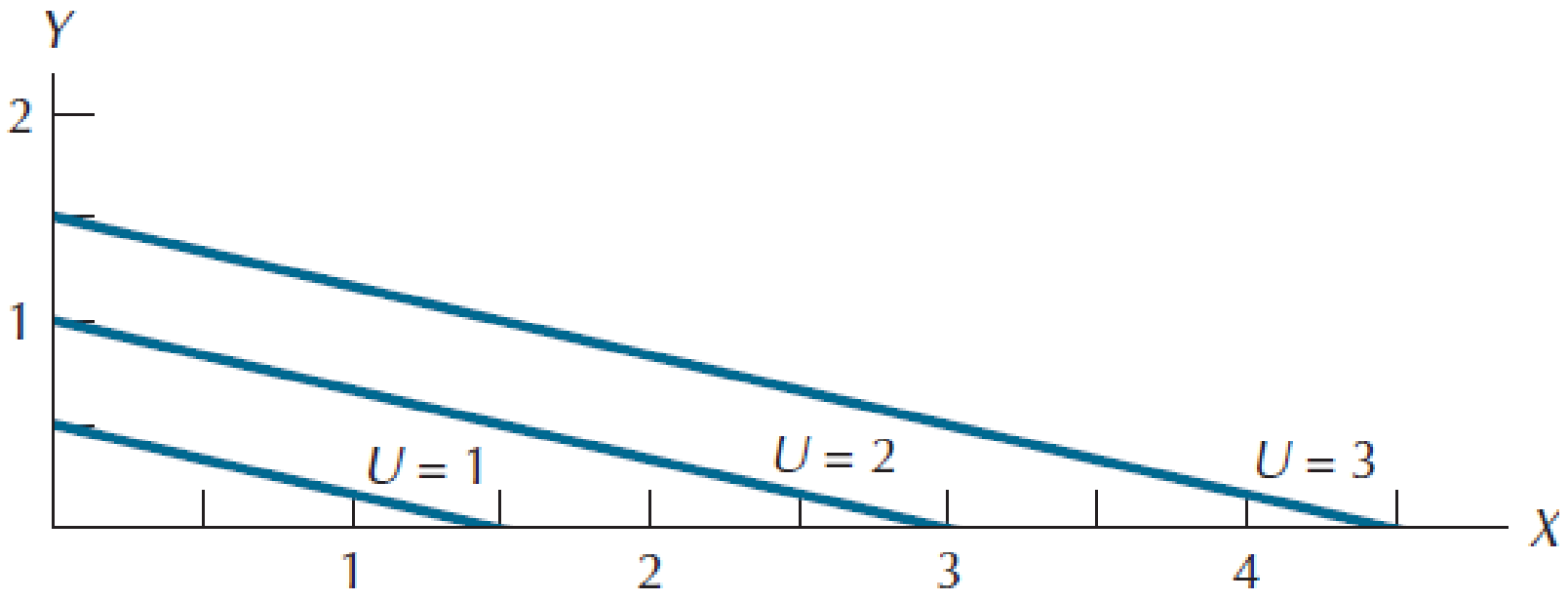


Figure A3.6: The Optimal Bundle when $U=XY$, $P_x=4$, $P_y=2$, and $M=40$