

21

The Theory of Consumer Choice

PRINCIPLES OF
MICROECONOMICS
FOURTH CANADIAN EDITION

N. GREGORY MANKIW
RONALD D. KNEEBONE
KENNETH J. MCKENZIE
NICHOLAS ROWE

PowerPoint® Slides
by Ron Cronovich
Canadian adaptation by Marc Prud'Homme

© 2008 Nelson Education Ltd.

In this chapter, look for the answers to these questions:

- How does the budget constraint represent the choices a consumer can afford?
- How do indifference curves represent the consumer's preferences?
- What determines how a consumer divides her resources between two goods?
- How does the theory of consumer choice explain decisions such as how much a consumer saves, or how much labour she supplies?

© 2008 Nelson Education Ltd.

1

Introduction

- Recall one of the Ten Principles:
People face tradeoffs.
 - Buying more of one good leaves less income to buy other goods.
 - Working more hours means more income and more consumption, but less leisure time.
 - Reducing saving allows more consumption today but reduces future consumption.
- This chapter explores how consumers make choices like these.

© 2008 Nelson Education Ltd.

2

The Budget Constraint: What the Consumer Can Afford

- Two goods: pizza and Pepsi
- A “consumption bundle” is a particular combination of the goods, e.g., 40 pizzas & 300 pints of Pepsi.
- **Budget constraint:** the limit on the consumption bundles that a consumer can afford

© 2008 Nelson Education Ltd.

3

ACTIVE LEARNING 1: Budget constraint

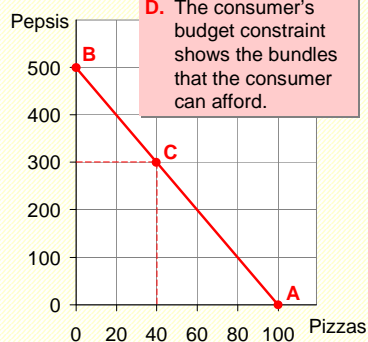
The consumer's income: \$1000
Prices: \$10 per pizza, \$2 per pint of Pepsi

- A. If the consumer spends all his income on pizza, how many pizzas does he buy?
- B. If the consumer spends all his income on Pepsi, how many pints of Pepsi does he buy?
- C. If the consumer spends \$400 on pizza, how many pizzas and Pepsis does he buy?
- D. Plot each of the bundles from parts A-C on a diagram that measures the quantity of pizza on the horizontal axis and quantity of Pepsi on the vertical axis, then connect the dots.

4

ACTIVE LEARNING 1: Answers

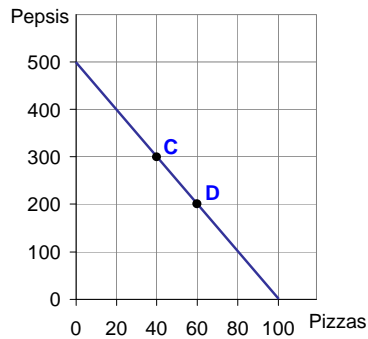
- A. $\$1000/\10
= 100 pizzas
- B. $\$1000/\2
= 500 Pepsis
- C. $\$400/\10
= 40 pizzas
 $\$600/\2
= 300 Pepsis



5

The Slope of the Budget Constraint

From **C** to **D**,
 "rise" = -100
 Pepsis
 "run" = +20 pizzas
 Slope = -5
 Consumer must
 give up 5 Pepsis to
 get another pizza.



© 2008 Nelson Education Ltd.

6

The Slope of the Budget Constraint

- The slope of the budget constraint equals
 - the rate at which the consumer can trade Pepsi for pizza
 - the opportunity cost of pizza in terms of Pepsi
 - the relative price of pizza:

$$\frac{\text{price of pizza}}{\text{price of Pepsi}} = \frac{\$10}{\$2} = 5 \text{ Pepsis per pizza}$$

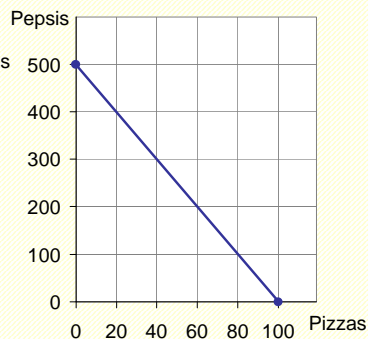
© 2008 Nelson Education Ltd.

7

ACTIVE LEARNING 2: Exercise

Show what happens
to the budget
constraint if:

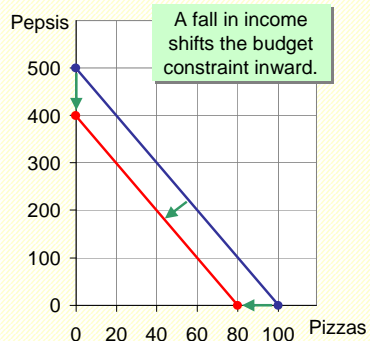
- A. Income falls to \$800
- B. The price of Pepsi rises to \$4/pint.



8

ACTIVE LEARNING 2A: Answers

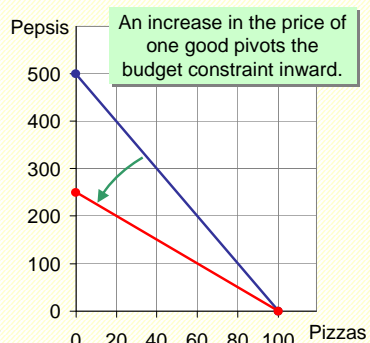
Consumer can buy
\$800/\$10
= 80 pizzas
or \$800/\$2
= 400 Pepsis
or any
combination
in between.



9

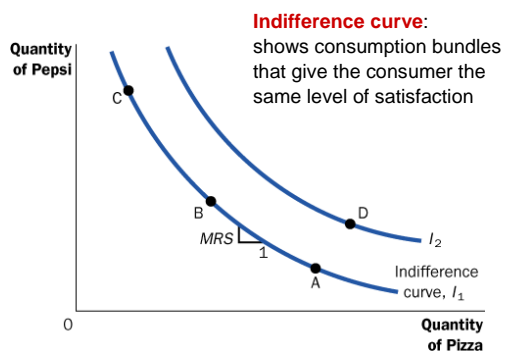
ACTIVE LEARNING 2B: Answers

Consumer can still buy
100 pizzas.
But now,
can only buy
\$1000/\$4
= 250 Pepsis.
Notice: slope is
smaller, relative
price of pizza
now only 4 Pepsis.



10

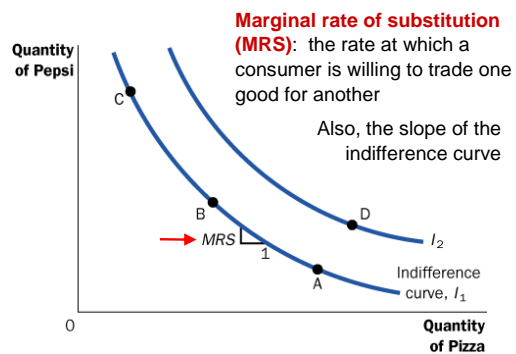
Preferences: What the Consumer Wants



© 2008 Nelson Education Ltd.

11

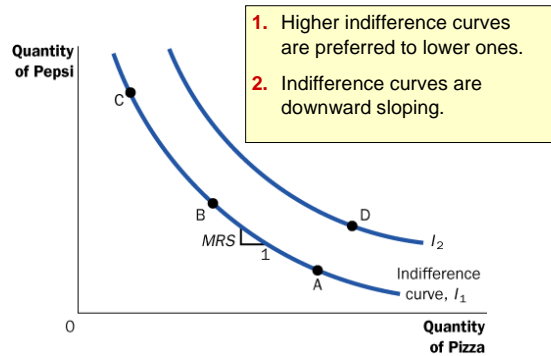
Preferences: What the Consumer Wants



© 2008 Nelson Education Ltd.

12

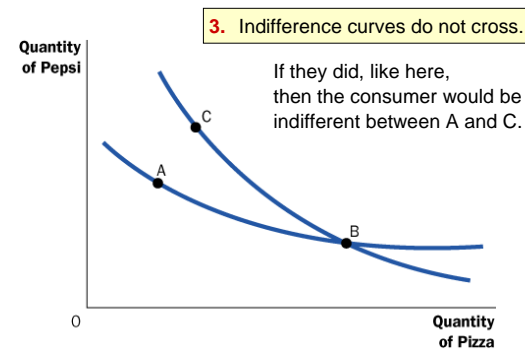
Four Properties of Indifference Curves



© 2008 Nelson Education Ltd.

13

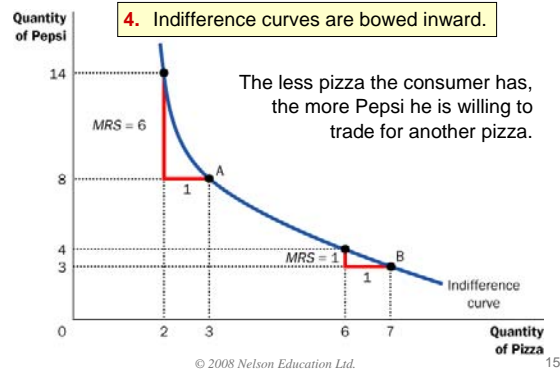
Four Properties of Indifference Curves



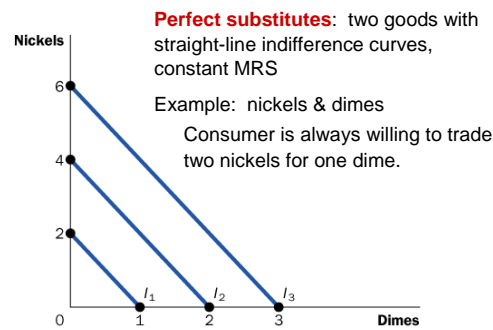
© 2008 Nelson Education Ltd.

14

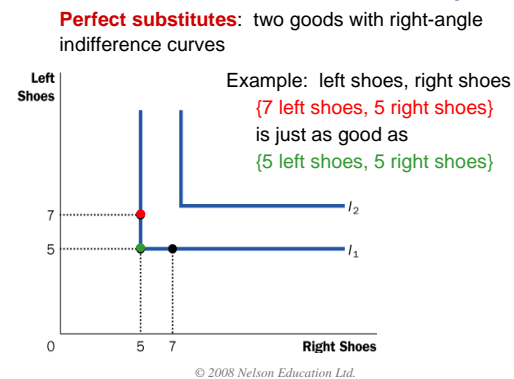
Four Properties of Indifference Curves



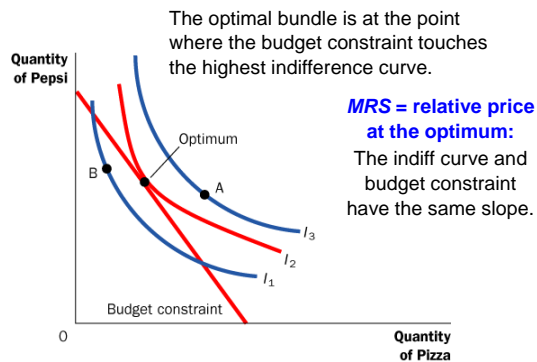
One Extreme Case: Perfect Substitutes



Another Extreme Case: Perfect Complements

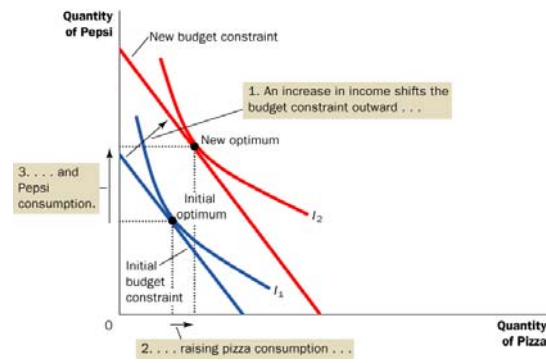


Optimization: What the Consumer Chooses



18

The Effects of an Increase in Income



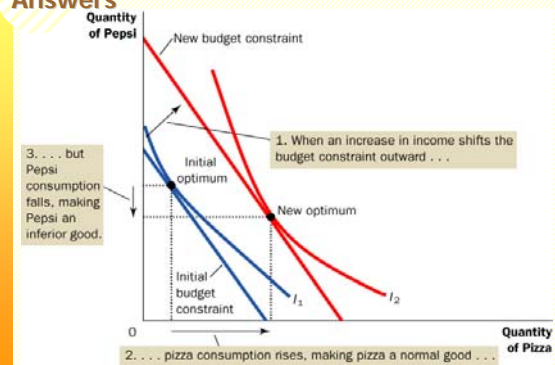
19

ACTIVE LEARNING 3: Inferior vs. normal goods

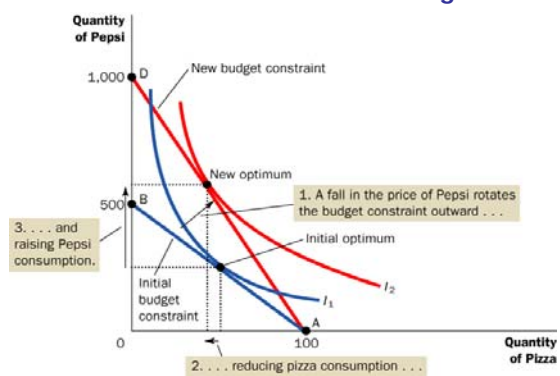
- An increase in income increases the quantity demanded of **normal goods** and reduces the quantity demanded of **inferior goods**.
- Suppose pizza is a normal good but Pepsi is an inferior good.
- Use a diagram to show the effects of an increase in income on the consumer's optimal bundle of pizza and Pepsi.

20

ACTIVE LEARNING 3: Answers



The Effects of a Price Change



The Income and Substitution Effects

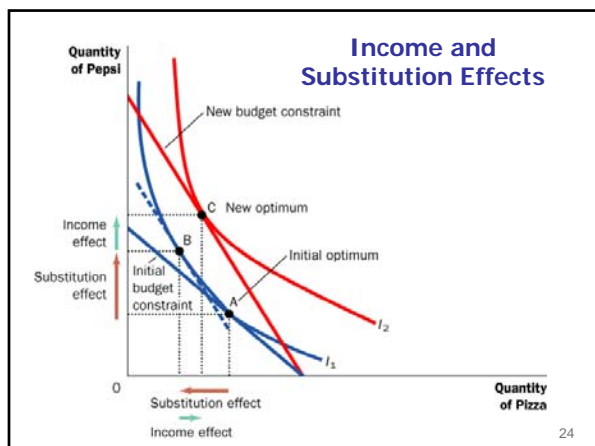
A fall in the price of Pepsi has two effects on the optimal consumption of both goods.

- **Income effect**

A fall in the price of Pepsi boosts the purchasing power of the consumer's income, allowing him to reach a higher indifference curve.

- **Substitution effect**

A fall in the price of Pepsi makes pizza more expensive relative to Pepsi, causes consumer to buy less pizza & more Pepsi.



ACTIVE LEARNING 4: Income & substitution effects

- The two goods are skis and ski bindings.
- Suppose the price of skis falls. Determine the effects on the consumer's demand for both goods if
 - income effect > substitution effect
 - income effect < substitution effect
- Which case do you think is more likely?

25

ACTIVE LEARNING 4: Answers

A fall in the price of skis

- Income effect:
 - demand for skis rises
 - demand for ski bindings rises
- Substitution effect:
 - demand for skis rises
 - demand for ski bindings falls
- The substitution effect is likely to be small, because skis and ski bindings are complements.

26

The Substitution Effect for Substitutes and Complements

- The substitution effect is huge when the goods are very close substitutes.
 - If Pepsi goes on sale, people who are nearly indifferent between Coke and Pepsi will buy mostly Pepsi.
- The substitution effect is tiny when goods are nearly perfect complements.
 - If software becomes more expensive relative to computers, people are not likely to buy less software and use the savings to buy more computers.

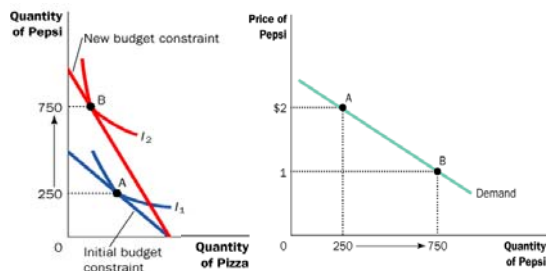
© 2008 Nelson Education Ltd.

27

Deriving the Demand Curve for Pepsi

Left graph: price of Pepsi falls from \$2 to \$1

Right graph: Pepsi demand curve



© 2008 Nelson Education Ltd.

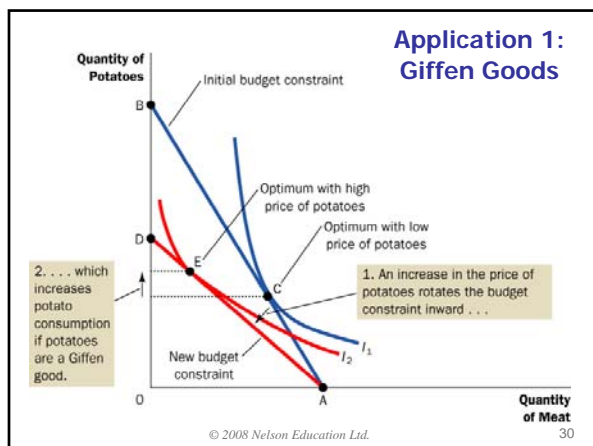
28

Application 1: Giffen Goods

- Do all goods obey the *Law of Demand*?
- Suppose the goods are potatoes and meat, and potatoes are an inferior good.
 - If price of potatoes rises,
 - substitution effect: buy less potatoes
 - income effect: buy more potatoes
- If income effect > substitution effect, then potatoes are a **Giffen good**, a good for which an increase in price raises the quantity demanded.

© 2008 Nelson Education Ltd.

29



Application 2: Wages and Labour Supply

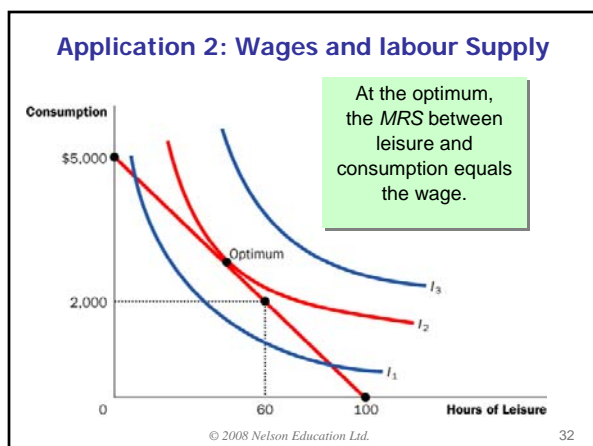
Budget constraint

- Shows a person's tradeoff between consumption and leisure.
- Depends on how much time she has to divide between leisure and working.
- The relative price of an hour of leisure is the amount of consumption she could buy with an hour's wages.

Indifference curve

- Shows "bundles" of consumption and leisure that give her the same level of satisfaction.

© 2008 Nelson Education Ltd. 31



Application 2: Wages and labour Supply

An increase in the wage has two effects on the optimal quantity of labour supplied.

- *Substitution effect (SE)*: A higher wage makes leisure more expensive relative to consumption. The person chooses less leisure, *i.e.*, increases quantity of labour supplied.
- *Income effect (IE)*: With a higher wage, she can afford more of both “goods.” She chooses more leisure, *i.e.*, reduces quantity of labour supplied.

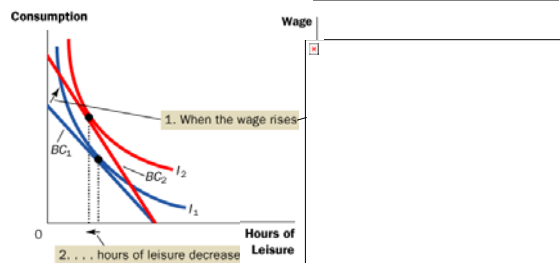
© 2008 Nelson Education Ltd.

33

Application 2: Wages and labour Supply

For this person,
 $SE > IE$

So her labour supply
increases with the wage



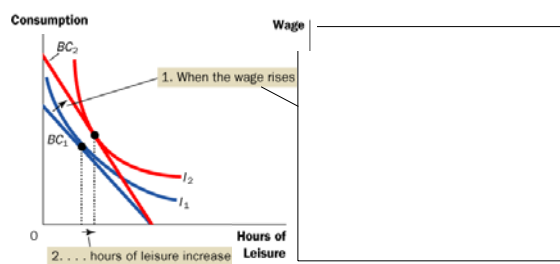
© 2008 Nelson Education Ltd.

34

Application 2: Wages and labour Supply

For this person,
 $SE < IE$

So his labour supply falls
when the wage rises



© 2008 Nelson Education Ltd.

35

Could This Happen in the Real World???

Cases where the income effect on labour supply is very strong:

- Over last 100 years, technological progress has increased labour demand and real wages.
The average workweek fell from 6 to 5 days.
- When a person wins the lottery or receives an inheritance, his wage is unchanged – hence no substitution effect.
But such persons are more likely to work fewer hours, indicating a strong income effect.

© 2008 Nelson Education Ltd.

36

Application 3: Interest Rates and Saving

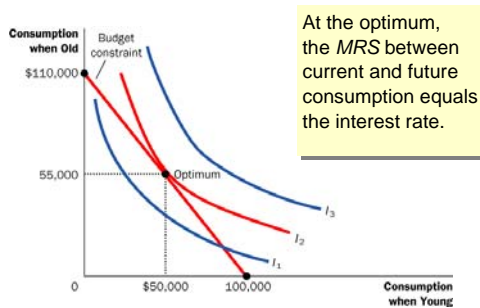
- A person lives for two periods.
 - Period 1: young, works, earns \$100,000
consumption = \$100,000 minus amount saved
 - Period 2: old, retired
consumption = saving from Period 1
plus interest earned on saving
- The interest rate determines the relative price of consumption when young in terms of consumption when old.

© 2008 Nelson Education Ltd.

37

Application 3: Interest Rates and Saving

Budget constraint shown is for 10% interest rate.



© 2008 Nelson Education Ltd.

38

ACTIVE LEARNING 5: Effects of an interest rate increase

- Suppose the interest rate rises.
- Determine the income and substitution effects on current and future consumption, and on saving.

39

ACTIVE LEARNING 5: Answers

The interest rate rises.

Substitution effect

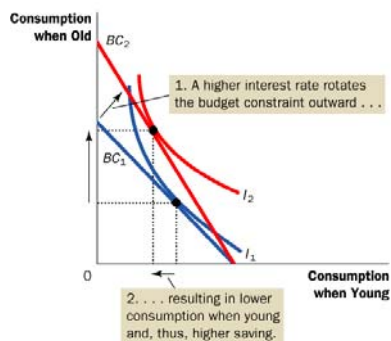
- Current consumption becomes more expensive relative to future consumption.
- Current consumption falls, saving rises, future consumption rises.

Income effect

- Can afford more consumption in both the present and the future. Saving falls.

40

Application 3: Interest Rates and Saving

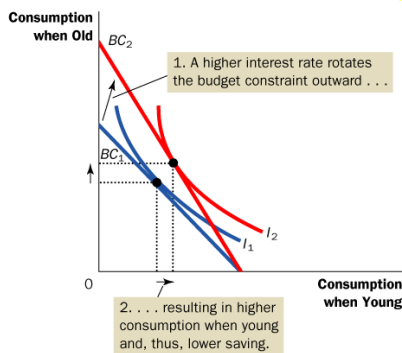


© 2008 Nelson Education Ltd.

41

In this case, $SE > IE$ and saving rises

Application 3: Interest Rates and Saving



In this case, $SE < IE$ and saving falls

42

CONCLUSION:

Do People Really Think This Way?

- Most people do not make spending decisions by writing down their budget constraints and indifference curves.
- Yet, they try to make the choices that maximize their satisfaction given their limited resources.
- The theory in this chapter is only intended as a metaphor for how consumers make decisions.
- It does fairly well at explaining consumer behaviour in many situations, and provides the basis for more advanced economic analysis.

© 2008 Nelson Education Ltd.

43

CHAPTER SUMMARY

- A consumer's budget constraint shows the possible combinations of different goods she can buy given her income and the prices of the goods. The slope of the budget constraint equals the relative price of the goods.
- An increase in income shifts the budget constraint outward. A change in the price of one of the goods pivots the budget constraint.

© 2008 Nelson Education Ltd.

44

CHAPTER SUMMARY

- A consumer's indifference curves represent her preferences. An indifference curve shows all the bundles that give the consumer a certain level of happiness. The consumer prefers points on higher indifference curves to points on lower ones.
- The slope of an indifference curve at any point is the marginal rate of substitution – the rate at which the consumer is willing to trade one good for the other.

© 2008 Nelson Education Ltd.

45

CHAPTER SUMMARY

- The consumer optimizes by choosing the point on her budget constraint that lies on the highest indifference curve. At this point, the marginal rate of substitution equals the relative price of the two goods.
- When the price of a good falls, the impact on the consumer's choices can be broken down into two effects, an income effect and a substitution effect.

© 2008 Nelson Education Ltd.

46

CHAPTER SUMMARY

- The income effect is the change in consumption that arises because a lower price makes the consumer better off. It is represented by a movement from a lower indifference curve to a higher one.
- The substitution effect is the change that arises because a price change encourages greater consumption of the good that has become relatively cheaper. It is represented by a movement along an indifference curve.

© 2008 Nelson Education Ltd.

47

CHAPTER SUMMARY

- The theory of consumer choice can be applied in many situations. It can explain why demand curves can potentially slope upward, why higher wages could either increase or decrease labour supply, and why higher interest rates could either increase or decrease saving.

© 2008 Nelson Education Ltd.

48

End: Chapter 21

© 2008 Nelson Education Ltd.

49
