

Chapter Outline

2.1 Production Possibilities Frontiers and Opportunity Costs

2.2 Comparative Advantage and Trade

2.3 The Market System

Elon Musk and Tesla Motors Face a Trade-off

Tesla's electric cars were first offered for sale in 2008. But the first cars did not fit Elon Musk's vision of an electric car for the average consumer.

Musk hoped to sell Tesla's new Model 3 for \$35,000; to achieve this price would require devoting more resources to producing the Model 3.

But this would take away from other, more profitable models.



Scarcity and Trade-offs

Households, firms and governments continually face decisions about how best to use their scarce resources.

Scarcity: a situation in which unlimited wants exceed the limited resources available to fulfill those wants.

Scarcity requires trade-offs. Economics teaches us tools to help make good trade-offs.

Example: When deciding how to use its scarce workers and machinery, if Tesla wants to produce more Model 3s, those resources will not be available to produce Model Ss.

2.1 Production Possibilities Frontiers and Opportunity Costs

Use a production possibilities frontier to analyze opportunity costs and trade-offs.

A **production possibilities frontier (PPF)** is a curve showing the maximum attainable combinations of two goods that can be produced with available resources and current technology.

Is the PPF a positive or normative tool?

- Positive; it shows “what is”, not “what should be”.

Figure 2.1 Tesla's Production Possibilities Frontier (1 of 2)

Tesla can produce its original models, or its new Model 3s.

Producing more Model 3s requires reducing the number of original models produced.

- Points on the PPF are attainable for Tesla.
- Points below the curve are inefficient.
- Points above the curve are unattainable with current resources.

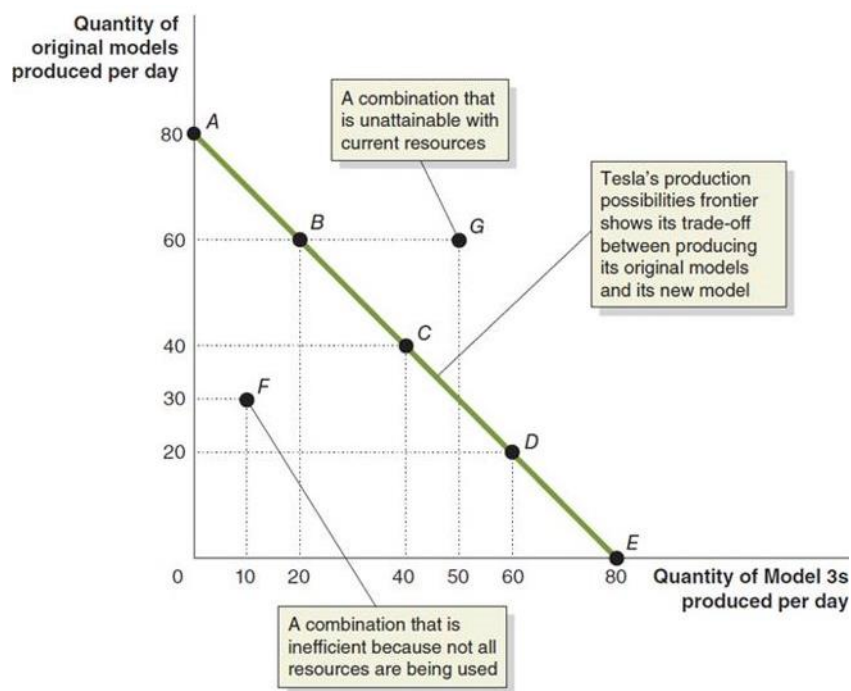


Figure 2.1 Tesla's Production Possibilities Frontier (1 of 3)

Tesla's Production Choices at its Fremont Plant

Choices	Quantity of Original Models Produced per Day	Quantity of Model 3s Produced per Day
A	80	0
B	60	20
C	40	40
D	20	60
E	0	80

Figure 2.1 Tesla's Production Possibilities Frontier (2 of 2)

To produce 20 more Model 3s (e.g. moving from A to B), Tesla must produce 20 fewer original models.

- The 20 fewer original models is the **opportunity cost** of producing 20 more Model 3s.

Opportunity cost: The highest-valued alternative that must be given up to engage in an activity.

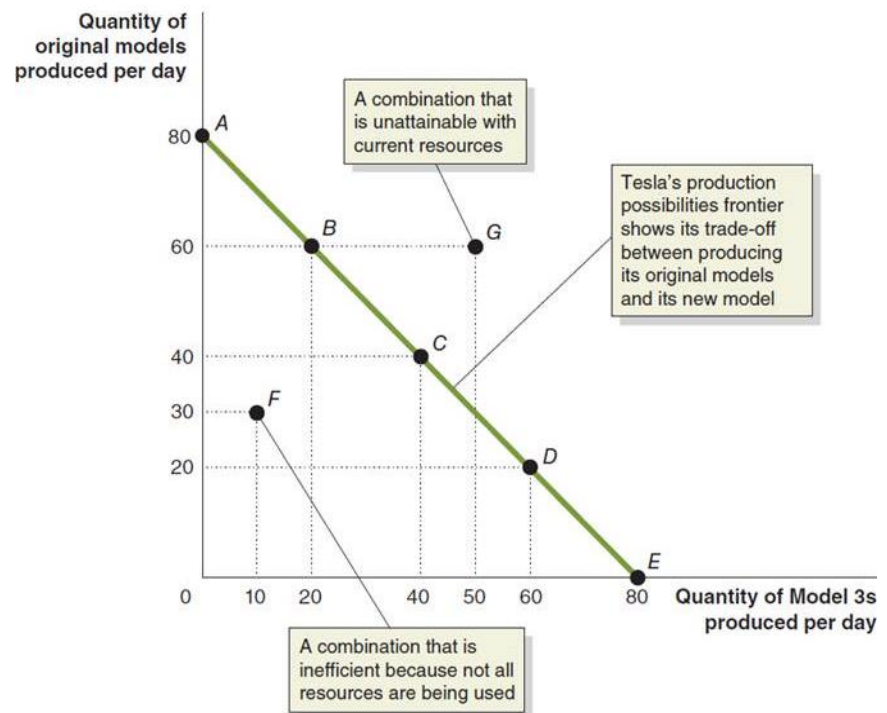


Figure 2.1 Tesla's Production Possibilities Frontier (2 of 3)

Tesla's Production Choices at its Fremont Plant

Choices	Quantity of Original Models Produced per Day	Quantity of Model 3s Produced per Day
A	80	0
B	60	20
C	40	40
D	20	60
E	0	80

Figure 2.2 Increasing Marginal Opportunity Costs

On the previous slide, opportunity costs were constant.

But opportunity costs are often increasing.

Why? Some resources are better suited to one task than another. The first resources to “switch” are the one best suited to switching.

The more resources already devoted to an activity, the smaller the payoff to devoting additional resources to that activity.

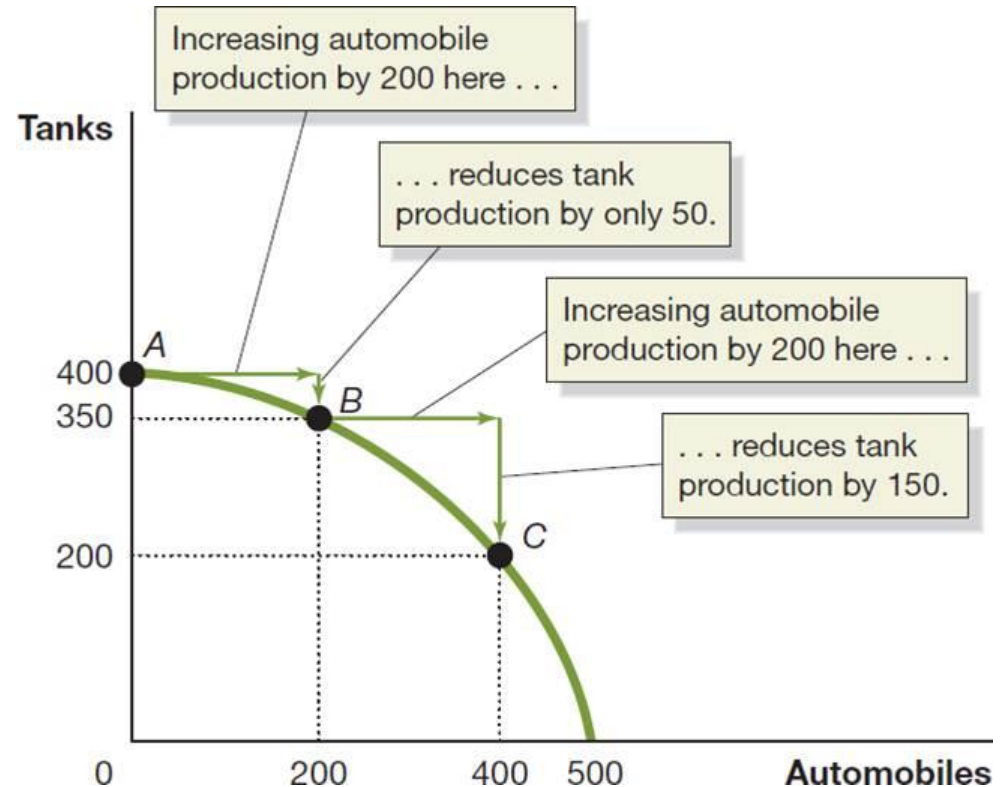
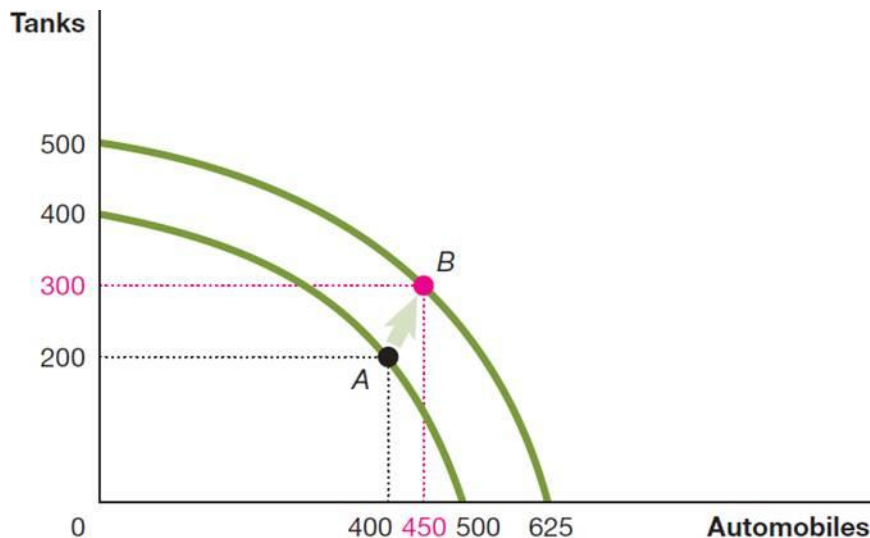


Figure 2.3 Economic Growth (Panel (a))

As more economic resources become available, the economy can move from point *A* to point *B*, producing more tanks and more automobiles.

Shifts in the production possibilities frontier represent **economic growth**.

Economic growth: the ability of the economy to increase the production of goods and services.



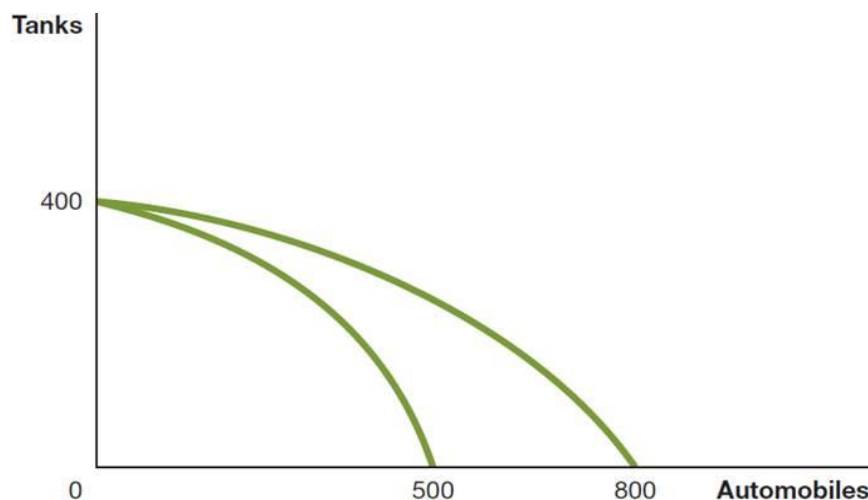
(a) Shifting out the production possibilities frontier

Figure 2.3 Economic Growth (Panel (b))

This panel shows technological improvement in the automobile industry.

The quantity of tanks that can be produced remains unchanged.

As in the previous slide, many previously unattainable combinations are now attainable.



(b) Technological change in the automobile industry

Apply the Concept: APPF for Exam Grades

Suppose you have a limited amount of time to study for two exams, Economics and Accounting.

What would the production possibilities curve for the exam grades look like?

1. A straight line, like the PPF for Tesla's vehicles, or
2. A bowed-outward curve, like the PPF for tanks and automobiles?

Answer: 2, the first hour spent studying economics is much more valuable (and has a lower opportunity cost) than the last hour.

2.2 Comparative Advantage and Trade

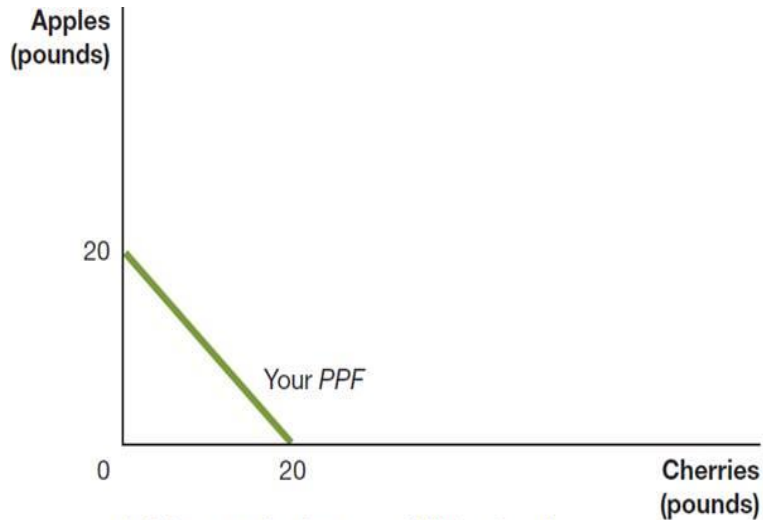
Describe comparative advantage and explain how it serves as the basis for trade.

You and your neighbor each have a limited time to pick apples and/or cherries.

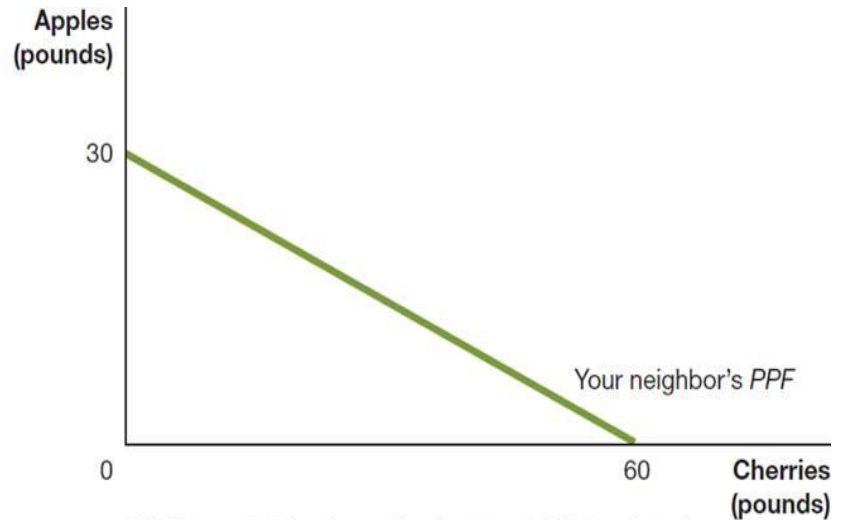
The table shows the amount of each fruit that you could each pick, by devoting all of your time to that fruit.

	You		Your Neighbor	
	Apples	Cherries	Apples	Cherries
Devote all time to picking apples	20 pounds	0 pounds	30 pounds	0 pounds
Devote all time to picking cherries	0 pounds	20 pounds	0 pounds	60 pounds

Figure 2.4 Production Possibilities for You and Your Neighbor, Without Trade



(a) Your production possibilities frontier



(b) Your neighbor's production possibilities frontier

If you spend all of your time picking cherries, you can pick 20 pounds of cherries; or if you spend all your time picking apples, you can pick 20 pounds of apples.

Your neighbor can similarly pick 60 pounds of cherries or 30 pounds of apples.

Specialization and Trade

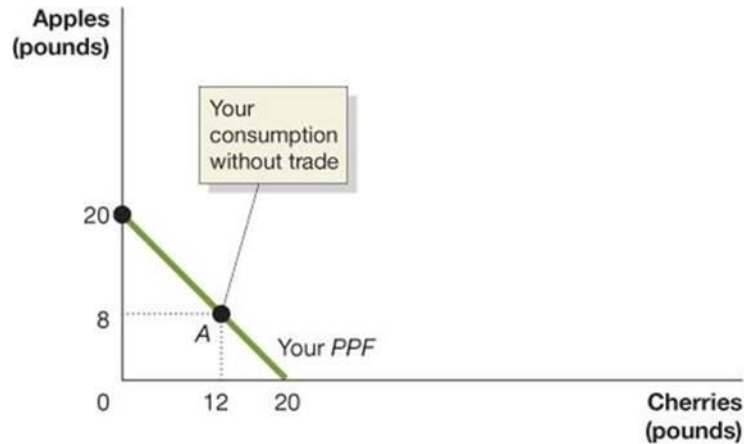
What if you and your neighbor decided to specialize and **trade**?

Trade: The act of buying and selling.

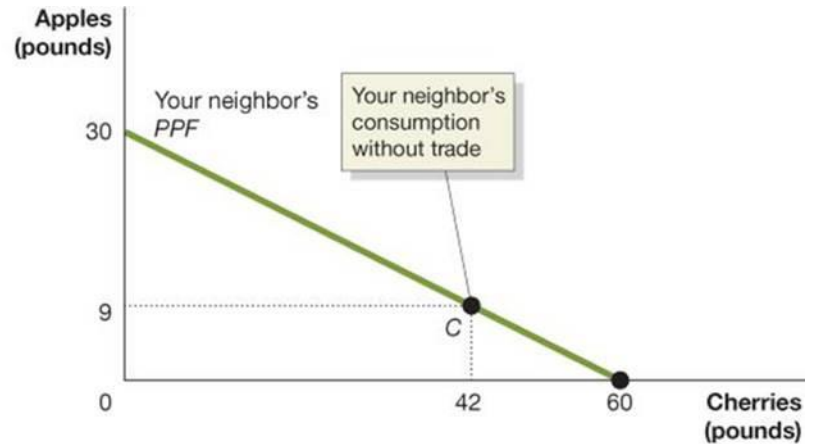
Could your neighbor benefit from trade? She is better at picking both apples and cherries...

Both of you can benefit from trade, by specializing in what you are **relatively** good at. Let's see how...

Figure 2.5 Gains from Trade (1 of 3)



(a) Your production and consumption with trade

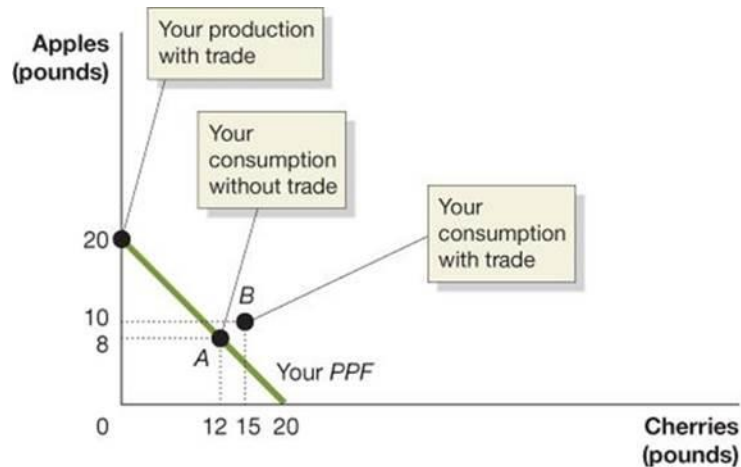


(b) Your neighbor's production and consumption with trade

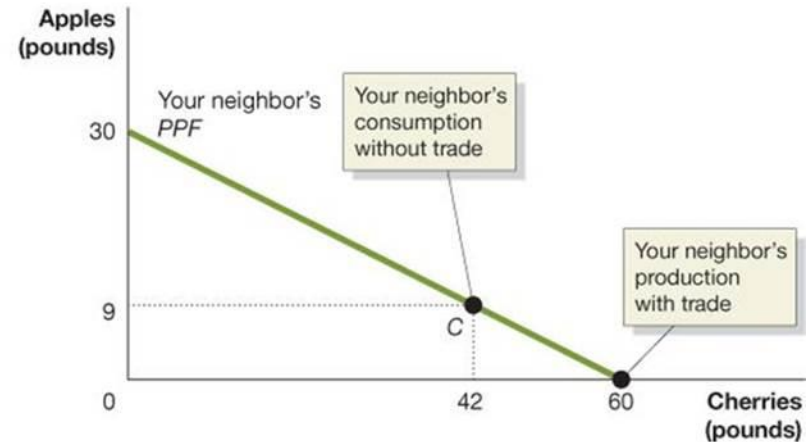
When you don't trade with your neighbor, let's say you pick and consume 8 pounds of apples and 12 pounds of cherries per week—point A in panel (a).

When your neighbor doesn't trade with you, she picks and consumes 9 pounds of apples and 42 pounds of cherries per week—point C in panel (b).

Figure 2.5 Gains from Trade (2 of 3)



(a) Your production and consumption with trade

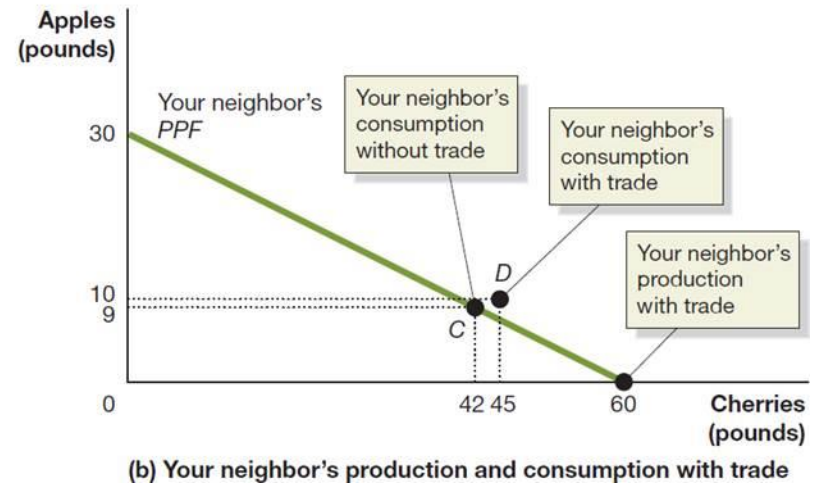
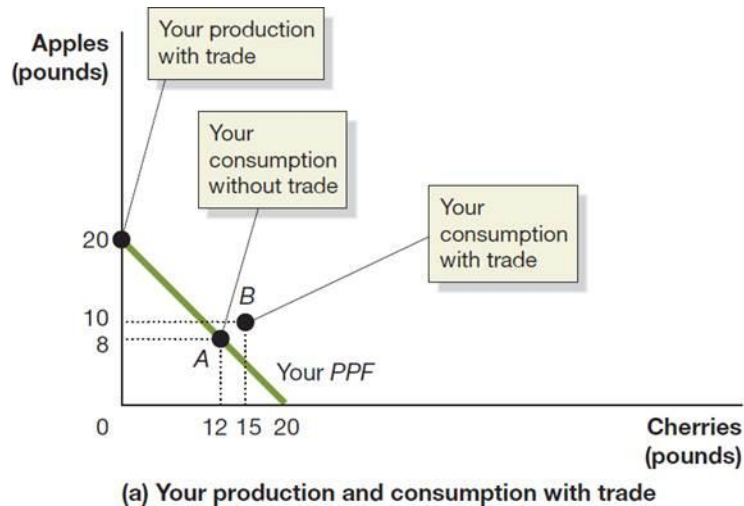


(b) Your neighbor's production and consumption with trade

If you specialize in picking apples, you can pick 20 pounds. If your neighbor specializes in picking cherries, she can pick 60 pounds.

If you trade 10 pounds of your apples for 15 pounds of your neighbor's cherries, you will be able to consume 10 pounds of apples and 15 pounds of cherries— point *B* in panel (a).

Figure 2.5 Gains from Trade (3 of 3)



Your neighbor can now consume 10 pounds of apples and 45 pounds of cherries—point *D* in panel (b). You and your neighbor are both better off as a result of trade.

Note that your neighbor benefits from trade **even though she could produce more of either fruit than you could.**

Table 2.1 A Summary of the Gains from Trade

	You		Your Neighbor	
	Apples (in pounds)	Cherries (in pounds)	Apples (in pounds)	Cherries (in pounds)
Production and consumption without trade	8	12	9	42
Production with trade	20	0	0	60
Consumption with trade	10	15	10	45
Gains from trade (increased consumption)	2	3	1	3

Both you and your neighbor are able to consume more with trade than without.

Explaining the Gains from Specialization and Trade

How could both of you benefit from trade, when your neighbor was so much better than you?

Economists say your neighbor had an **absolute advantage** in both cherry and apple picking, but you had a **comparative advantage** in picking apples.

Absolute advantage: The ability of an individual, a firm, or a country to produce more of a good or service than competitors, using the same amount of resources.

Comparative advantage: The ability of an individual, a firm, or a country to produce a good or service at a lower opportunity cost than competitors.

Table 2.2 Opportunity Costs of Picking Apples and Cherries

Who	Opportunity Cost of Picking 1 Pound of Apples	Opportunity Cost of Picking 1 Pound of Cherries
You	1 pound of cherries	1 pound of apples
Your Neighbor	2 pounds of cherries	0.5 pound of apples

The basis for trade is comparative advantage, not absolute advantage.

Individuals, firms, and countries are better off if they specialize in producing goods and services for which they have a comparative advantage and obtain the other goods and services they need by trading.

Apply the Concept: Comparative Advantage and Housework

People living together have to divide up household chores.

Basic economic concepts like comparative advantage can provide useful insight in the division of labor.

Suppose Jack is faster than Jill at both cooking and laundry. However:

- Jack is **Much** faster at preparing tasty meals, while
- Jack is only a little faster at doing laundry

Jack's comparative advantage is in cooking—to cook a tasty meal, he gives up the opportunity to perform less laundry than Jill—so he should specialize in this, while Jill specializes in laundry.