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PRINCIPLES OF  
**ECONOMICS**  
Eight Edition



CHAPTER  
**3** **Interdependence and  
the Gains from Trade**

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Look for the answers to these questions:

- Why do people – and nations – choose to be economically interdependent?
- How can trade make everyone better off?
- What is absolute advantage?
- What is comparative advantage?
- How are these concepts similar?
- How are they different?

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**Interdependence**

Every day you rely on many people from around the world, most of whom you've never met, to provide you with the goods and services you enjoy.



- hair gel from Cleveland, OH
- cell phone from Taiwan
- dress shirt from China
- coffee from Kenya

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**Interdependence**

- “Trade can make everyone better off”
  - One of the Ten Principles from Chapter 1
  - We now learn why people – and nations – choose to be interdependent
  - And how they can gain from trade

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**ASK THE EXPERTS**

Trade between China and the United States

*“Trade with China makes most Americans better off because, among other advantages, they can buy goods that are made or assembled more cheaply in China.”*

What do economists say?



0% disagree      0% uncertain  
100% agree

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**Our Example**

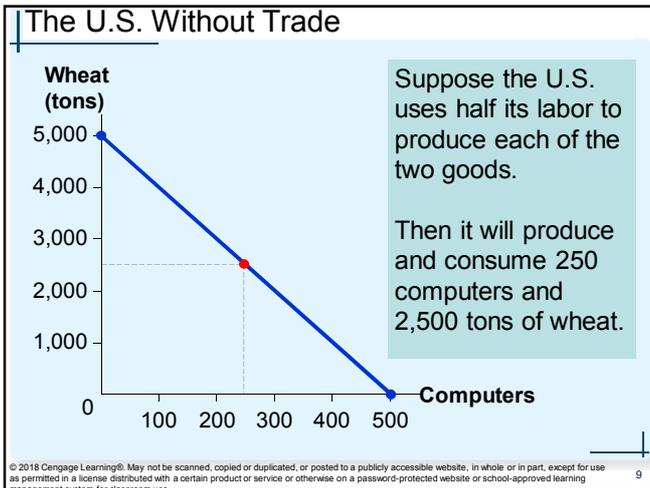
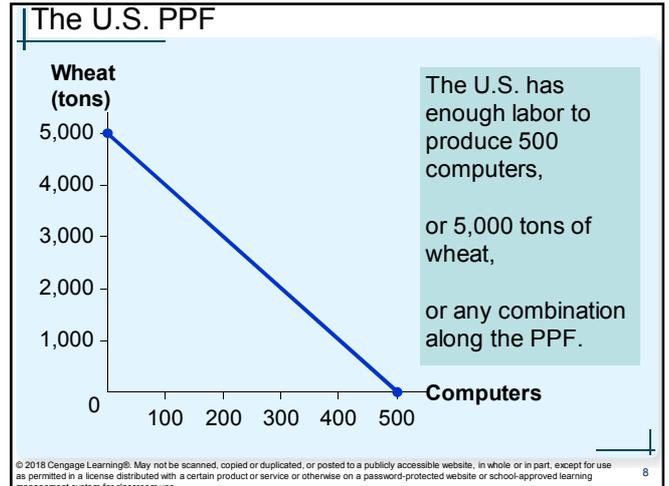
- **Two countries:**
  - The U.S. and Japan
- **Two goods:**
  - Computers and wheat
- **One resource:**
  - Labor, measured in hours
- **How much of both goods each country produces and consumes**
  - If the country chooses to be self-sufficient
  - If it trades with the other country

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### Our Example

- **Production Possibilities in the U.S.**
  - The U.S. has 50,000 hours of labor available for production, per month
  - Producing one computer requires 100 hours of labor
  - Producing one ton of wheat requires 10 hours of labor

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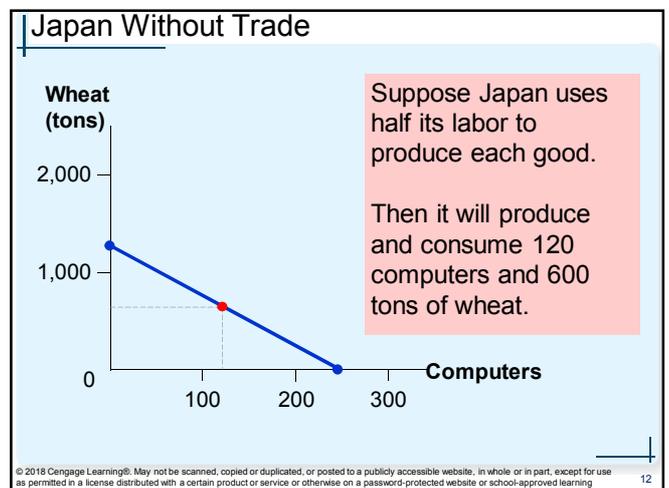
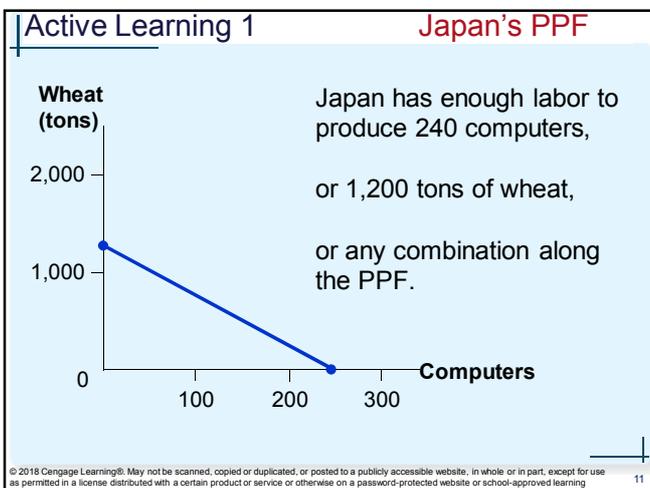
### Active Learning 1 Derive Japan's PPF

Use the following information to draw Japan's PPF.

- Japan has 30,000 hours of labor available for production, per month.
- Producing one computer requires 125 hours of labor.
- Producing one ton of wheat requires 25 hours of labor.

- Your graph should measure computers on the horizontal axis.

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### Consumption With and Without Trade

- Without trade:
  - U.S. consumers get 250 computers and 2500 tons wheat
  - Japanese consumers get 120 computers and 600 tons wheat
- Comparison
  - Consumption without trade vs. consumption with trade
  - We need to see how much of each good is produced and traded by the two countries

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### Active Learning 2 Production under trade

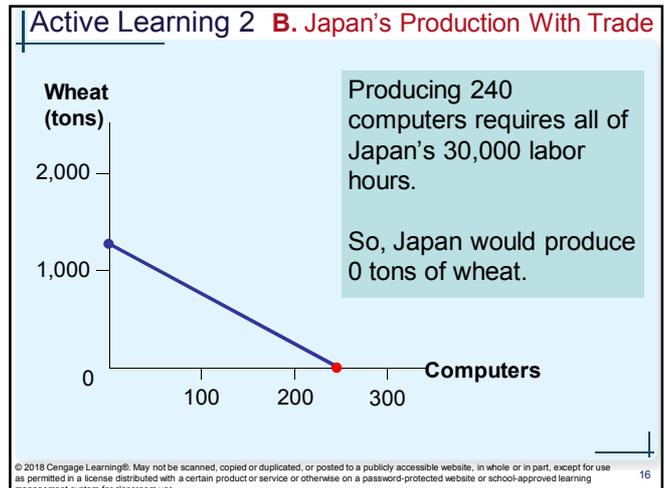
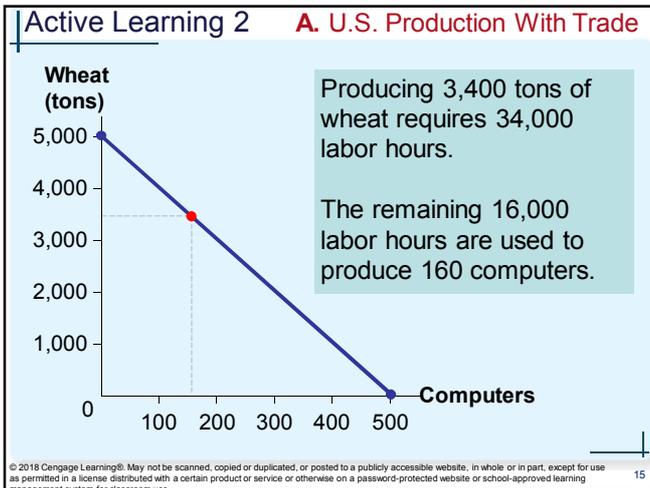
A. Suppose the U.S. produces 3400 tons of wheat.

- How many computers would the U.S. be able to produce with its remaining labor?
- Draw the point representing this combination of computers and wheat on the U.S. PPF.

B. Suppose Japan produces 240 computers.

- How many tons of wheat would Japan be able to produce with its remaining labor?
- Draw this point on Japan's PPF.

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### Exports and Imports

- Imports
  - Goods produced abroad and sold domestically
- Exports
  - Goods produced domestically and sold abroad

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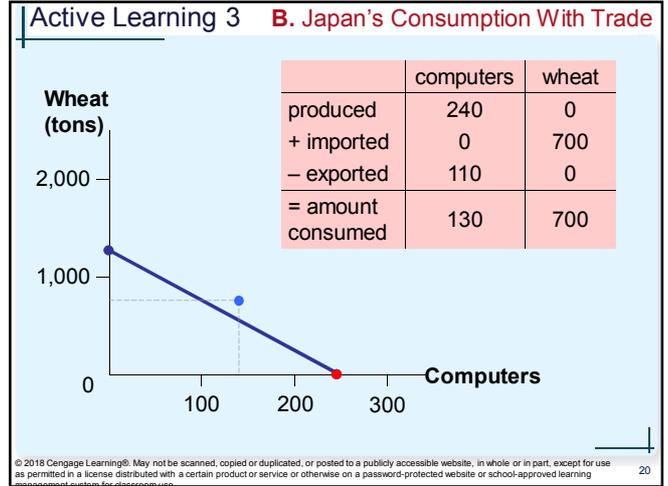
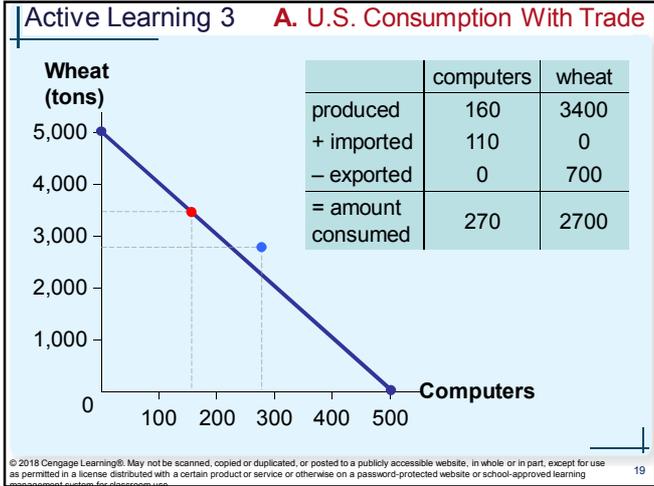
### Active Learning 3 Consumption under trade

Suppose the U.S. exports 700 tons of wheat to Japan, and imports 110 computers from Japan. (Japan imports 700 tons wheat and exports 110 computers.)

A. How much of each good is consumed in the U.S.? Plot this combination on the U.S. PPF.

B. How much of each good is consumed in Japan? Plot this combination on Japan's PPF.

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**Trade Makes Both Countries Better Off**

U.S.			
	consumption without trade	consumption with trade	gains from trade
computers	250	270	20
wheat	2500	2700	200

Japan			
	consumption without trade	consumption with trade	gains from trade
computers	120	130	10
wheat	600	700	100

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- Where Do These Gains Come From?**
- **Absolute advantage:**
    - The ability to produce a good using fewer inputs than another producer
    - The U.S. has absolute advantage in wheat
      - Producing a ton of wheat uses 10 labor hours in the U.S. vs. 25 in Japan
    - The U.S. has absolute advantage in computers
      - Producing one computer requires 125 labor hours in Japan, but only 100 in the U.S.
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- Where Do These Gains Come From?**
- The U.S. has an absolute advantage in both goods!**
- So why does Japan specialize in computers?
  - Why do both countries gain from trade?
  - **Two countries can gain from trade**
    - When each specializes in the good it produces at lowest cost
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- Two Measures of the Cost of a Good**
- **Absolute advantage**
    - Measures the cost of a good in terms of the inputs required to produce it
  - **Another measure of cost: opportunity cost**
    - The opportunity cost of a computer = amount of wheat that could be produced using the labor needed to produce one computer
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## Comparative Advantage

- **Comparative advantage**
  - The ability to produce a good at a lower opportunity cost than another producer
- **Principle of comparative advantage**
  - Each good should be produced by the individual that has the smaller opportunity cost of producing that good

**Specialize according to comparative advantage**

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## Comparative Advantage

- **The opportunity cost of a computer is**
  - 10 tons of wheat in the U.S.:
    - Producing one computer requires 100 labor hours, which instead could produce 10 tons of wheat
  - 5 tons of wheat in Japan:
    - Producing one computer requires 125 labor hours, which instead could produce 5 tons of wheat

**Japan has comparative advantage in computers**

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## Comparative Advantage and Trade

- **Gains from trade**
  - Arise from comparative advantage (differences in opportunity costs)
- **When each country specializes in the good(s) in which it has a comparative advantage**
  - Total production in all countries is higher
  - The world's "economic pie" is bigger
  - All countries can gain from trade

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## Active Learning 4 Absolute and comparative advantage

Argentina, 10,000 hours of labor/month:

- producing 1 lb. coffee requires 2 hours;
- producing 1 bottle wine requires 4 hours

Brazil, 10,000 hours of labor/month:

- producing 1 lb. coffee requires 1 hour
- producing 1 bottle wine requires 5 hours

1. Which country has an absolute advantage in the production of coffee?
2. Which country has a comparative advantage in the production of wine?

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## Active Learning 4 Answers

1. Brazil: absolute advantage in coffee
  - Producing 1 lb. coffee:
    - One labor-hour in Brazil, but two in Argentina.
2. Argentina: comparative advantage in wine
  - Argentina's opportunity cost of wine is 2 lb. coffee
    - The four labor-hours required to produce a bottle of wine could instead produce 2 lb. coffee
  - Brazil's opportunity cost of wine is 5 lb. coffee

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## ASK THE EXPERTS

### Trade between China and the United States

*"Some Americans who work in the production of competing goods, such as clothing and furniture, are made worse off by trade with China."*

What do economists say?

Response	Percentage
Agree	96%
Uncertain	4%
Disagree	0%

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## Summary

- Interdependence and trade are desirable
  - Allow everyone to enjoy a greater quantity and variety of goods and services
- Comparative advantage: being able to produce a good at a lower opportunity cost
- Absolute advantage: being able to produce a good with fewer inputs
- The gains from trade are based on comparative advantage, not absolute advantage

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## Summary

- Trade makes everyone better off
  - It allows people to specialize in those activities in which they have a comparative advantage
- The principle of comparative advantage applies to countries as well as to people
- Economists use the principle of comparative advantage to advocate free trade among countries

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## Chapter 3: Gains From Trade

- ▶ Trade can make people better off
- ▶ Key Idea: Comparative Advantage
- ▶ Suggested Homework:
  - ▶ Read Mankiw Chap. 3
  - ▶ Mankiw, Chap.3, Problem 3, 8, 9