# 3 Interdependence and the Gains from Trade

PRINCIPLES OF

ECONOMICS

FOURTH EDITION

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PowerPoint® Slides
by Ron Cronovich

# In this chapter, 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?

# Interdependence

*Every day you rely on many people from around the world, most of whom you do not know, to provide you with the goods and services you enjoy.*

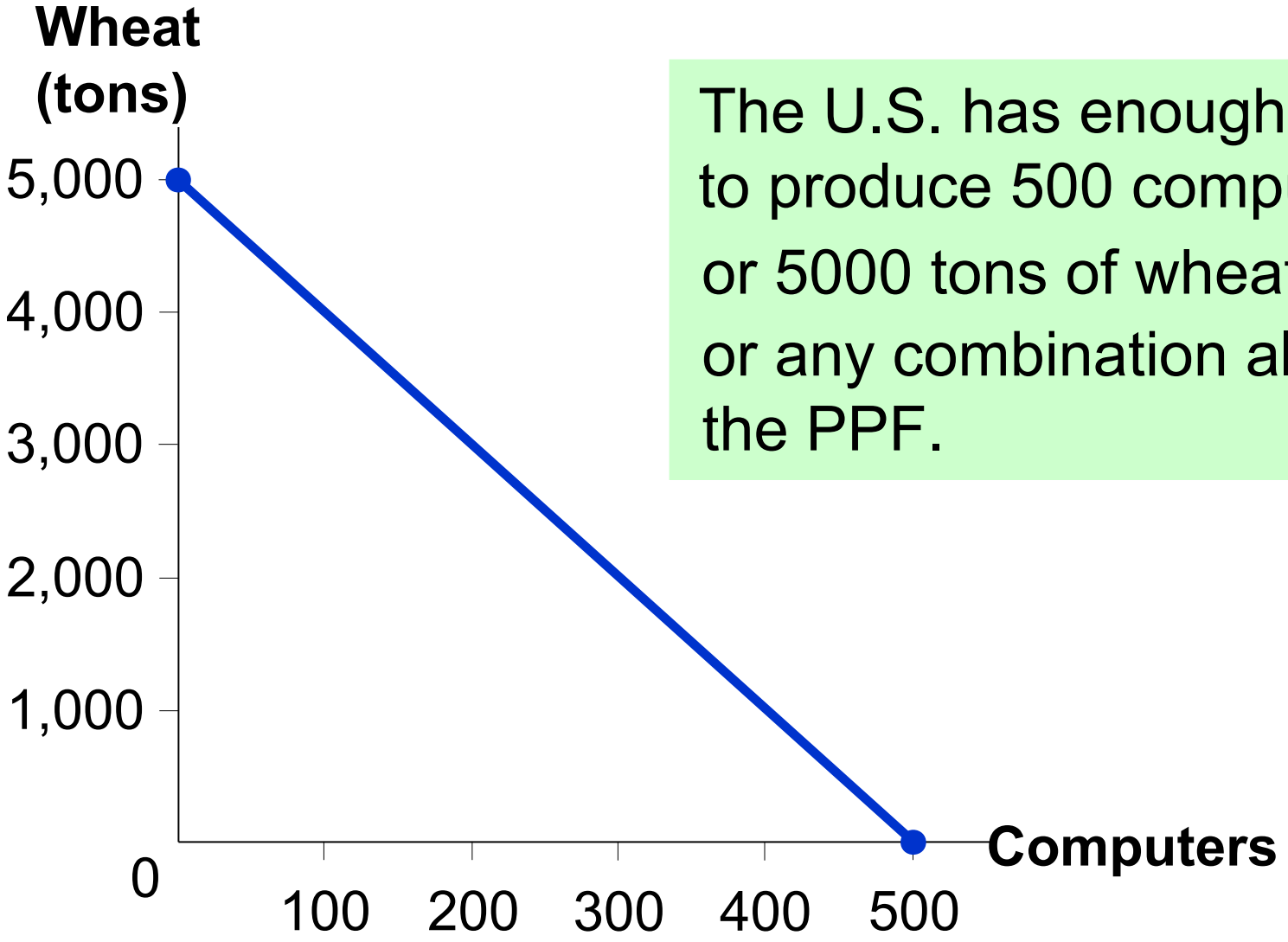
# Our Example

- Two countries:  the U.S. and Japan
- Two goods:  computers and wheat
- One resource:  labor, measured in hours
- We will look at 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

# Production Possibilities in the U.S.

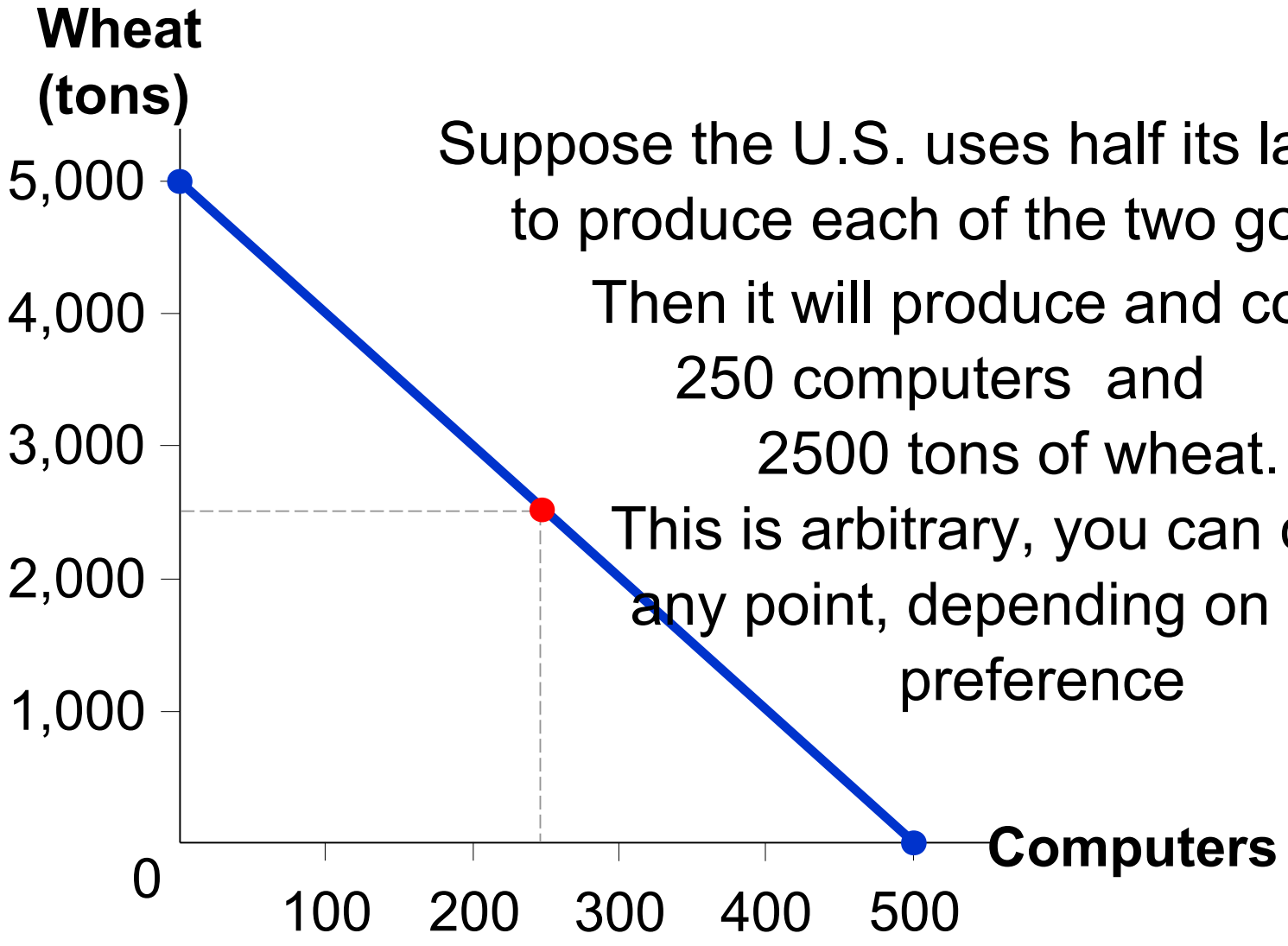
- The U.S. has 50,000 hours of labor available for production, per month.
- Producing one computer requires 100 hours of labor.
- Producing one ton of wheat requires 10 hours of labor.

# The U.S. PPF




The U.S. has enough labor to produce 500 computers, or 5000 tons of wheat, or any combination along the PPF.

# The U.S. Without Trade




Suppose the U.S. uses half its labor to produce each of the two goods.

Then it will produce and consume
250 computers and
2500 tons of wheat.

This is arbitrary, you can choose any point, depending on your preference

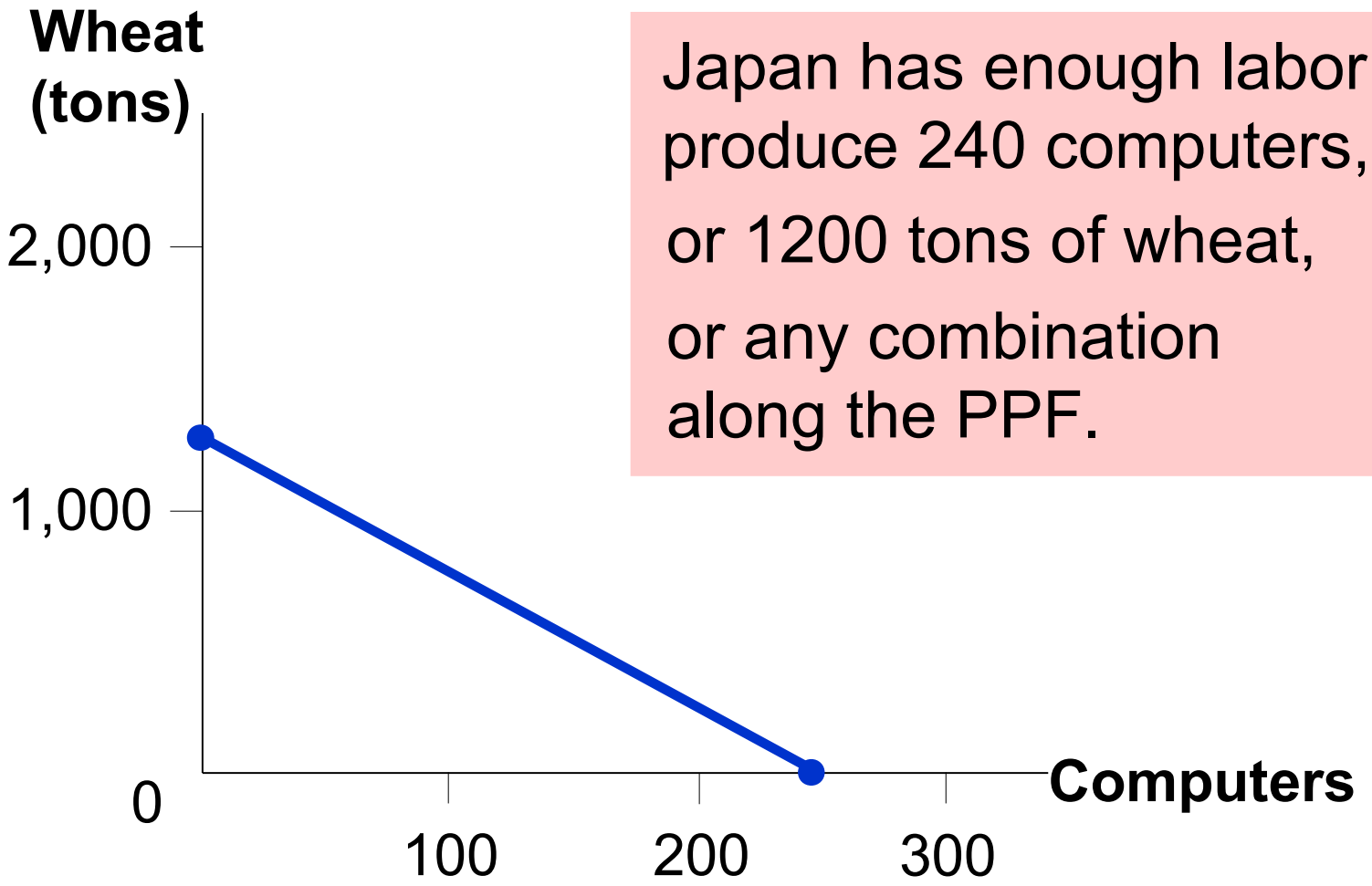
# ACTIVE LEARNING 1:
# Derive Japan's PPF

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. (better technology)
- Producing one ton of wheat requires 25 hours of labor. (fewer land)

Your graph should measure computers on the horizontal axis.

# Japan's PPF

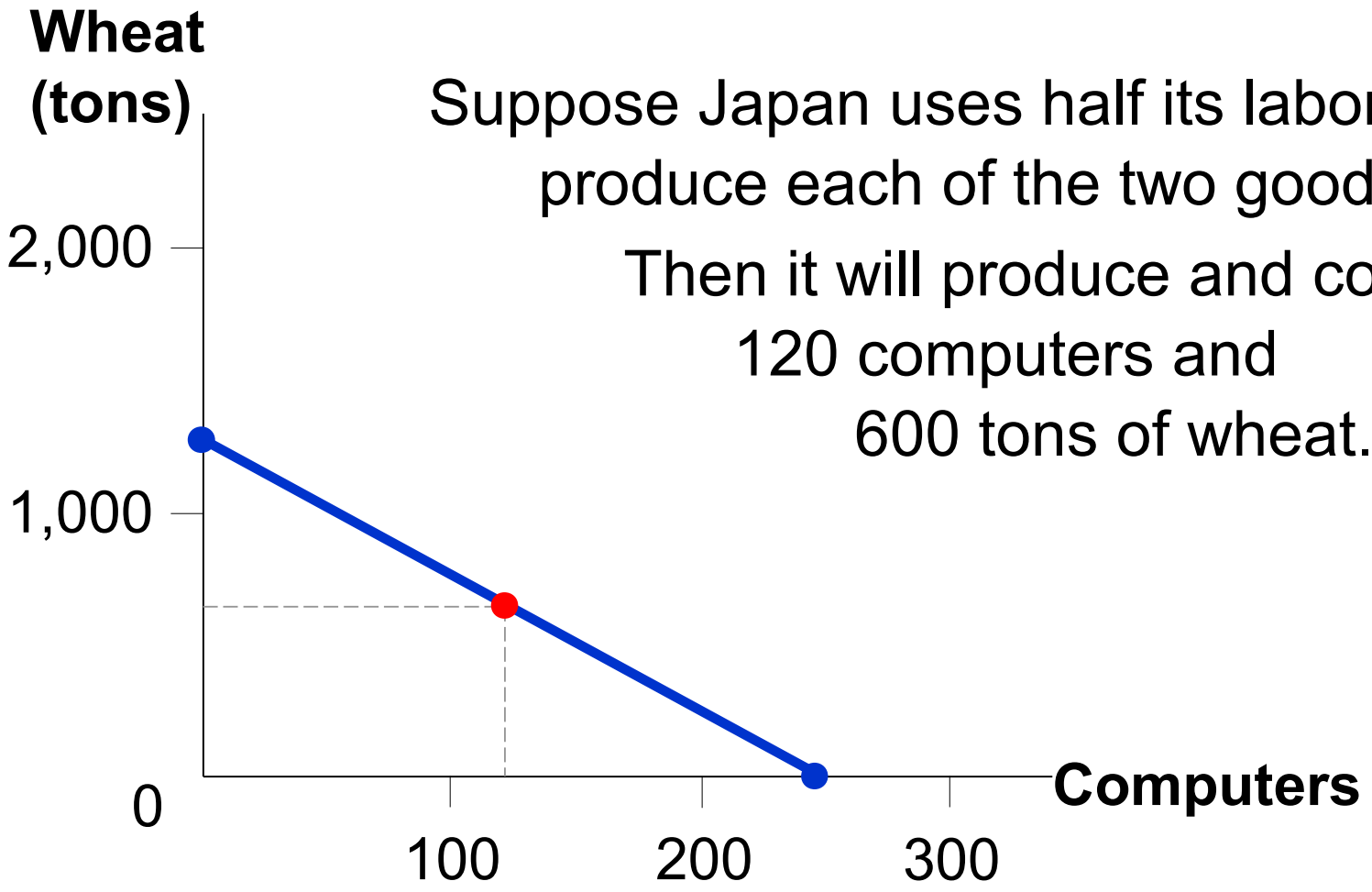



Japan has enough labor to produce 240 computers,

or 1200 tons of wheat,

or any combination along the PPF.

# Japan Without Trade




Suppose Japan uses half its labor to produce each of the two goods.

Then it will produce and consume
120 computers and
600 tons of wheat.

# Consumption With and Without Trade

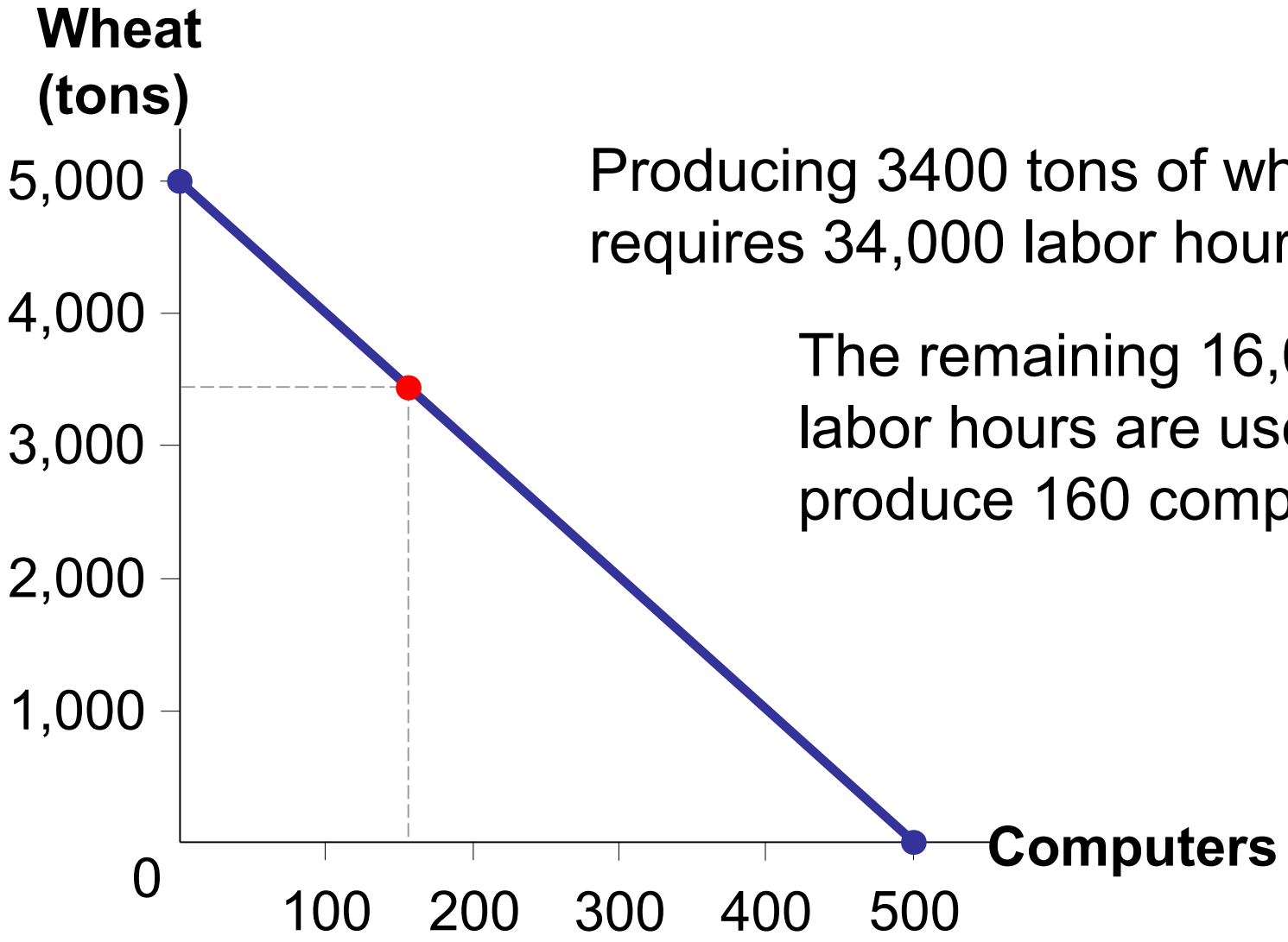
- Without trade,
  - U.S. consumers get 250 computers and 2500 tons wheat.
  - Japanese consumers get 120 computers and 600 tons wheat.
- We will compare consumption without trade to consumption with trade.
- First, we need to see how much of each good is produced and traded by the two countries.

## ACTIVE LEARNING 2:
# Production under trade

1. Suppose the U.S. produces 3400 tons of wheat(move toward wheat production). 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.

2. 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.

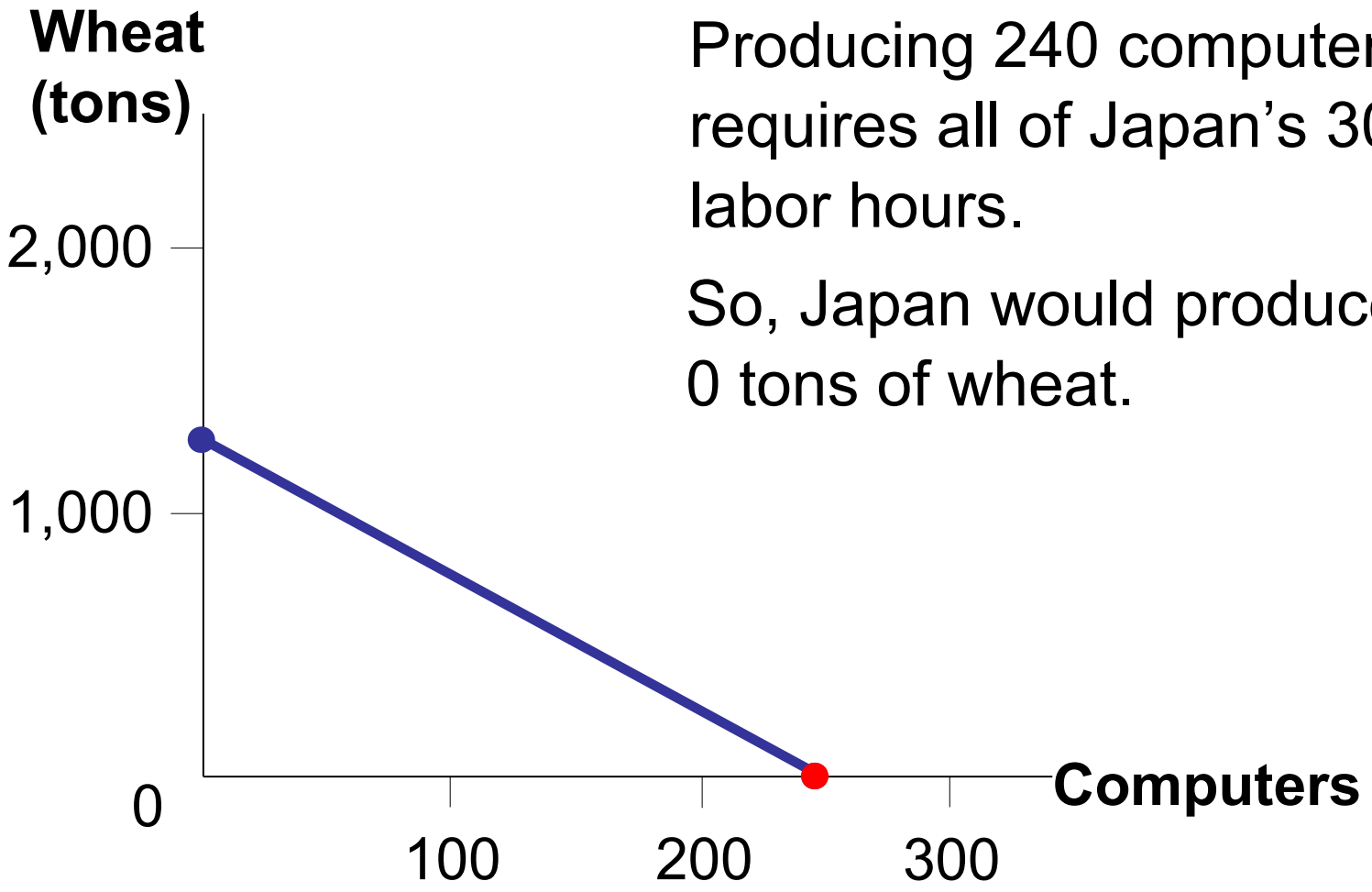
# U.S. Production With Trade




Producing 3400 tons of wheat requires 34,000 labor hours.

The remaining 16,000 labor hours are used to produce 160 computers.

# Japan's Production With Trade




Producing 240 computers requires all of Japan's 30,000 labor hours.

So, Japan would produce 0 tons of wheat.

# International Trade

- **Then they have to trade with each other…**
- **Exports( ?? )**:
  goods produced domestically and sold abroad
- **Imports( ?? )**:
  goods produced abroad and sold domestically

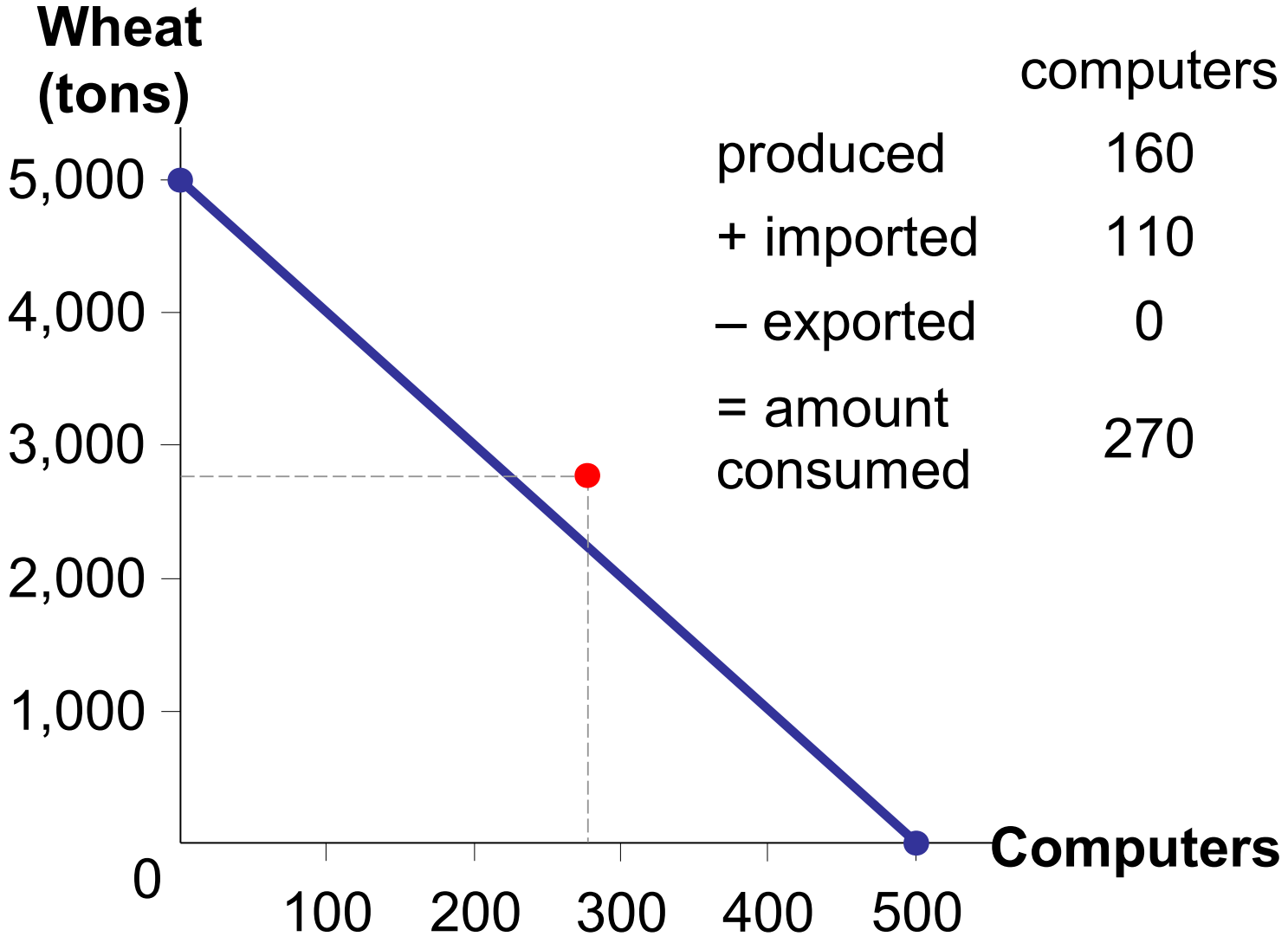
## ACTIVE LEARNING 3:
# Consumption under trade

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

(So, Japan imports 700 tons wheat and exports 110 computers.)

- How much of each good is consumed in the U.S.? Plot this combination on the U.S. PPF.
- How much of each good is consumed in Japan? Plot this combination on Japan's PPF.

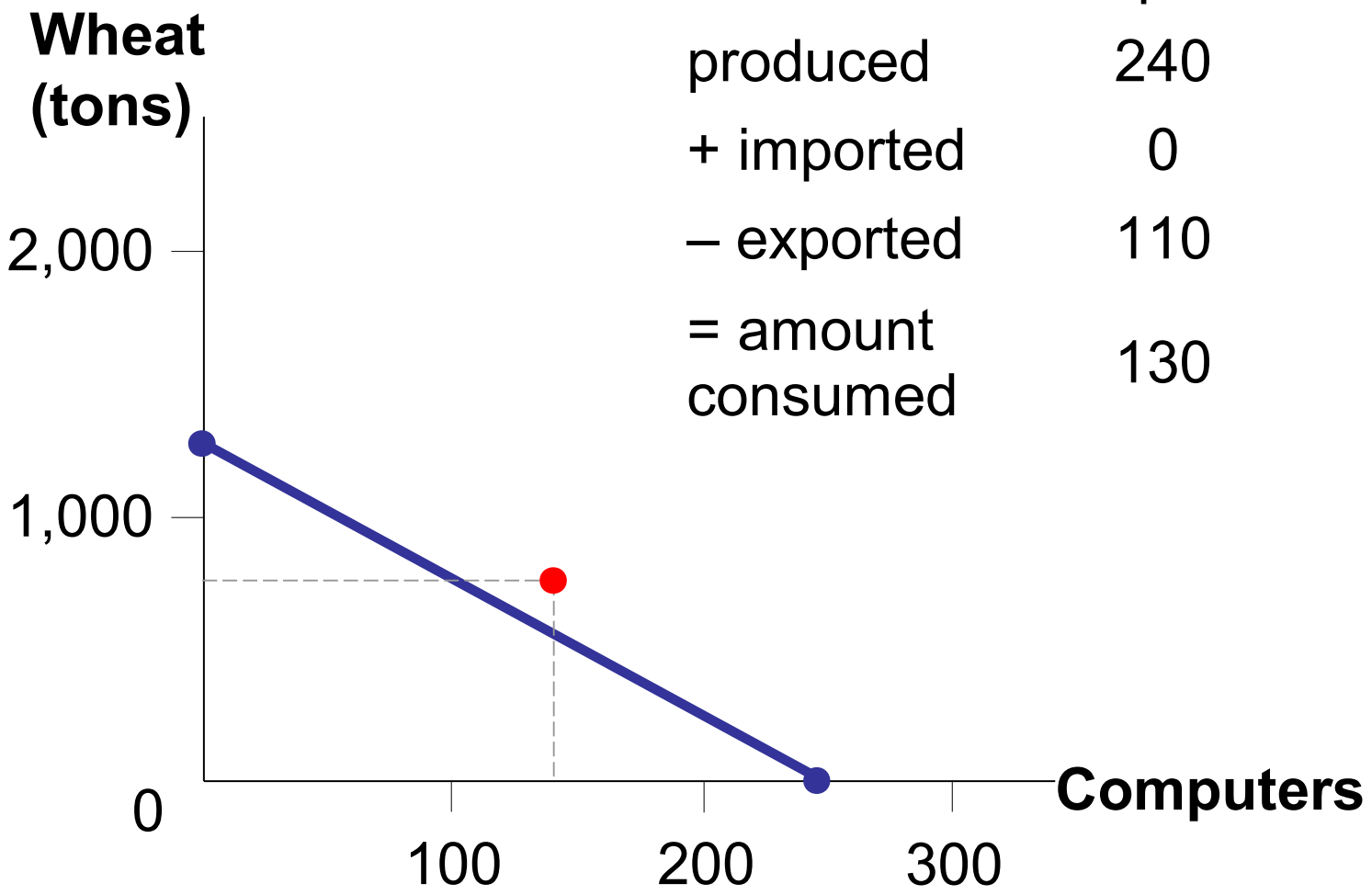
# U.S. Consumption With Trade




| | computers | wheat |
|---|---|---|
| produced | 160 | 3400 |
| + imported | 110 | 0 |
| – exported | 0 | 700 |
| = amount consumed | 270 | 2700 |

# Japan's Consumption With Trade

| | computers | wheat |
|---|---|---|
| produced | 240 | 0 |
| + imported | 0 | 700 |
| – exported | 110 | 0 |
| = amount consumed | 130 | 700 |



# Trade Makes Both Countries Better Off

**U.S.**

| | consumption without trade | consumption with trade | gains from trade |
|---|---|---|---|
| computers | 250 | 270 | 20 |
| wheat | 2,500 | 2,700 | 200 |

**Japan**

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

The whole world produce 30 more computers

and 300 more wheat!

# Where Do These Gains Come From?

- **How do we know we have to make US to move toward wheat, and Japan toward Computer?**
- **Solution 1: find out who is better absolutely.**
- **Absolute advantage( ???? )**: the ability to produce a good using fewer inputs than another producer
- The U.S. has an absolute advantage in the production of wheat:
  producing a ton of wheat uses 10 labor hours in the U.S. vs. 25 in Japan.

# Where Do These Gains Come From?

- If each country has an absolute advantage in one good and specializes in that good, then both countries can gain from trade.
- Which country has an absolute advantage in computers?
- Producing one computer requires
  125 labor hours in Japan,
  but only 100 in the U.S.

***So why does Japan specialize in computers?***
***Why do <u>both</u> countries gain from trade?***

# Two Measures of the Cost of a Good

- Two countries can gain from trade when each specializes in the good it produces at lowest cost.
- Absolute advantage measures the cost of a good in terms of the inputs required to produce it.
- Recall: Another measure of cost is *opportunity cost.*

- In our example, the opportunity cost of a computer is the amount of wheat that could be produced using the labor needed to produce one computer.

# Opportunity Cost and Comparative Advantage

- **Comparative advantage( ???? )**: the ability to produce a good at a lower opportunity cost than another producer ( ????????????????)
- Which country has the comparative advantage in computers?
- To answer this, must determine the opp. cost of a computer in each country.

# Opportunity Cost and Comparative Advantage

- The opp. cost of a computer is
  - 10 tons of wheat in the U.S., because producing one computer requires 100 labor hours,
    which instead could produce 10 tons of wheat.
  - 5 tons of wheat in Japan, because producing one computer requires 125 labor hours,
    which instead could produce 5 tons of wheat.
- So, Japan has a comparative advantage in computers ( ?? Japan ??????????! )

# Comparative Advantage and Trade

- 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 and this creates the gains from trade
- The same applies to individual producers (like the farmer and the rancher) specializing in different goods and trading with each other.
- The more different you are, the more you gain. (think of 1970's Taiwan, and US)

# Comparative Advantage and Trade

- our goal was to see that trade, indeed, can make everyone better off because of “comparative advantage”.
- David Ricardo (1772-1823): “Principles of Political Economy and Taxation”(P57)
- Other argument:
- Wage should be left to free competition.
- Against protectionism: British Corn law (repealed in 1846)
- Landlord v.s. capitalist, further growth
- P 58: Slaying Orges: World of War Craft and Magical Land

# Unanswered Questions….

- (1) why Japan has to use 110 computers to exchange for 700 tons of wheat? Why not 7000 tons? i.e. how is the price determined?(by market)
- (2) Is this fair?
- (a)One country might rip off most of the gains of trade
- (b) wheat grower in Japan and computer maker in US…
- (3) but notice for Japan (or US) as a whole, they can both benefit from trade, no matter how unfair the price seems to be, if the exchange is voluntary ( ????? ),
- Because you can always choose not to exchange!