N. GREGORY MANKIW

PRINCIPLES OF

ECONOMICS

Eighth Edition

CHAPTER

3

Interdependence and the Gains from Trade

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

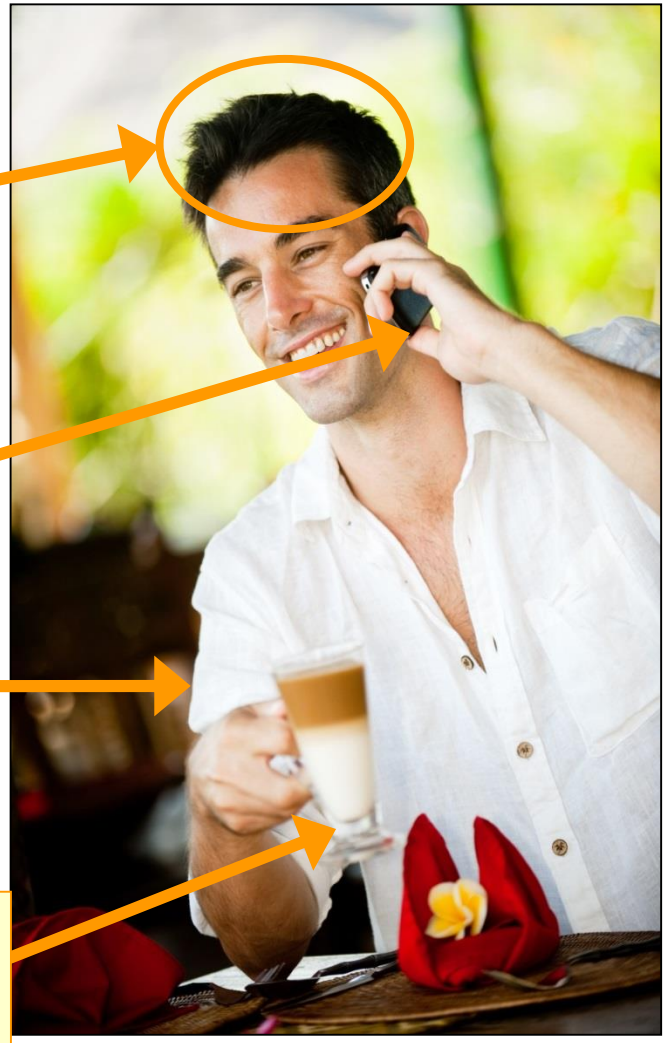
Every day you rely on many people from around the world, most of whom you've never met, to provide you with the goods and services you enjoy.

hair gel from Cleveland, OH

cell phone from Taiwan

dress shirt from China

coffee from Kenya



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

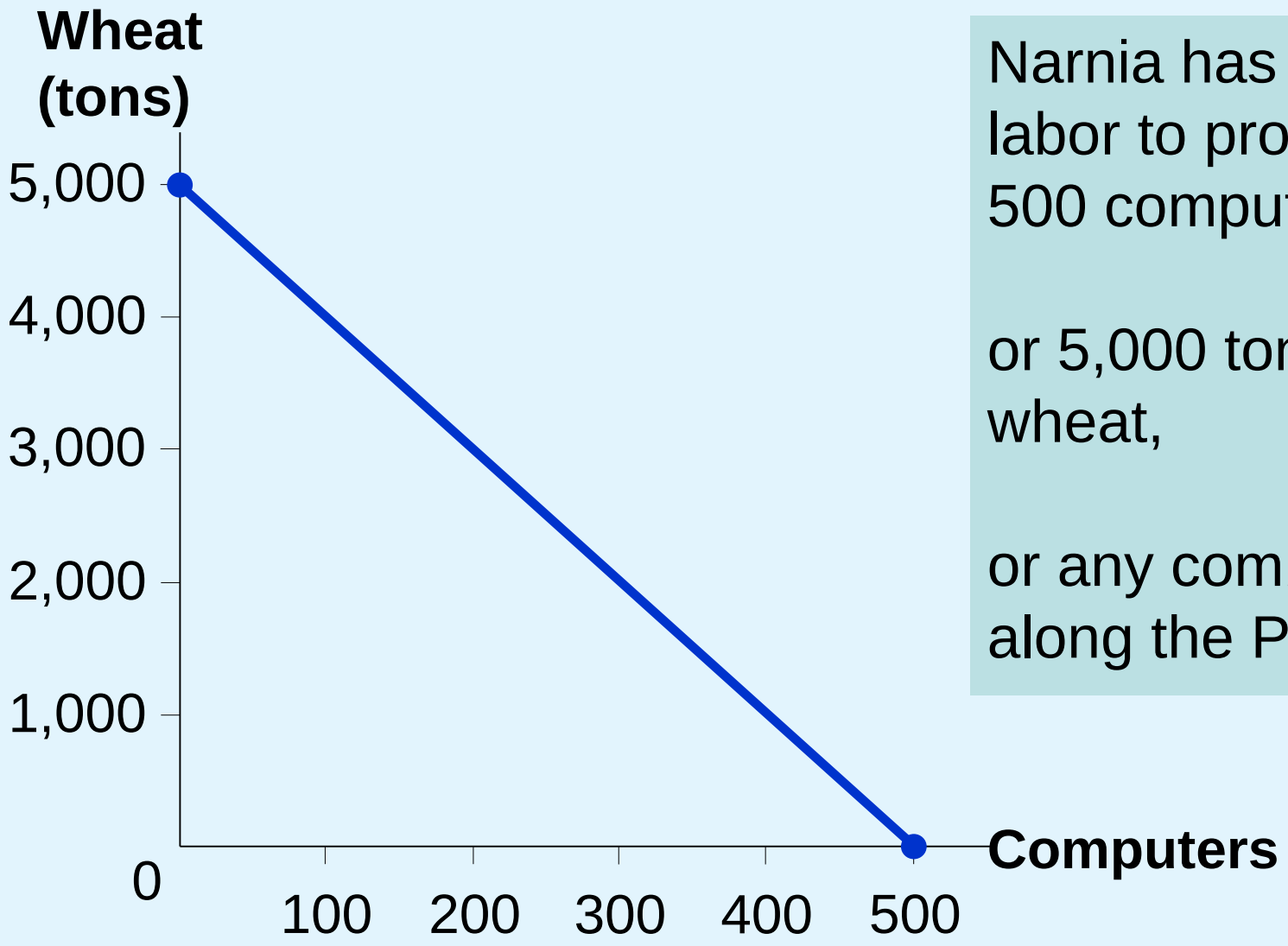
Our Example

- Two countries:
  - ‘Narnia’ and ‘Neverland’
- 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

Our Example

- Production Possibilities in Narnia
  - Narnia 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

Narnia PPF

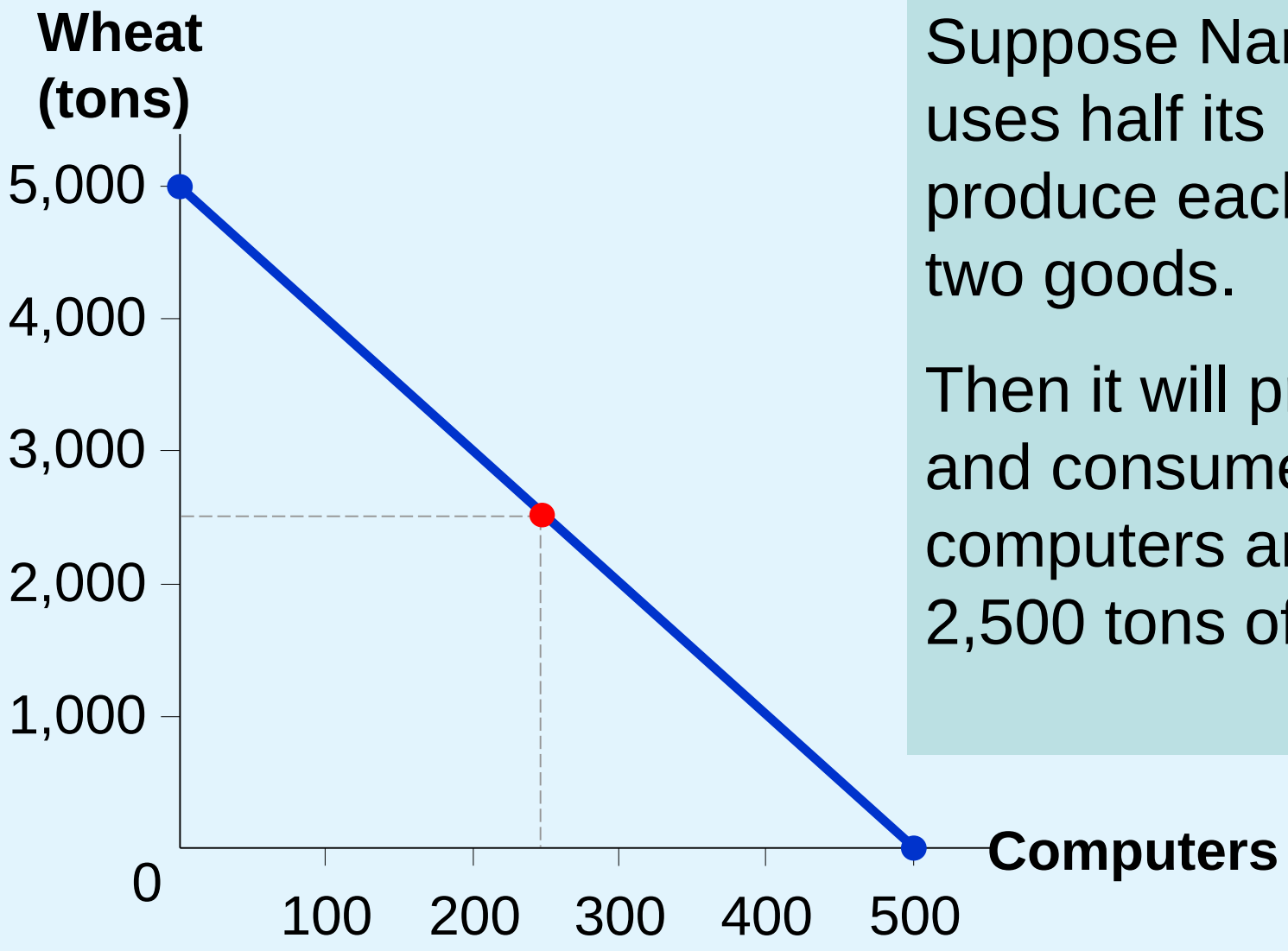


Narnia has enough labor to produce 500 computers,

or 5,000 tons of wheat,

or any combination along the PPF.

Narnia Without Trade



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

Then it will produce and consume 250 computers and 2,500 tons of wheat.

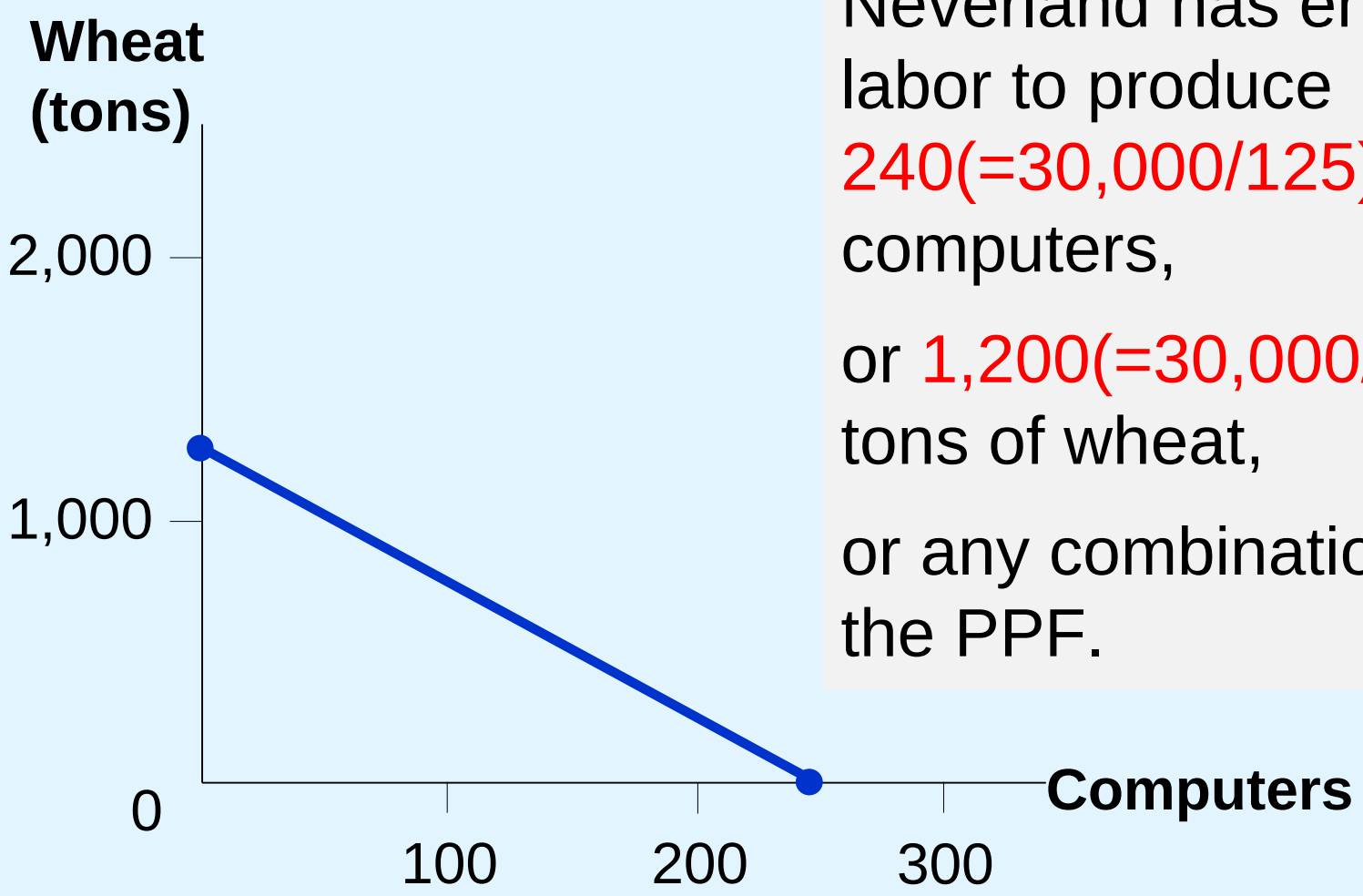
Derive Neverland's PPF

Use the following information to draw Neverland's PPF.

- Neverland 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.

Neverland's PPF

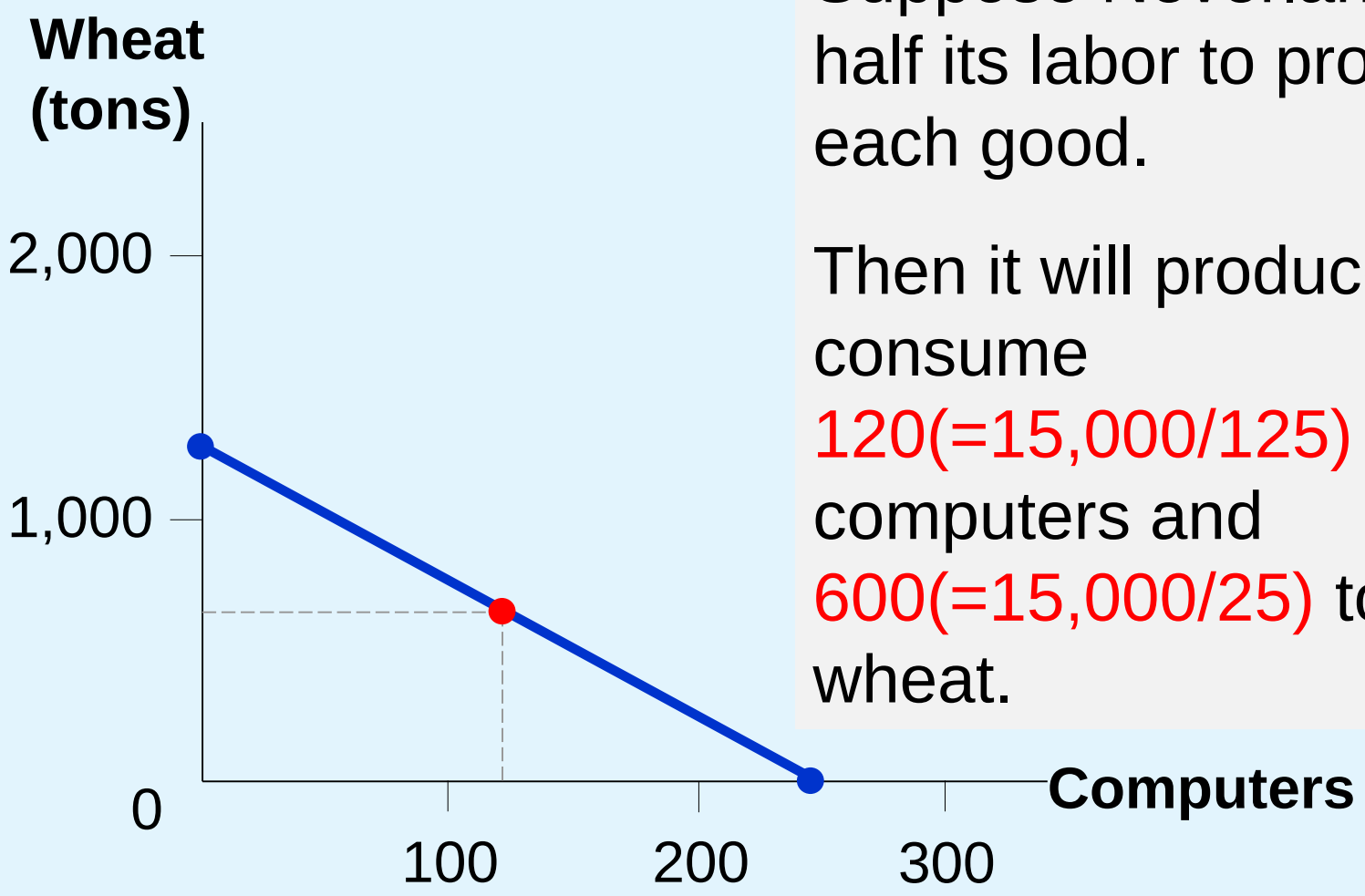


Neverland has enough labor to produce 240(=30,000/125) computers,

or 1,200(=30,000/25) tons of wheat,

or any combination along the PPF.

Neverland Without Trade



Suppose Neverland uses half its labor to produce each good.

Then it will produce and consume 120(=15,000/125) computers and 600(=15,000/25) tons of wheat.

Consumption With and Without Trade

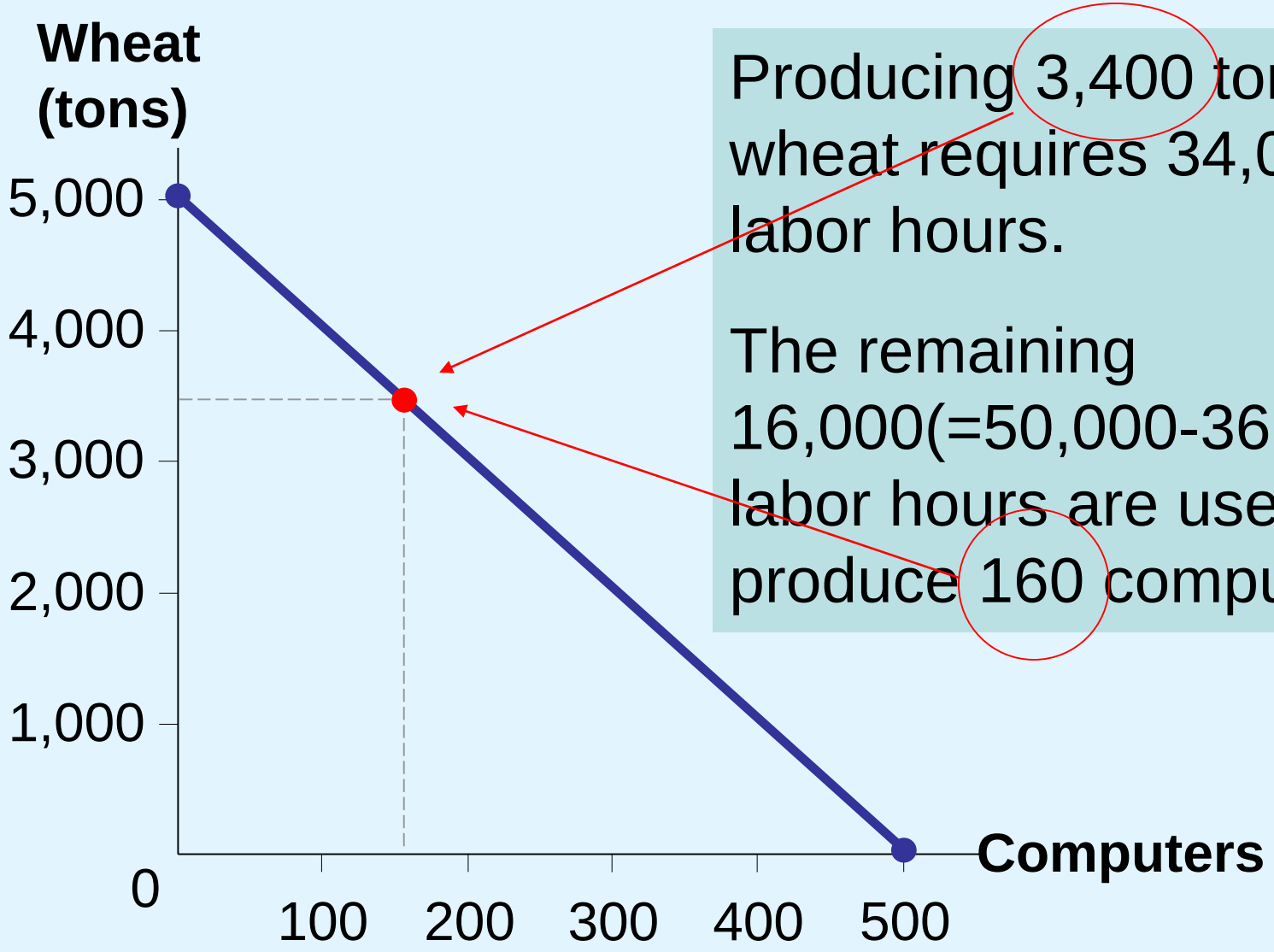
- Without trade:
  - Narnia consumers get 250 computers and 2500 tons wheat
  - Neverland consumers get 120 computers and 600 tons wheat
- Comparison
  - Consumption without trade vs. consumption with trade
  - We need to see how much of each good is produced and traded by the two countries

Production under trade

A. Suppose Narnia produces 3400 tons of wheat.
   - How many computers would Narnia be able to produce with its remaining labor?
   - Draw the point representing this combination of computers and wheat on Narnia PPF.

B. Suppose Neverland produces 240 computers.
   - How many tons of wheat would Neverland be able to produce with its remaining labor?
   - Draw this point on Neverland's PPF.

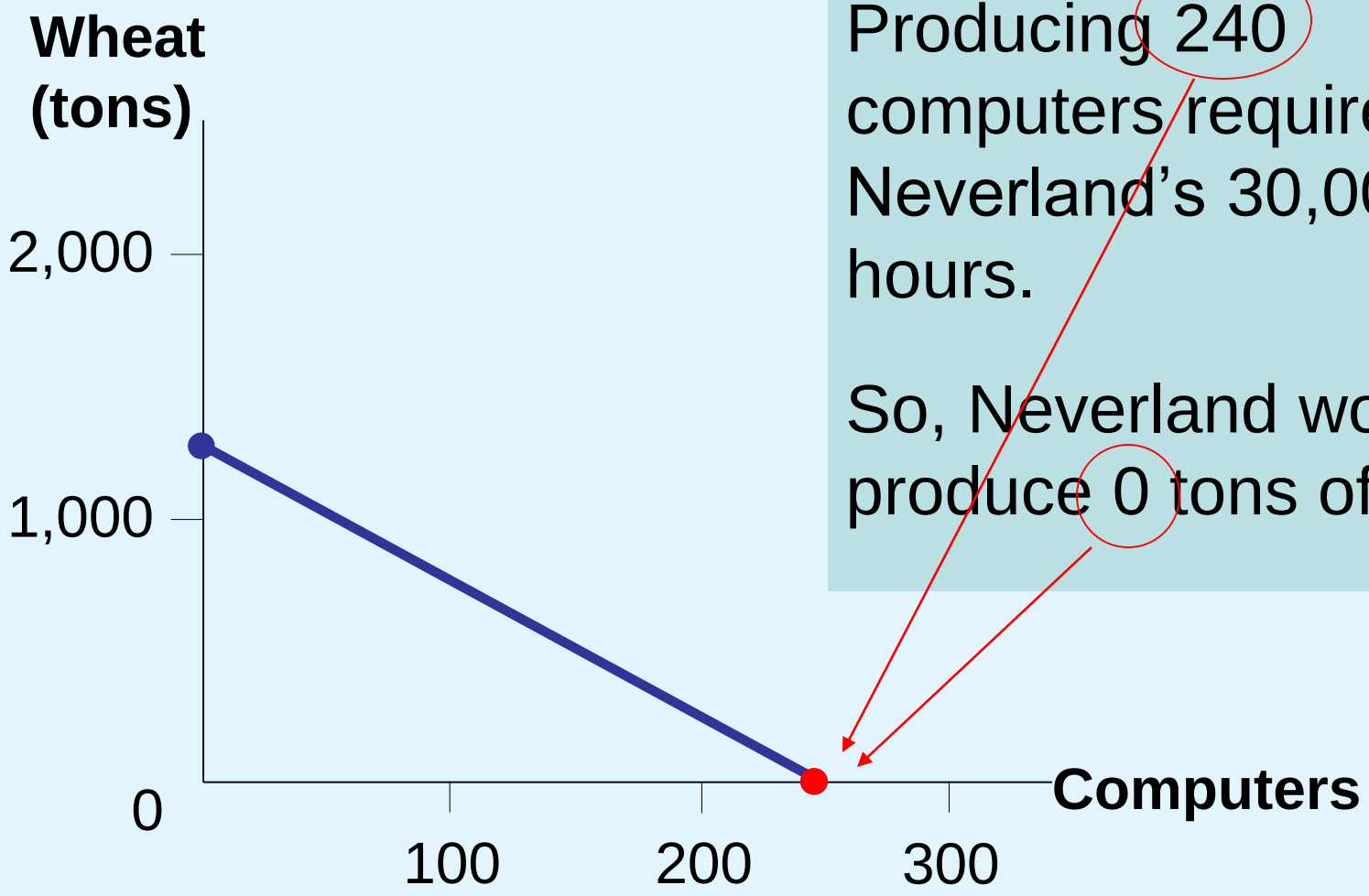
A. Narnia Production With Trade



Producing 3,400 tons of wheat requires 34,000 labor hours.

The remaining 16,000(=50,000-36,000) labor hours are used to produce 160 computers.

B. Neverland's Production With Trade



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

So, Neverland would produce 0 tons of wheat.

Exports and Imports

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

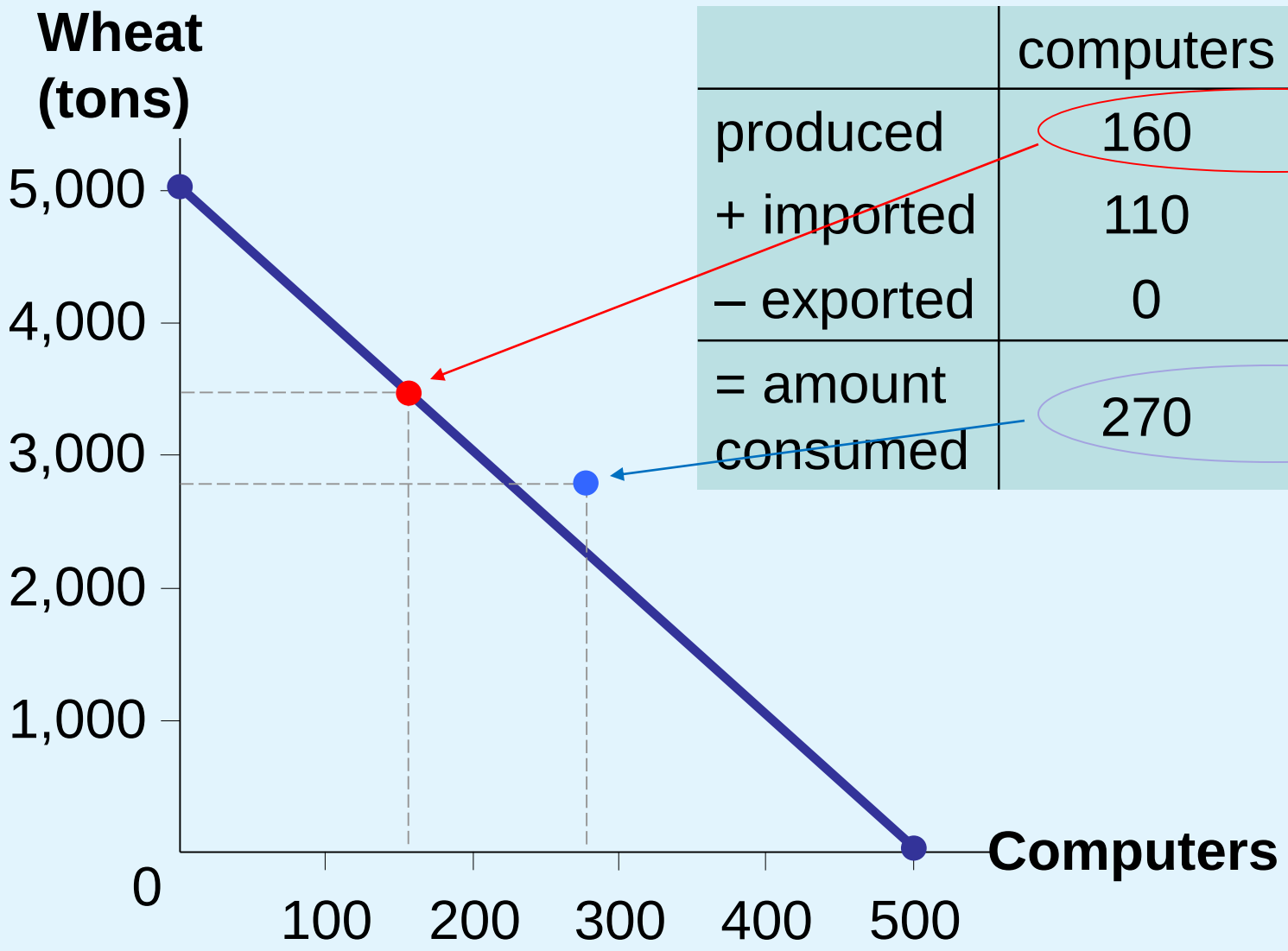
Consumption under trade

Suppose Narnia exports 700 tons of wheat to Neverland, and imports 110 computers from Neverland. (Neverland imports 700 tons wheat and exports 110 computers.)

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

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

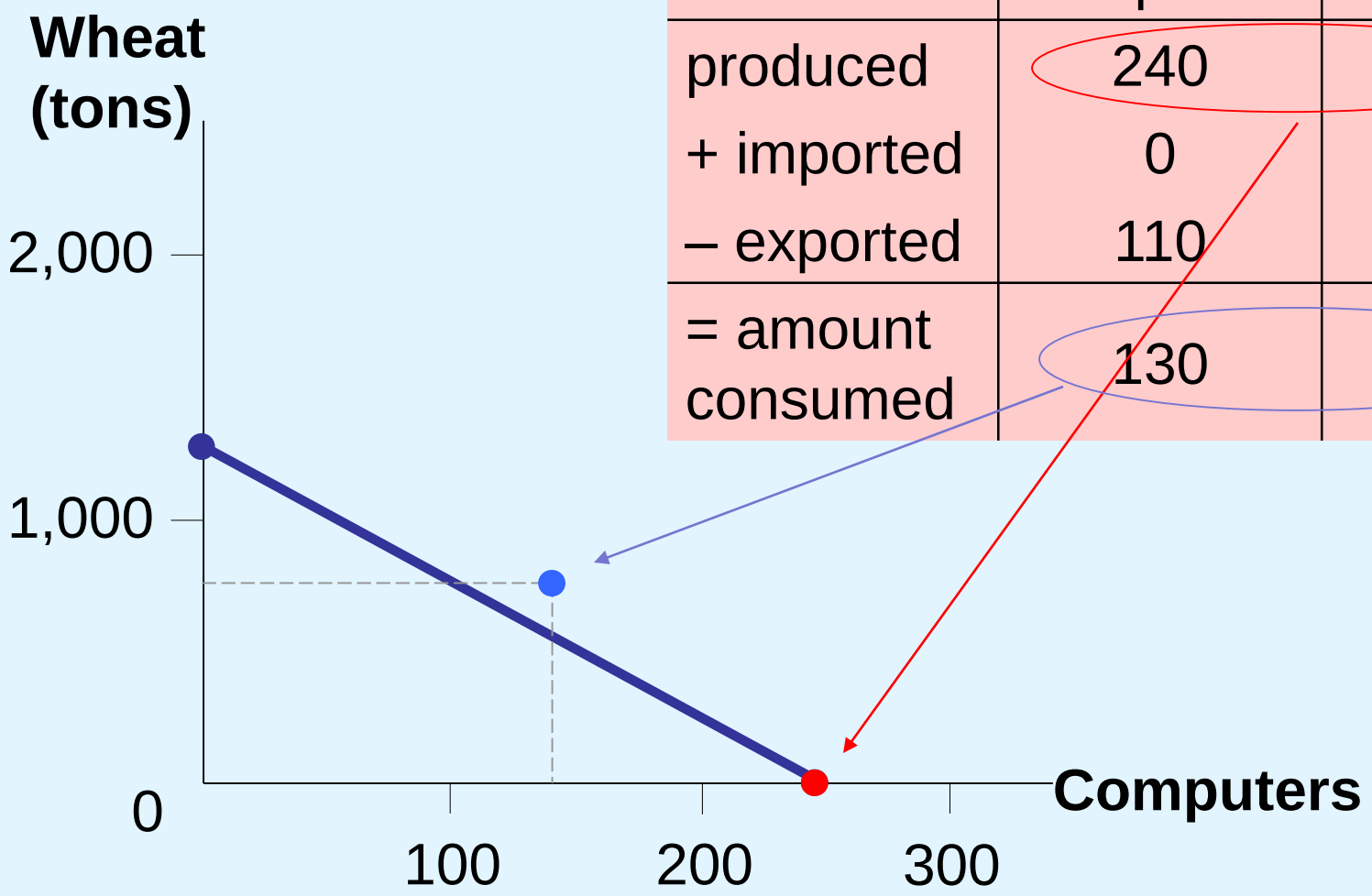
A. Narnia Consumption With Trade



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

B. Neverland'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

Narnia			
	consumption without trade	consumption with trade	gains from trade
computers	250	270	**20**
wheat	2500	2700	**200**
Neverland			
	consumption without trade	consumption with trade	gains from trade
computers	120	130	**10**
wheat	600	700	**100**

Where Do These Gains Come From?

- Absolute advantage:
  - The ability to produce a good using fewer inputs than another producer
  - Narnia has absolute advantage in wheat
    - Producing a ton of wheat uses 10 labor hours in Narnia vs. 25 in Neverland
  - Narnia has absolute advantage in computers
    - Producing one computer requires 125 labor hours in Neverland, but only 100 in the Narnia

Where Do These Gains Come From?

Narnia has an absolute advantage in both goods!

- So why does Neverland 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

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

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!!

Comparative Advantage

- The opportunity cost of a computer is
  - 10 tons of wheat in the Narnia:
    - Producing one computer requires 100 labor hours, which instead could produce 10 tons of wheat
  - 5 tons of wheat in Neverland:
    - Producing one computer requires 125 labor hours, which instead could produce 5 tons of wheat

Neverland has comparative advantage in computers!!!

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

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?

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

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

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