Chapter 3

Comparative Advantage & Gains from Trade

- Suppose there are 2 people trapped on an island: Peyton the potato farmer and Rodgers the beef rancher.
- Only two goods are produced: potatoes and meat, and each person can produce both goods.
- The following table gives information on how much they can produce of each good:

	MEAT	**or**	**POTATOES**
Peyton	8 oz		32 oz
Rodgers	24 oz		48 oz

Suppose Peyton and Rodgers fend for themselves:

- Each consumes what they each produce.
- So, the production possibilities frontier is also a consumption possibilities frontier.

- Let's compute the opportunity costs of producing each good for each person: (let's ignore the units of measurement for now).

For Peyton:

- To get 32 potatoes, give up 8 meat
  To get 1 potato, give up ¼ meat

The opp.cost of a potato = ¼ meat
The opp.cost of a meat = 4 potatoes

For Rodgers:

- To get 48 potatoes, give up 24 meat
  To get 1 potato, give up ½ meat

The opp.cost of a potato = ½ meat

The opp.cost of a meat = 2 potatoes.

- Let's compare their opportunity costs:

	Opp.Cost of a Potato	**Opp.Cost of a Meat**
PEYTON	¼ meat	4 potatoes
RODGERS	½ meat	2 potatoes

Comparative Advantage

- Peyton has a lower opportunity cost of producing potatoes (1/4 meat compared to 1/2 meat for Rodgers).
- We say Peyton has a comparative advantage in potatoes: he can produce them at a lower opportunity cost than someone else.
- Rodgers has a lower opportunity cost of producing meat (2 potatoes compared to 4 potatoes: Rodgers has a comparative advantage in meat.

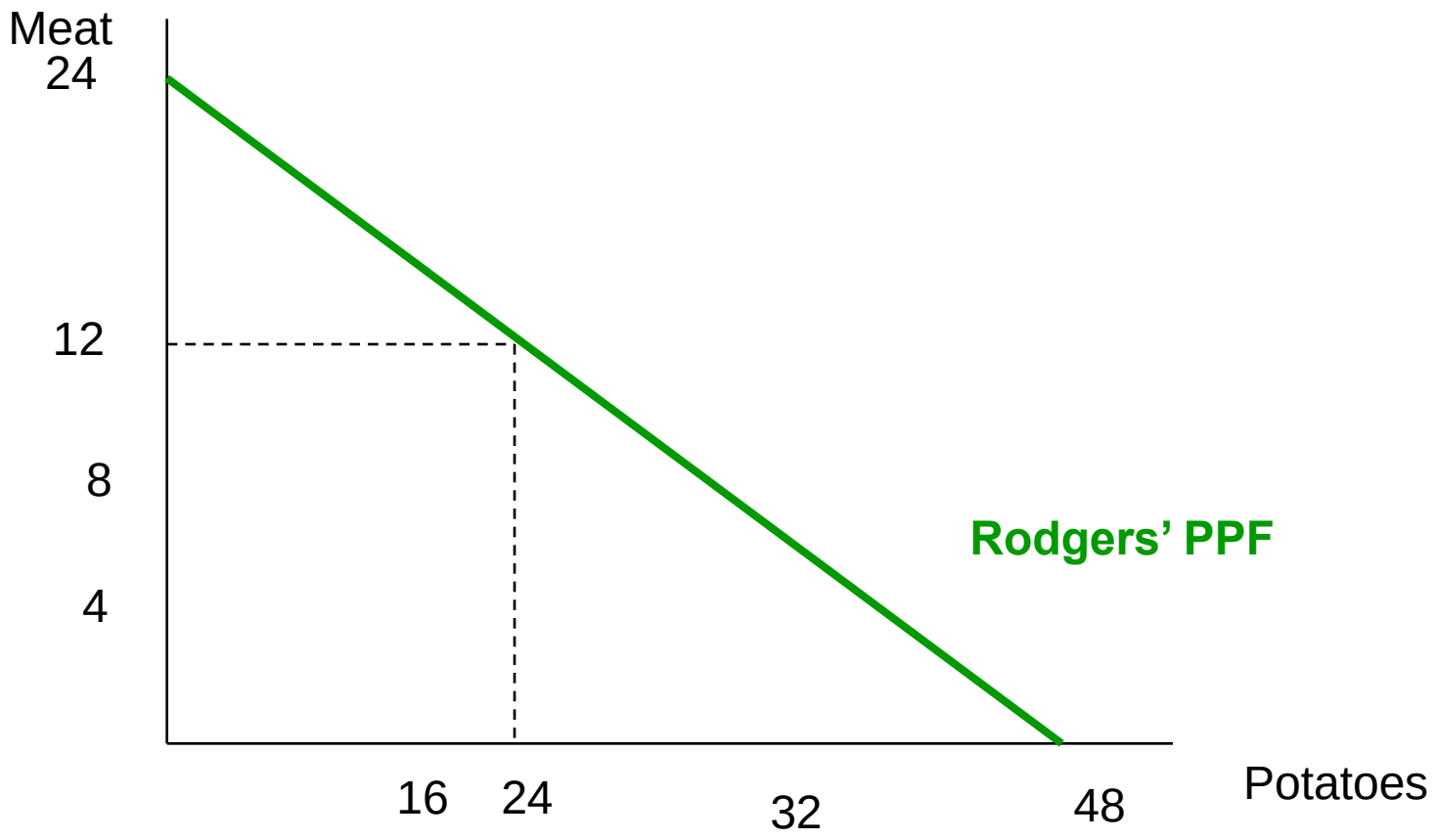
- Peyton should specialize in the production of potatoes and trade potatoes for meat.
- Rodgers should specialize in producing meat and trade meat for potatoes.

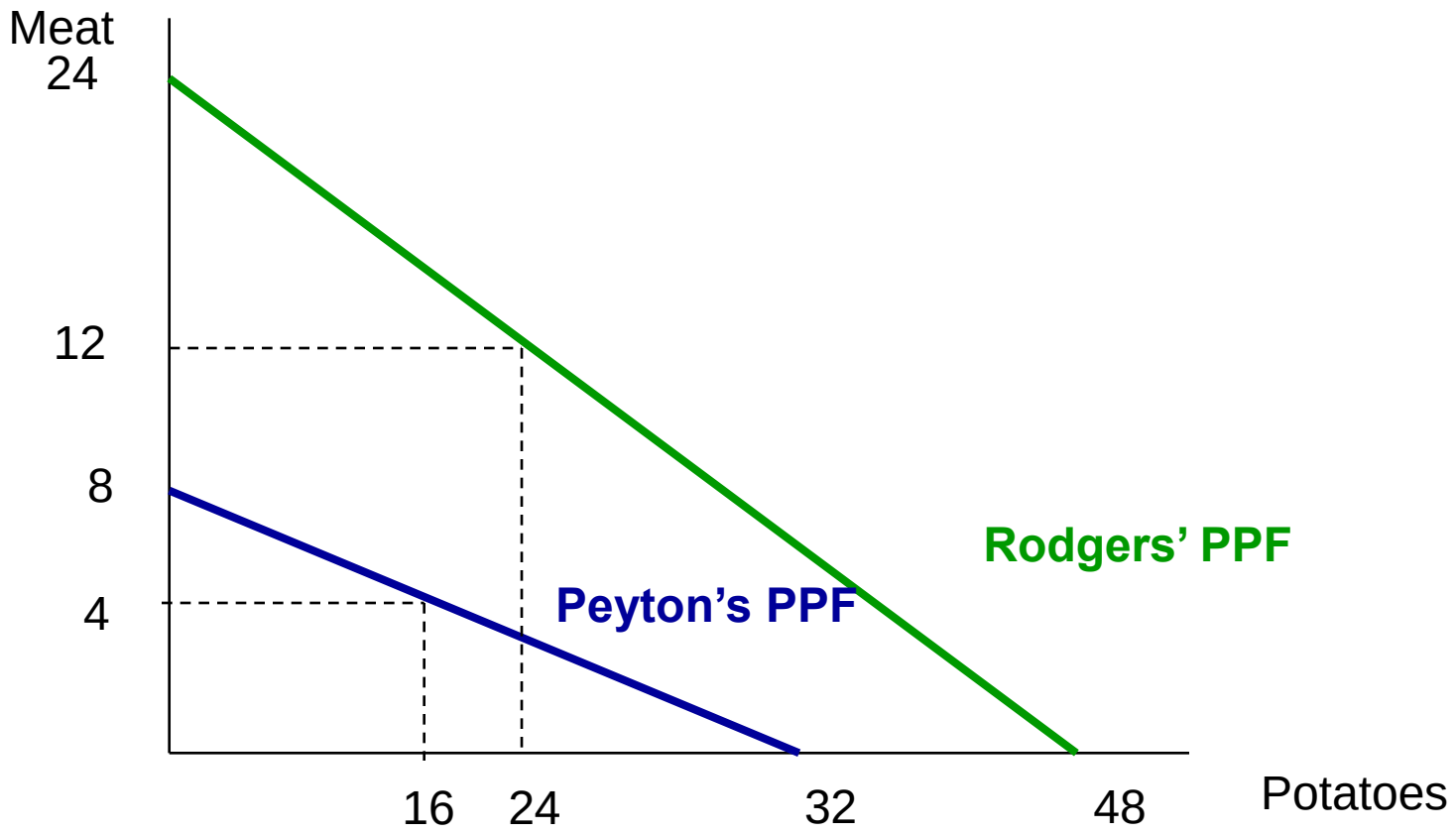
- When they trade with each other, they can consume more of both goods!

Suppose that when they fend for themselves:

- Rodgers produces and consumes 24 potatoes and 12 meat.
- Peyton produces and consumes 16 potatoes and 4 meat.

- Their PPFs are:


Meat
24
12
8
4
Rodgers' PPF
16
24
32
48
Potatoes

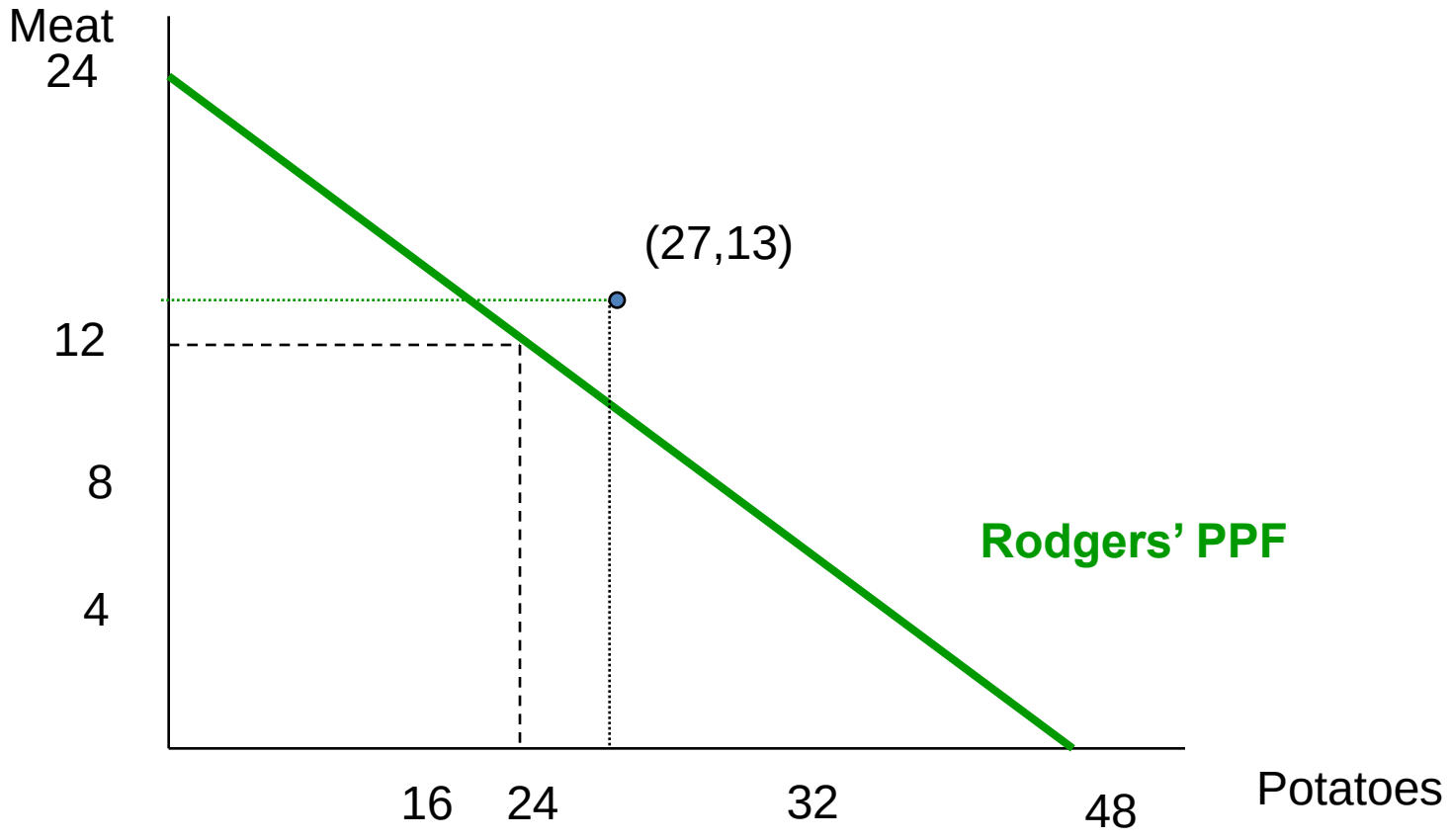

Meat
24
12
8
4
Rodgers' PPF
Peyton's PPF
16
24
32
48
Potatoes

- Now suppose they decide to specialize and trade with each other.
- They agree on a price of 15 potatoes for 5 meat – i.e. they will trade 15 potatoes for 5 meat.
- The following table shows their production and consumption before and after specialization and trade:

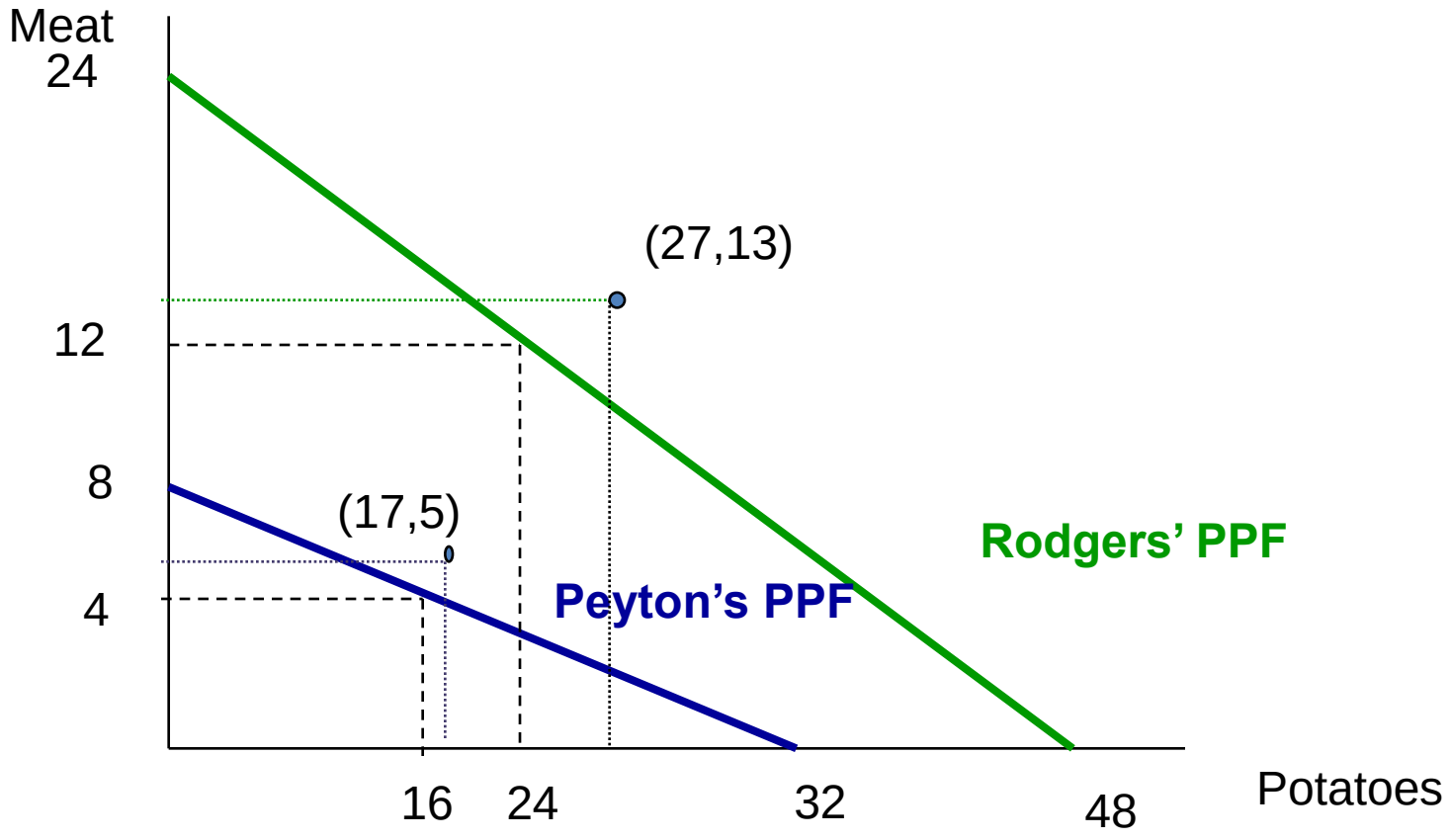
Peyton and Rodgers' Gains from Specialization and Trade

	Peyton		Rodgers	
	Meat	**Potatoes**	**Meat**	**Potatoes**
Without Trade:				
Production and Consumption	4 oz	16 oz	12 oz	24 oz
With Trade:				
Production	0 oz	32 oz	18 oz	12 oz
Trade	Gets 5 oz	Gives 15 oz	Gives 5 oz	Gets 15 oz
Consumption	5 oz	17 oz	13 oz	27 oz
Gains from Trade:				
Increase in Consumption	+1 oz	+1 oz	+1 oz	+3 oz

Rodgers and Peyton's Consumption After Trade



Rodgers and Peyton's Consumption After Trade



In summary,

- When there exists comparative advantage, each individual should specialize in the production of the good in which they have comparative advantage.
- They should trade with each other.
- There will be gains from trade for both.

- Note that usually textbooks will consider specializing in a good as producing only that good and then trading what they don't consume.
- Our textbook doesn't. In that way, it's more realistic about how economies actually function.
- Most economies will produce some of both goods and then trade their surpluses.
- However, on any tests and the exam, we'll assume that when a firm specializes in the production of a good, it produces only that good.

- Note that if no economy has a comparative advantage (that is, they have the same opportunity costs), there won't be any trade.

- That's because there would be nothing to gain from trade.

A Note About Prices

- How did Peyton and Rodgers come up with the terms of trade 5 meat for 15 potatoes?
- First note that this is essentially 1 meat = 3 potatoes.
- The opportunity cost of meat was 1 meat = 4 potatoes for Peyton and 1 meat = 2 potatoes for Rodgers (Rodgers has the comparative advantage in meat and will specialize in meat).

- For Rodgers to “sell” meat to Peyton, he has to get more than what it costs him to produce it: he has to get more than 2 potatoes.
- For Peyton to “buy” meat from Rodgers, he has to pay less than what it costs him to produce it himself: he has to pay less than 4 potatoes.
- The price of 1 meat = 3 potatoes satisfies both conditions (any price between 2 and 4 potatoes would do it).
- That’s why they settled on 1 meat for 3 potatoes (or 5 meat for 15 potatoes).

Absolute Advantage

- Describes the productivity of one person, firm, or nation compared to that of another.
- The producer that requires a smaller quantity of inputs to produce a good (is more productive) is said to have an absolute advantage in producing that good.
- Productivity can be calculated as

$$\text{Productivity} = \frac{\text{quantity produced}}{\text{number of inputs used}}$$

	Minutes Needed to Make 1 Ounce of:	
	Meat	Potatoes
Peyton	60 min/oz	15 min/oz
Rodgers	20 min/oz	10 min/oz

- Rodgers needs only 10 minutes to produce an ounce of potatoes, whereas Peyton needs 15 minutes.
- Rodgers needs only 20 minutes to produce an ounce of meat, whereas Peyton needs 60 minutes.

- Rodgers has an absolute advantage in the production of both meat and potatoes.

- Rodgers uses fewer inputs – in this case, labour time – to produce the same amount of both goods than Peyton the farmer.
- Rodgers the rancher is more productive than Peyton the farmer in the production of both meat and potatoes.
- NOTE: Even though Rodgers has an absolute advantage in both goods, because there exists comparative advantage, there are still gains to be made from trade, as we have seen.