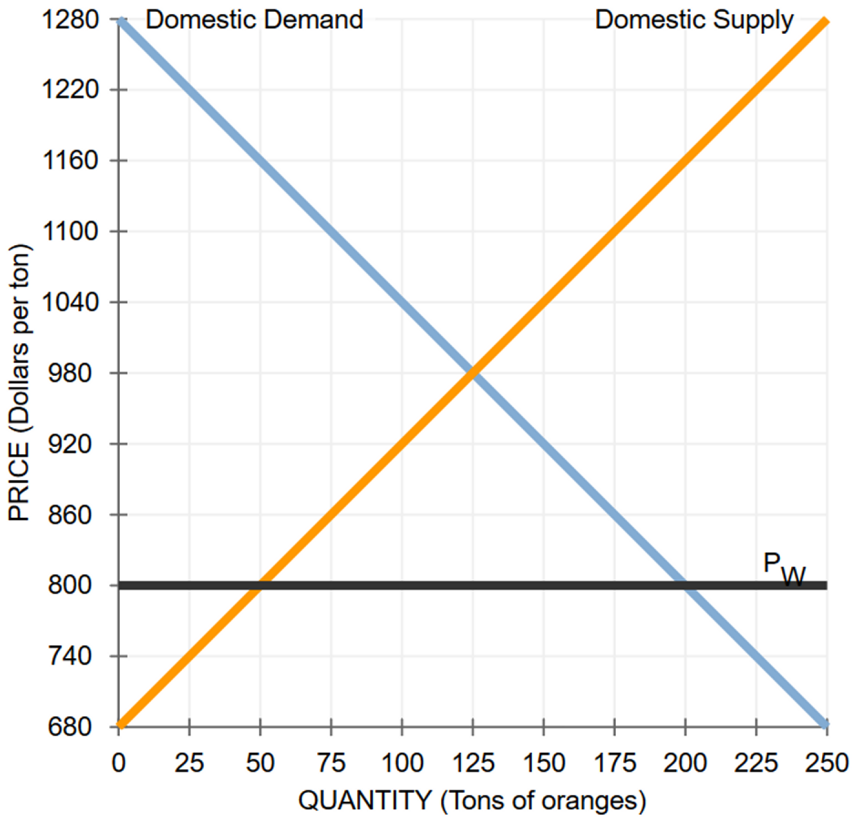
Problem 1

Part 1

Guatemala trades oranges. Demand for and supply of oranges in Guatemala do not affect the world price. The graph shows the oranges market in Guatemala. The world price is P_W = \$800 per ton. Shade consumer surplus and producer surplus when the economy is at free-trade equilibrium.



Part 2

(a) Under trade, Guatemala will import how many tons of oranges?

(b) If Guatemala imposes tariff of \$120 on each imported ton of oranges, what is the price consumers pay? And how many tons will Guatemala import?

(c) Graph the effects of the \$120 tariff.

Part 3

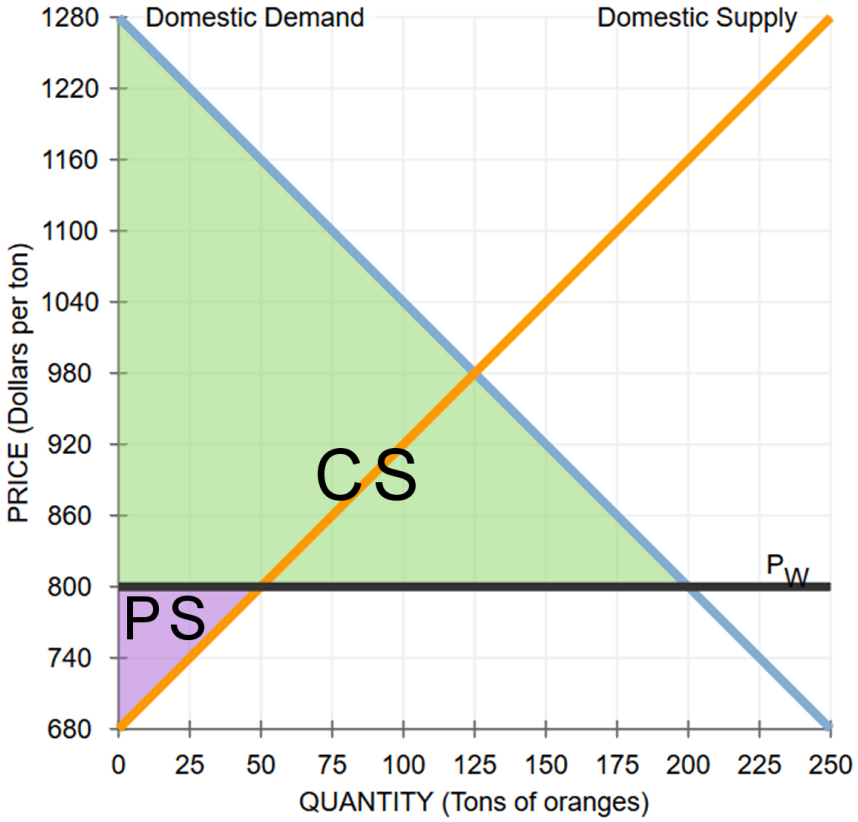
(a) Calculate the consumer surplus, producer surplus, and government revenue under free trade.

(b) Calculate the same things under the tariff.

(c) Does net welfare increase or decrease?

Problem 1 Answers

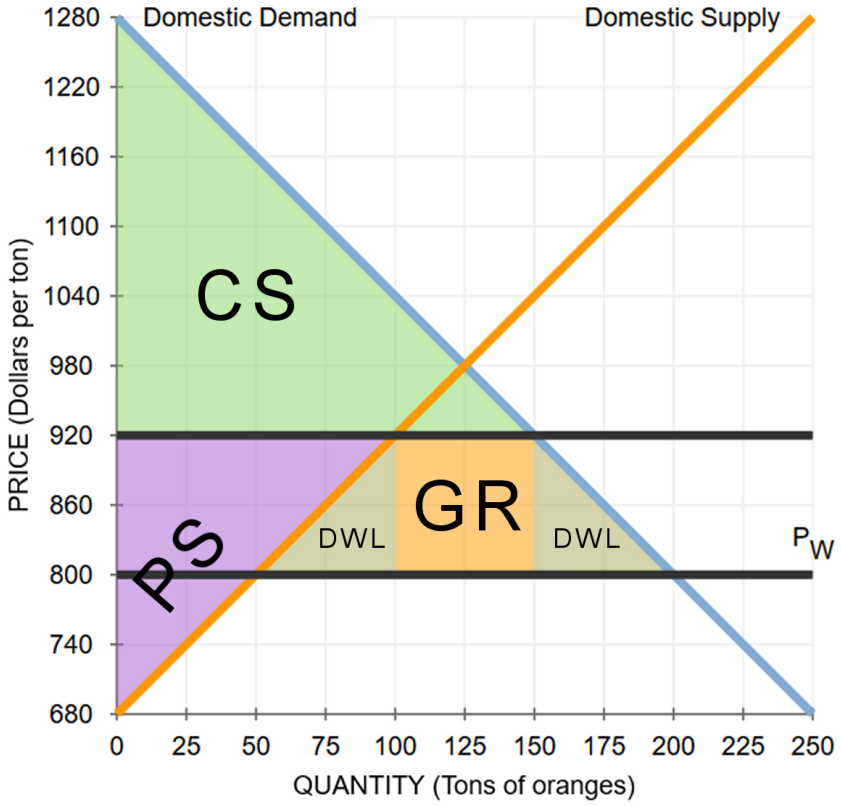
Part 1



Part 2

(a) At the price of \$800, they demand 200 tons but only supply 50 tons. So that means \$150 will be imported to satisfy the unmet demand.

(b) The tariff increases price to \$800+\$120 = \$920 per ton. Imports will be 150 − 100 = 50 tons.



Part 3

Free Trade

- CS is 1/2(200)(480) = \$48000.
- PS is 1/2(50)(120) = \$3000.

Tariff

- CS is 1/2(360)(\$150) = \$27000.
- PS is 1/2(100)(\$240) = \$12000.
- GR is 50 × \$120 = \$6000.

Welfare change is \$45000 − \$51000 = −\$6000.

Problem 2

Part 1

This economy produces pens and oranges.

	Pens	
Year	Price (Dollars per pen)	Quantity (Number of pens)
2012	1	125
2013	2	170
2014	4	150

	Oranges	
Year	Price (Dollars per orange)	Quantity (Number of oranges)
2012	1	200
2013	4	230
2014	4	170

For each year, compute the **nominal GDP, real GDP, and GDP deflator.**

Part 2

From 2013 to 2014, did nominal GDP increase or decrease? What about real GDP?

What was the inflation rate in 2014?

Part 3

Why is real GDP a more accurate measure of an economy's production than nominal GDP? (Choose one.)

(a) Real GDP is not influenced by price changes, but nominal GDP is.

(b) Real GDP measures the value of the goods and services an economy produces, but nominal GDP measures the value of the goods and services an economy consumes.

(c) Real GDP does not include the value of intermediate goods and services, but nominal GDP does.

Problem 2 Answers

Part 1

- For 2012, nominal GDP and real GDP are both

$$\$1 \times 125 + \$1 \times 200 = \$325.$$

- For 2013, nominal GDP is

$$\$2 \times 170 + \$4 \times 230 = \$1260,$$

real GDP is

$$\$1 \times 170 + \$1 \times 230 = \$400,$$

and therefore the GDP deflator is

$$100 \times \frac{1260}{400} = 315.$$

- Similar calculation shows that 2014 has \$1280 nominal GDP, \$320 real GDP, and a GDP deflator of 400.

Part 2

Nominal GDP **increased** from \$1260 to \$1280, whereas real GDP **decreased** from \$400 to \$320.

The rate of inflation is

$$100 \times \frac{\text{2014 GDP deflator} - \text{2013 GDP Deflator}}{\text{2013 GDP Deflator}}$$

$$100 \times \frac{400 - 315}{315}$$

$$= 27\%.$$

Part 3

Real GDP is the value of an economy's output after the impact of price changes has been removed. Nominal GDP is the value of an economy's output measured in current prices. Therefore, nominal GDP rises and falls with price changes and may provide a misleading indication of whether output is increasing or decreasing.

Problem 3

		2014		2015		2016	
	Quantity in Basket	Price (Dollars)	Cost (Dollars)	Price (Dollars)	Cost (Dollars)	Price (Dollars)	Cost (Dollars)
Notebooks	10	5	50	7		11	
Calculators	1	100	100	110		140	
Large coffees	150	1	150	1		1	
Energy drinks	50	2	100	3		4	
Textbooks	10	100	1,000	120		150	
Total cost			1,400				
Price index			100				

Part 1

The College Student Price Index (CSPI) is based on a typical college students annual purchases. Fill in the boxes above.

Part 2

(a) By how much did the CSPI increased by between 2014 and 2015?

(b) What about between 2015 and 2016?

Part 3

Why might this price index overstate inflation in the cost of going to college? (Choose one or more.)

(a) Energy drinks became increasingly popular on college campuses between 2014 and 2016 due to significant improvements in flavor, but this quality change is hard to measure.

(b) A new mobile device for personal computing became available for purchase.

(c) As the price of calculators rose, fewer students decided to buy them, opting instead to use the free calculators in their cell phones or on their computers.

Problem 3 Answers

		2014		2015		2016	
	Quantity in Basket	Price (Dollars)	Cost (Dollars)	Price (Dollars)	Cost (Dollars)	Price (Dollars)	Cost (Dollars)
Notebooks	10	5	50	7	70 ✓	11	110 ✓
Calculators	1	100	100	110	110 ✓	140	140 ✓
Large coffees	150	1	150	1	150 ✓	1	150 ✓
Energy drinks	50	2	100	3	150 ✓	4	200 ✓
Textbooks	10	100	1,000	120	1,200 ✓	150	1,500 ✓
Total cost			1,400		1,680 ✓		2,100 ✓
Price index			100		120 ✓		150 ✓

Part 2

Between 2014 and 2015 the CSPI increased by

$$100 \times \frac{120 - 100}{100} = 20\%.$$

Between 2015 and 2016 the CSPI increased by

$$100 \times \frac{150 - 120}{120} = 25\%.$$

Part 3

All choices are correct. This price index uses a fixed bundle of goods – that is, the same goods in the same amounts. So it does not account for new goods. It also does not account for an increase in the quality of a good, which we could think of as a "new" good. And it does not take into account that as the price of one good goes up, people will sometimes buy more of a competing good.