

- e) Complete the table below based on Amy's demand for cheesecakes which is $Q_d = 90 - 4P$.

P	Q_d	$\epsilon_p \left(= \frac{1}{\left \text{slope} \right } \left(\frac{P}{Q} \right) \right)$	TR (= P x Qd)
0	90	0	0
5			
10			
11.25			
15			
20			
22.5	0	undefined	0

When the elasticity $\epsilon_p > 1$: if the price increases, does the total revenue increase, decrease, or remain unchanged? _____.

When the elasticity $\epsilon_p < 1$: if the price increases, does the total revenue increase, decrease, or remain unchanged? _____.

II. Cross-price elasticity of Demand: Amy substitutes cheesecakes for ice cream sometimes, but Amy always drinks coffee when she has a piece of cheesecake.

- f) The price of ice cream decreases by 10%. As a result, Amy's demand for cheesecakes decreases from 11 cheesecakes to 9 cheesecakes. What is the cross-price elasticity of demand for Amy for these two goods? Hint: for this calculation just use the % change for price you have been given and then calculate the % change in the quantity demanded using the arc elasticity concept. $\epsilon^{\text{cheesecake}}_{p \text{ ice cream}} =$ _____. From Amy's perspective, is ice cream a substitute or a complement good for cheesecakes? _____. Why? Use the concept of cross-price elasticity of demand to explain your answer.

- g) The price of coffee increases by 20%. As a result, Amy's demand for cheesecakes decreases by 15%. What is the cross-price elasticity of demand for Amy for these two goods? $\epsilon^{\text{cheesecake}}_{p \text{ coffee}} =$ _____. From Amy's perspective, is coffee a substitute or a complement good for cheesecakes? _____. Why? Use the concept of cross-price elasticity of demand to explain your answer.

III. Income elasticity of Demand: Amy got a raise at work, and her income increases by 25%. As a result, her demand for cheesecakes increases by 15%. In the meanwhile, Amy's demand for jelly decreases by 10%.

- h) What is Amy's income elasticity of demand for cheesecakes? _____
 What does this income elasticity tell us about Amy's valuation of cheesecakes (are cheesecakes normal or inferior goods)? _____
- i) What is Amy's income elasticity of demand for jelly? _____
 What does this income elasticity tell us about Amy's valuation of jelly (is jelly a normal or an inferior good)? _____

Q2. Tariffs and Quotas

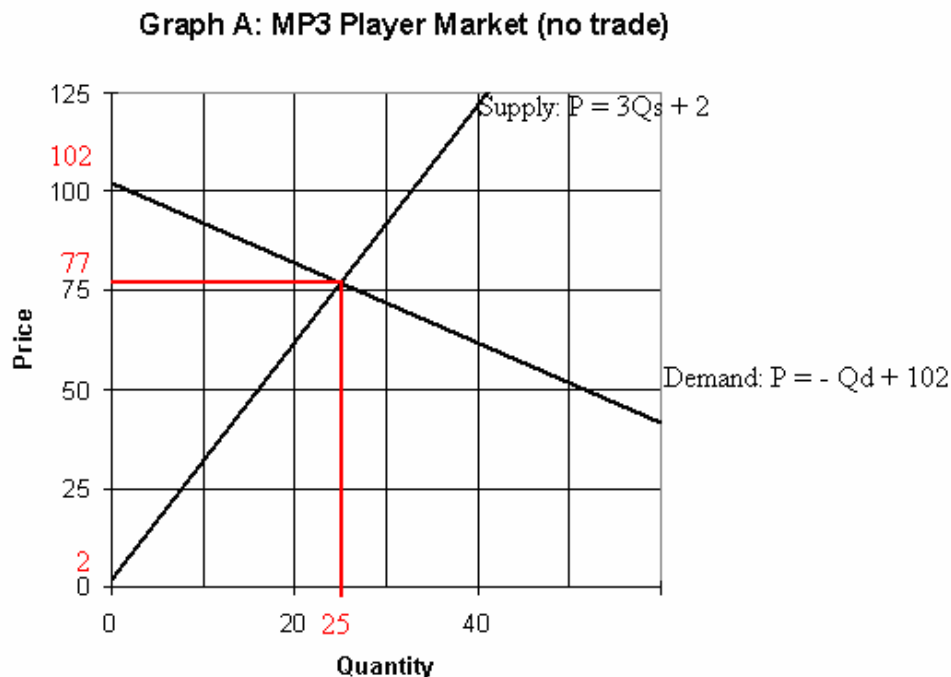
The domestic demand and domestic supply curves for MP3 players in a small closed economy are as follows:

Supply: $P = 3Q_s + 2$

Demand: $P = -Q_d + 102$

I. Closed Economy (no trade)

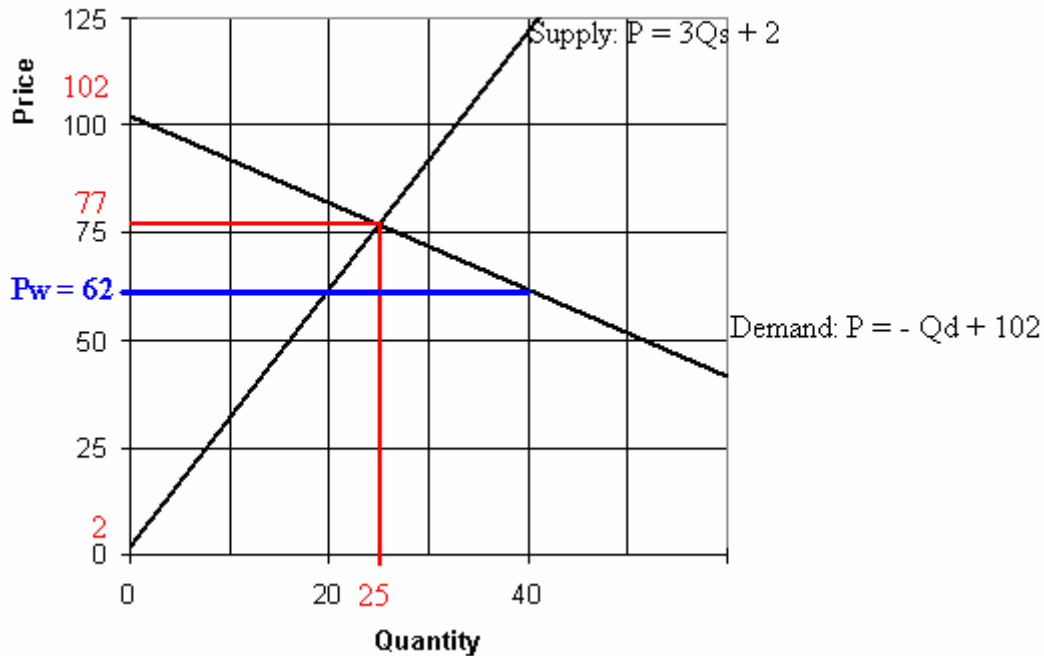
- a. Shade the area of consumer surplus (CS) and producer surplus (PS) of the economy without trade on Graph A below. Calculate the value of consumer surplus (CS) and producer surplus (PS) for the MP3 player market in this small closed economy. CS = _____, PS = _____.



II. Open Economy to Free Trade.

Use the following information to answer question a) ~ d). Suppose that this small closed economy is open to **free trade** and that the **world price is \$62** per MP3 player.

Graph B: MP3 Player Market (w/free trade)

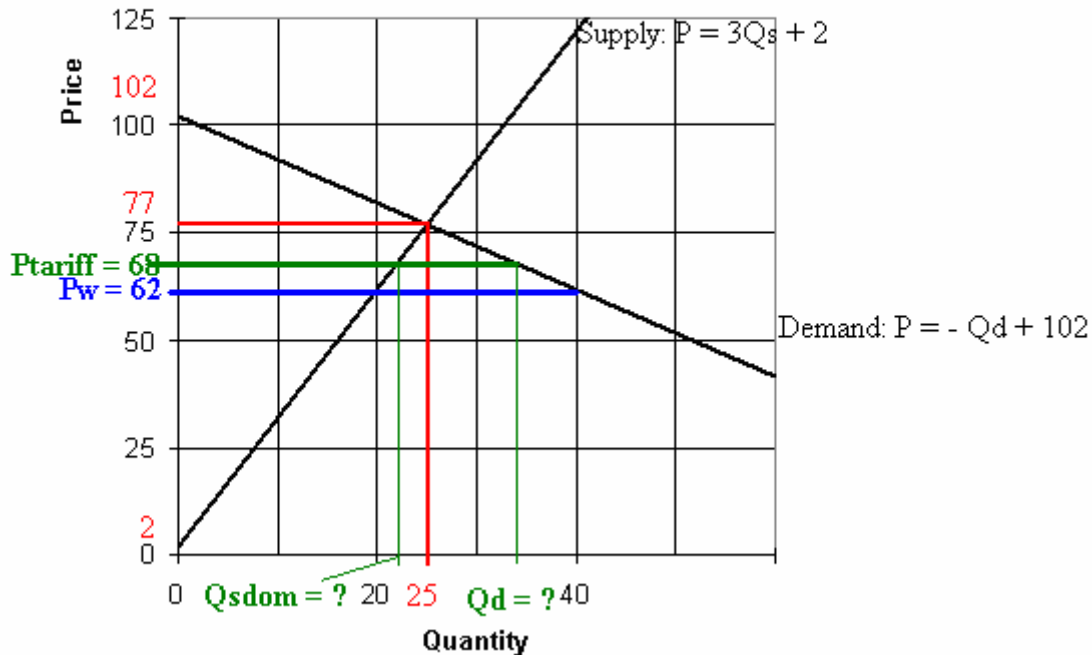


- What is the quantity supplied by domestic producers? _____
- What is the quantity demanded by domestic consumers? _____
- With free trade, how many MP3 players will the country import or export? _____
- Shade the area of the consumer surplus (CS) and producer surplus (PS) after the economy opens to free trade on Graph B above. Calculate the value of consumer surplus (CS) and producer surplus (PS). $CS_{trade} = \underline{\hspace{2cm}}$ and $PS_{trade} = \underline{\hspace{2cm}}$.

III. Open Economy to Trade (with Tariff)

Use the following information to answer question a) ~ i). Suppose that the government imposes a **tariff of \$6** on each imported MP3 player, and the **world price is \$62** per MP3 player.

Graph C: MP3 Player Market (w/Tariff)



- What is the quantity supplied by domestic producers after the introduction of the tariff? _____.
- What is the quantity demanded by domestic consumers after the introduction of the tariff? _____.
- How many MP3 players will the country import or export after the introduction of the tariff? _____.
- Shade the areas of the consumer surplus (CS), the producer surplus (PS), the total tariff revenue (TR), and the dead weight loss (DWL) after the introduction of tariffs on Graph C above.

e. Calculate the value of consumer surplus (CS) and the value of producer surplus (PS) for the MP3 player market after introducing the tariff. CS w/Tariff = _____ and PS w/Tariff = _____.

f. Calculate the value of total tariff revenue. Tariff Revenue = _____.

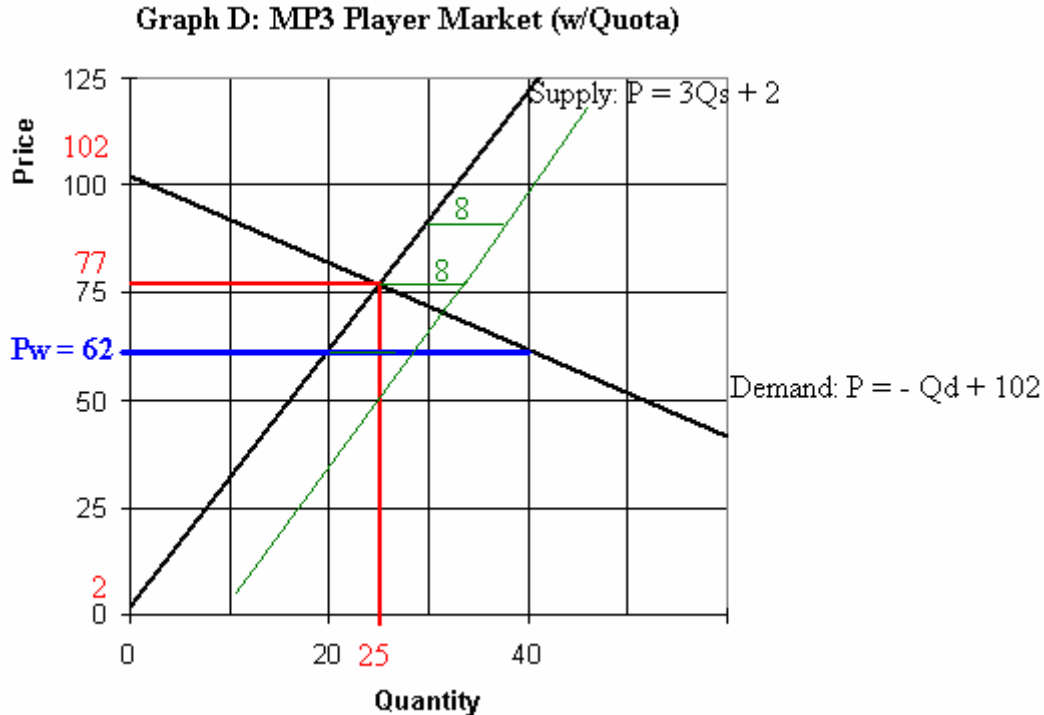
g. Calculate the dead weight loss. DWL = _____.

h. Rank the consumer surplus (CS) for the three options from the highest to the lowest:
Option 1: the MP3 player market without trade.
Option 2: the MP3 player market with free trade.
Option 3: the MP3 player market with the tariff.
_____.

i. Rank the producer surplus (PS) for the three options from the highest to the lowest:
Option 1: the MP3 player market without trade.
Option 2: the MP3 player market with free trade.
Option 3: the MP3 player market with the tariff.
_____.

IV. Open Economy to Trade (w/Quota)

Use the following information to answer question a) ~ j). Suppose that the government introduces a **quota allowing imports of 8 units** instead of introducing tariffs. Suppose that **the world price is \$62** per MP3 player.



- What is the quantity demanded by domestic consumers after the introduction of the quota? _____.
- What is the quantity supplied by domestic producers after the introduction of the quota? _____.
- How many MP3 players will the country import or export after the introduction of the quota? _____.
- Mark the new supply curve S^{Quota} with a **bold line** or a **colored line** on Graph D after the implementation of the quota. Shade the areas of the consumer surplus (CS), the producer surplus (PS), the license holder revenue (LHR), and the dead weight loss (DWL) after the introduction of the quota on Graph D above.

- e. Calculate the value of consumer surplus (CS) and the value of producer surplus (PS) for the MP3 player market after introducing the quota. CS w/Quota = _____ . PS w/Quota = _____ .
- f. Calculate the value of total license holder revenue. License Holder Revenue = _____ .
- g. Calculate the dead weight loss. DWL = _____ .
- h. Rank the consumer surplus (CS) for the three options from the highest to the lowest:
 Option 1: the MP3 player market without trade.
 Option 2: the MP3 player market with free trade.
 Option 3: the MP3 player market with the quota.
 _____ .
- i. Rank the producer surplus (PS) for the three options from the highest to the lowest:
 Option 1: the MP3 player market without trade.
 Option 2: the MP3 player market with free trade.
 Option 3: the MP3 player market with the quota.
 _____ .
- j. If the government wants to use the quota policy to attain the equilibrium quantity equal to the domestic quantity demanded under the \$6 tariff policy in g), what would be the quantity the government sets for the quota to achieve this goal?
 _____ .

Q3. Nominal vs. Real Prices: Use the following table to answer the next five questions.

The CPIs below are constructed using Year 1960 as the base year (BY = 1960).

Year	CPI (BY= 1960)	Nominal average salary
1980	200	\$10,000
1995	300	\$21,000
2008	400	\$30,000
2009	420	\$32,000

I. What will be the CPI measure in year 1980 if we alter the base year to 2008? _____

II. What was the increase in the general price level from 1980 to 2008? _____

If the average salary increased at the same rate as the increase in the general price level, given the nominal average salary was \$10,000 in 1980, what should the nominal average salary be in 2008? _____.

III. The nominal price of the minimum wage was \$6 per hour in 1980 as well as in 2008. What was the real price of the minimum wage per hour in 1980 using 2008 as the base year? _____

IV. Using the above table of information recalculate the CPI using 1980 as the base year (BY). Fill in your answers in the table below.

Year	CPI (BY = 1960)	CPI (BY = 1980)
1980	200	
1995	300	
2008	400	
2009	420	

V. Suppose your nominal salary is \$60,000 in 2008. You are about to meet with your boss and demand a raise. Given the forecast of the CPI in 2009 in the table above using BY = 1960, what's the minimum nominal salary you should ask for 2009 in order to maintain the same real wage/purchasing power you get in 2008?
