

Solutions to the Must-try Practice Questions for Test 1

1. The following table shows the production possibilities for Canada and the US, each of which produces two goods, guns and butter. Also reported is the time it takes for each country to produce the given quantities.

	GUNS	BUTTER	HOURS to PRODUCE
US	80	100	4
CANADA	200	300	10

a) Compute the opportunity costs of each good for each country.

US: $80 \text{ guns} = 100 \text{ butter}$
 $\Rightarrow 1 \text{ gun} = 1.2 \text{ butter}$
 $\Rightarrow 1 \text{ butter} = .8 \text{ guns}$

CANADA: $200 \text{ guns} = 300 \text{ butter}$
 $\Rightarrow 1 \text{ gun} = 1.5 \text{ butter}$
 $\Rightarrow 1 \text{ butter} = .66 \text{ guns}$

b) Does either country have a comparative advantage in the production of either good?

US has comparative advantage in guns (lower opportunity cost) and CANADA has comparative advantage in butter.

c) Does either country have an absolute advantage in the production of either good?

US: 4 hrs for 80 guns
 \Rightarrow 1 hr for 20 guns
 4 hrs for 100 butter
 \Rightarrow 1 hr for 25 butter

CANADA: 10 hrs for 200 guns
 \Rightarrow 1 hr for 20 guns
 10 hrs for 300 butter
 \Rightarrow 1 hr for 30 butter

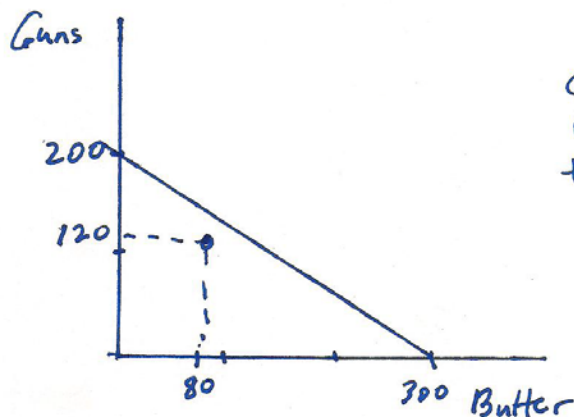
	QTY in 1 Hour	
	GUNS	BUTTER
US	20	25
CANADA	20	30

CANADA has an absolute advantage in butter; no one has abs. adv. in guns.

d) Should trade occur? Why or why not?

YES because there exists comparative advantage. US should specialize in guns, Canada should specialize in butter and they should trade with each other.

e) Suppose Canada was currently producing and consuming 80 guns and 120 butter. Is Canada productively efficient? (Hint: draw the PPF)



No - not on its PPF. Canada is not using all its resources, given its technology.

Aside: The equation of the PPF is

$$\text{Guns} = -\frac{2}{3} \text{Butter} + 200$$

and the point (80, 120) is not on the line.

2. The daily market demand for cell phones is $Q_d = 500 - 3P$ and supply is $Q_s = P - 20$.

a) What is equilibrium price and quantity?

$$\begin{aligned}\text{In equilibrium, } Q_d &= Q_s \\ 500 - 3P &= P - 20 \\ 520 &= 4P \\ P &= 130 \\ Q &= 110\end{aligned}$$

b) Suppose price changes from equilibrium price to \$100. What is the elasticity of demand?

$$\text{When } P = 100, Q_d = 500 - 3(100) = 200$$

$$P_1 = 130$$

$$P_2 = 100$$

$$Q_1 = 110$$

$$Q_2 = 200$$

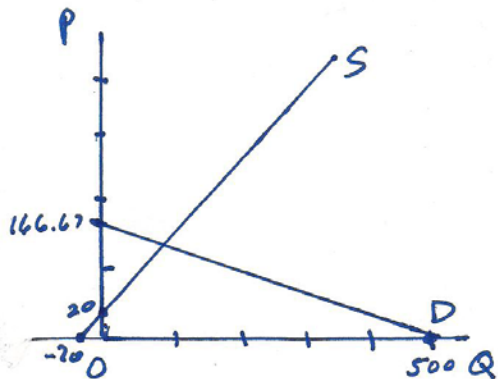
$$\begin{aligned}E_p &= \frac{(Q_2 - Q_1) / (Q_2 + Q_1) / 2}{(P_2 - P_1) / (P_2 + P_1) / 2} \\ &= \frac{(200 - 110) / 155}{(100 - 130) / 115} \\ &= - \frac{.58}{.26} = -2.23\end{aligned}$$

Drop the minus sign, so $E_p = 2.23$, elastic

c) Given your answer in b), if a firm was able to change its price, what would it want to do if it wanted to increase its total revenue?

It should decrease its price since demand is elastic.

d) Which is more elastic, demand or supply? (Hint: draw the curves accurately)



Supply is steeper, so demand is more elastic.

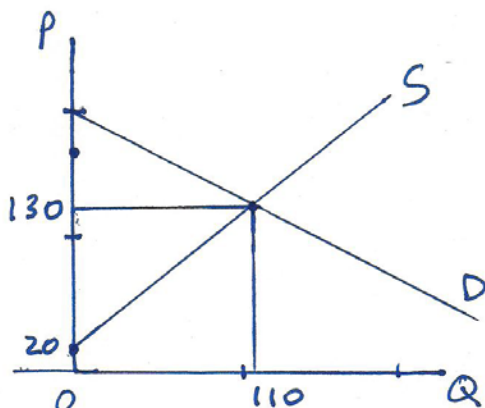
Alternatively, using inverse equations

$$\text{slope of } S = 1$$

$$\text{slope of } D = \frac{1}{3}$$

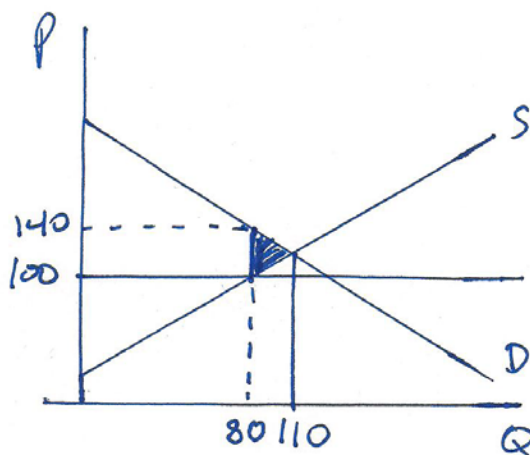
Same conclusion

e) What is the value of producer surplus when the market is in equilibrium?



$$PS = .5(110)(110) \\ = \$6050.00$$

f) If price is \$100, what is the deadweight loss in total surplus?



When $P = 100$,

$$Q_s = 100 - 20 \\ = 80$$

When $Q = 80$, consumers will pay:

$$Q_d = 500 - 3P$$

$$80 = 500 - 3P$$

$$P = 140$$

$$DWL = .5(40)(30) = \$600.00$$