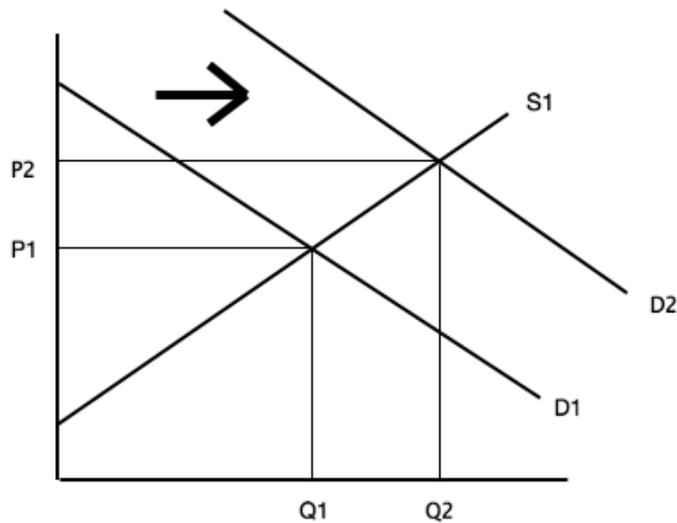




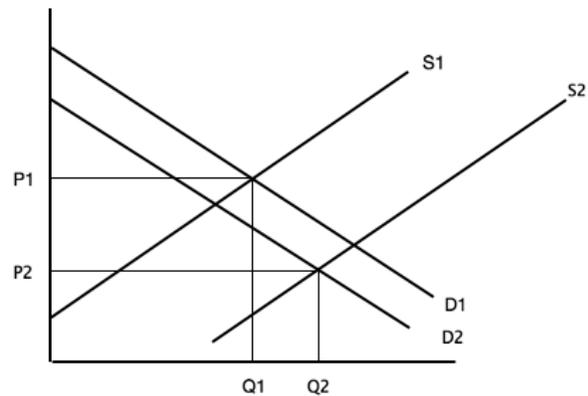
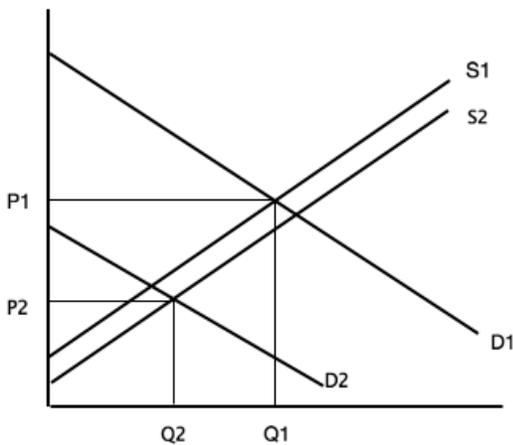
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ECON 102 McLeod – Exam 1 – Practice Exam Solutions

1. D – The study of how individuals and societies choose to use scarce resources is the best definition of economics.
2. D – A price floor set below equilibrium does not have an impact on the market. Price floors only have an impact if they are set above the equilibrium price. A price ceiling set below the equilibrium price will result in a shortage because demand will exceed supply when a price ceiling is set below equilibrium price.
3. C – It is the slope of the PPC
4. C – The demand for vaporizers will increase, and the price of vaporizers will rise.



5. B – Decrease; have an indeterminate effect. The new technology will shift the supply curve outward to the right. The new study on negative health consequences will shift the demand curve inward to the left. Since supply and demand are moving in opposite directions, we will only be able to determine the effect on price. We will not be able to determine the effect on quantity. We can illustrate this by drawing two graphs. In the first graph, there will be a big shift of the demand curve and a small shift of the supply curve. In the second graph, there will be a small shift of the demand curve and a big shift of the supply curve.



We can see that the equilibrium price has decreased in both graphs. However, quantity decreases in the first graph, and it increases in the second graph. Therefore, we cannot determine the effect on quantity.

6. D – 150 pens

Billy: Number of days to make 60 pencils =  $60 / 12 = 5$  days

Billy: Number of pens made in 5 days =  $5 \text{ days} * 30 = 150$  pens

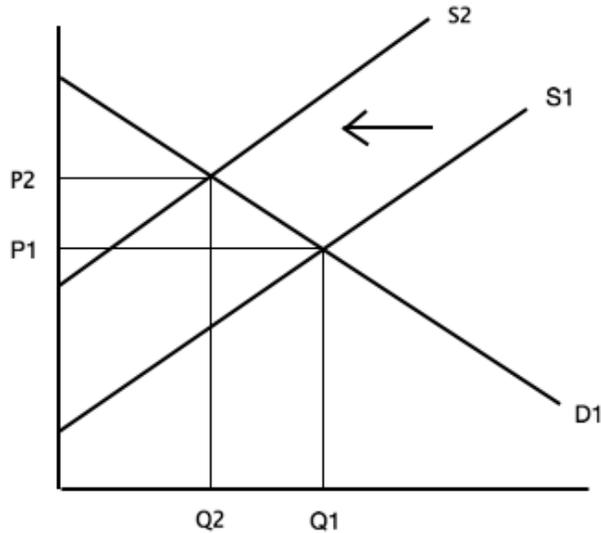
7. B – 90 pens

Sally: Number of days to make 60 pencils =  $60 / 30 = 2$  days

Sally: Number of pens made in 2 days =  $2 \text{ days} * 45 = 90$  pens

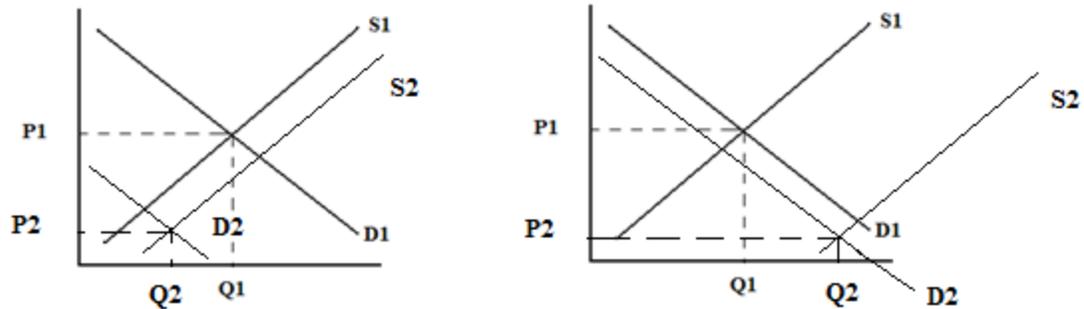
8. B – Sally has the lower opportunity cost of making pencils. Sally gives up making 90 pens to produce 60 pencils. Billy gives up making 150 pens to produce 60 pencils.

9. B – The supply of bagels will decrease, and the price of bagels will rise.



10. C – If you decide to go to college, you are giving up the full-time job you could be working. If there is little or no chance of you getting a job, the opportunity cost of going to college is lower than if you were giving up a \$300,000 a year job.
11. C – Decisions made by individuals and households.
12. B – Being able to see Phish for less than \$60 is a good deal.
13. B – This statement cannot be verified as true or false because it is an opinion.
14. B – There is an inverse relationship between price and quantity demanded.
15. A – That all other factors are held constant.
16. B – A shortage means that demand is greater than supply. Suppliers will raise price until supply and demand are equal.
17. C – The price of a substitute decreasing will shift demand for Sierra Nevada inward to the left. The improvement in technology will shift Sierra Nevada's supply curve outward to the right.

18. D – Remember to draw two graphs side by side for these problems, as we did in the exam review. You can see that in both graphs the equilibrium price decreases, but we cannot determine the effect on equilibrium quantity.



19. C – This is the point where supply and demand intersect.
20. C – At a price of \$4, the quantity supplied will be 800 units and the quantity demanded will be 400 units. This means supply will exceed demand by 400 units ( $800 - 400 = 400$ ).
21. A – At a price of \$1 the quantity supplied will be 200 units and the quantity demanded will be 1,000 units. This means that demand will exceed supply by 800 units ( $1,000 - 200 = 800$ ). When demand exceeds supply, it is called a shortage.
22. B – If hot dogs become more expensive, people are going to buy fewer hot dog buns because they are complementary goods.
23. D – The interest rate and the national money supply are macroeconomic issues that affect the economy as a whole.
24. B – A positive statement is a statement of fact while a normative statement involves opinion judgment.

25. E – None of the above. The first thing we need to do is set the supply and demand equations equal so we can find the equilibrium price and quantity.

$$Q_s = Q_d$$

$$P - 20 = 100 - 2P$$

$$3P = 120$$

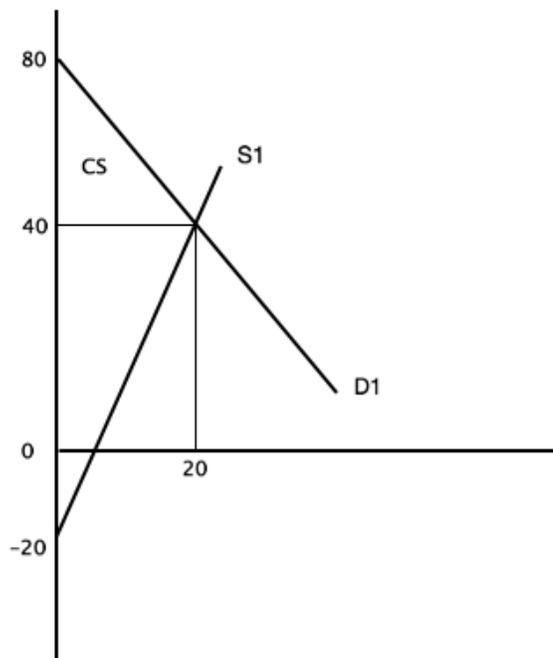
$$P = 40$$

Now that we have found the equilibrium price is \$40, we can plug that in as the value for P in the supply and demand equations to find the equilibrium quantity. Technically, we only need to plug into either the supply equation or the demand equation; however, we can check that our calculation for equilibrium price is correct by plugging into both equations. The equilibrium price is the price where quantity supplied and quantity demanded will be equal.

$$Q_d = 100 - 2(40) = 20$$

$$Q_s = 40 - 20 = 20$$

Now we need to create a graph. We need to use our supply and demand equations to determine the vertical intercepts of the supply and demand curves. Then we use our equilibrium price and quantity to complete the graph.



$$CS = (1/2)(\text{Base})(\text{Height})$$

$$CS = (1/2)(20)(80 - 40) = 400$$

26. A – Demand for a good becomes more elastic when the good becomes a larger portion of a consumer’s budget. Consumers are more sensitive to changes in price when a good makes up a larger portion of the consumer’s budget.

27. A – We know they are substitutes because the cross-price elasticity of demand is positive.

28. D – Elastic

$$\text{Point elasticity} = (1 / \text{Slope}) * (P / Q)$$

$$\text{Slope} = \text{Rise} / \text{Run} = -10 / 5 = -2$$

$$(1 / \text{Slope}) = 1 / -2 = -0.5$$

$$E = -0.5 * (\$50 / 5) = -5$$

29. B – 0

30. D – Falls, inelastic

31. E – None of the above (Price decreased by 5%)

$$E_p = \frac{\% \Delta Qd}{\% \Delta P}$$

$$-1.2 = 6\% / \% \Delta P$$

$$\% \Delta P = -5\%$$

32. C – Unitary elastic

$$\text{Point elasticity} = (1 / \text{Slope}) * (P / Q)$$

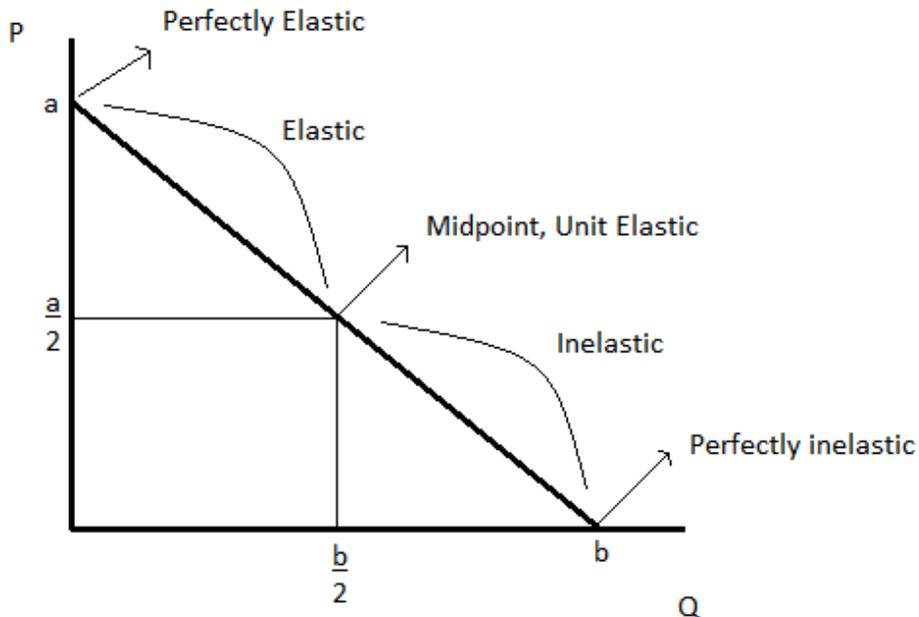
$$\text{Slope} = \text{Rise} / \text{Run} = -10 / 5 = -2$$

$$(1 / \text{Slope}) = 1 / -2 = -0.5$$

$$E = -0.5 * (\$30 / 15) = -1$$

33. B – A horizontal line

34. D – Price elasticity of demand becomes more elastic as price increases. We can see this illustrated in the graph below.



35. A – Become more elastic. Consumers are more sensitive to price changes as they are given additional time to adjust to the change in price.
36. D – DVDs are inferior goods because they have a negative income elasticity. iPads are normal goods because they have a positive income elasticity. We would need to know the cross-price elasticity of demand to be able to determine if the goods are substitutes or complements. We are only given the income elasticity of demand for this problem.

37. B – Inelastic

$$\text{Point elasticity} = (1 / \text{Slope}) * (P / Q)$$

$$\text{Slope} = \text{Rise} / \text{Run} = -10 / 5 = -2$$

$$(1 / \text{Slope}) = 1 / -2 = -0.5$$

$$E = -0.5 * (\$10 / 25) = -0.2$$

38. B – The demand for the internet ads is elastic in this price range because the percentage increase in quantity demanded was greater than the percentage decrease in price.

39. C – You know the goods are substitutes because the cross price elasticity of demand is positive.

$$E_{Q_X, P_Y} = \frac{\% \Delta Qd \text{ for Strawberry } D}{\% \Delta P \text{ for Sour } D} = \frac{30\%}{40\%} = 0.75$$

40. B – Demand is perfectly inelastic

41. D – Jello is an inferior good so income elasticity of demand will be negative.

### **Short Answer Problems**

1. California because California can grow 24 units of marijuana per acre, and Oregon can only grow 8 units per acre.
2. California because California can grow 8 units of grapes per acre, and Oregon can only grow 6 units per acre.
3. California because California has the lower opportunity cost of growing marijuana. California only gives up 0.33 units of grapes for each unit of marijuana. Oregon gives up 0.75 units of grapes for each unit of marijuana.

California: OC marijuana = Loss in grapes / Gain in marijuana =  $8 / 24 = 0.33$  grapes

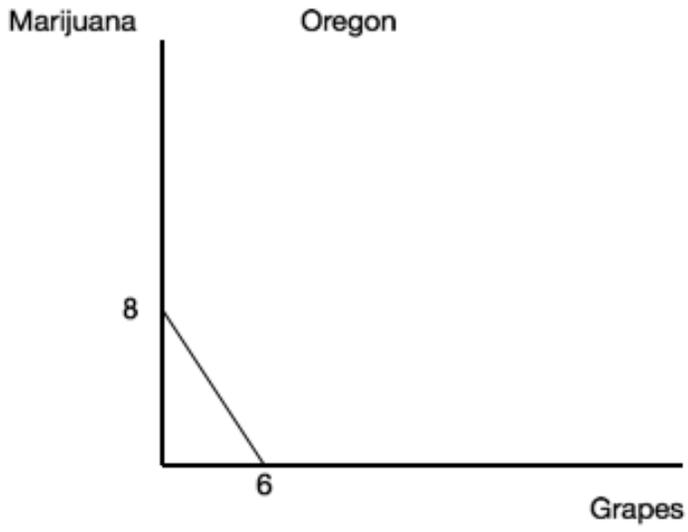
Oregon: OC marijuana = Loss in grapes / Gain in marijuana =  $6 / 8 = 0.75$  grapes

4. Oregon because Oregon has the lower opportunity cost of growing grapes. Oregon only gives up 1.33 units of marijuana for each unit of grapes. California gives up 3 units of marijuana for each unit of grapes.

California: OC grapes = Loss in marijuana / Gain in grapes =  $24 / 8 = 3$  marijuana

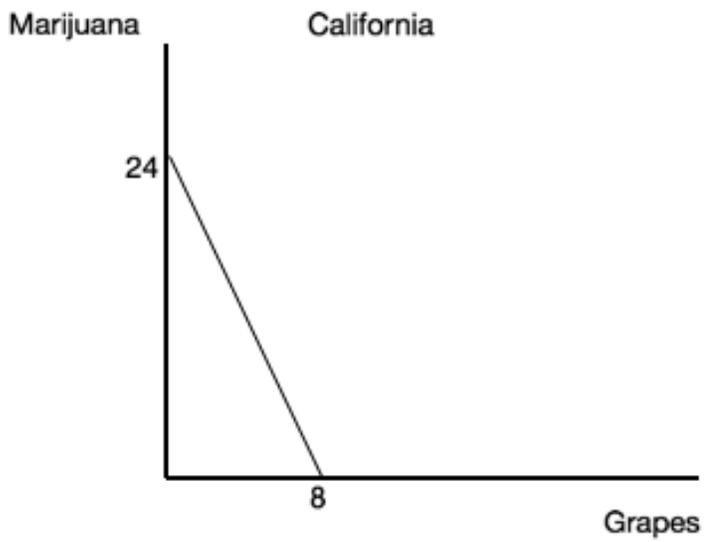
Oregon: OC grapes = Loss in marijuana / Gain in grapes =  $8 / 6 = 1.33$  marijuana

5. -1.33



$$\text{MRT} = \text{Rise} / \text{Run} = -8 \text{ marijuana} / 6 \text{ grapes} = -1.33$$

6. -3



$$\text{MRT} = \text{Rise} / \text{Run} = -24 \text{ marijuana} / 8 \text{ grapes} = -3$$

7. 1,160 units of grapes

California has a comparative advantage in growing marijuana so California will grow all the marijuana. California can then use any leftover acreage to grow grapes. Oregon will use all 100 acres to produce grapes.

CA acres needed for 720 units of marijuana =  $720 \text{ units} / 24 \text{ units per acre} = 30 \text{ acres}$

This will leave California with 70 acres ( $100 - 30 = 70$ ) to grow grapes.

California grapes =  $70 \text{ acres} \times 8 \text{ units per acre} = 560 \text{ units}$

Oregon grapes =  $100 \text{ acres} \times 6 \text{ units per acre} = 600 \text{ units}$

Total grapes =  $560 \text{ units} + 600 \text{ units} = 1,160 \text{ units}$

8. To find the equilibrium price and quantity, you need to set  $Q_d = Q_s$ .

$$400 - 10P = 100 + 20P$$

$$300 = 30P$$

$$P = 10$$

Now you can plug  $P$  back into either the  $Q_d$  or  $Q_s$  equation to find the equilibrium quantity. Since \$10 is the price that makes  $Q_d$  and  $Q_s$  equal, it doesn't matter which equation you plug \$10 back into. However, a good way to check that you got this problem correct is to plug the value you found for  $P$  back into both equations. If both equations give you the same  $Q$ , it is very likely you have the correct answer.

$$Q_d = 400 - 10(10) = 300$$

$$Q_s = 100 + 20(10) = 300$$

Will there be a shortage or a surplus if the price of this good is \$7? Will the price of the good rise or fall over time?

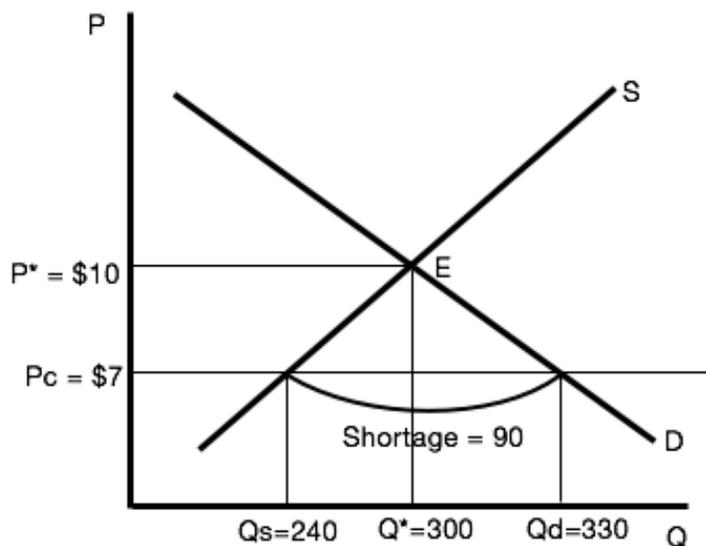
$$Q_d = 400 - 10(P)$$

$$Q_d = 400 - 10(7) = 330$$

$$Q_s = 100 + 20(P)$$

$$Q_s = 100 + 20(7) = 240$$

There is a shortage of 90 units ( $330 - 240 = 90$ ) because  $Q_d$  is greater than  $Q_s$ . We expect the price of the good to rise over time.

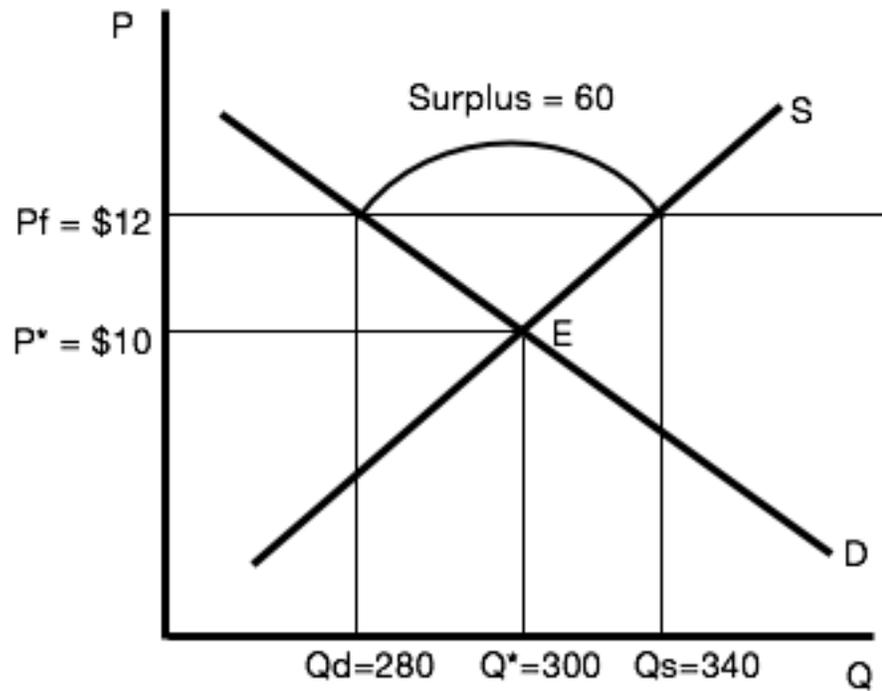


Will there be a shortage or a surplus if the price of this good is \$12? Will the price of the good rise or fall over time?

$$Q_d = 400 - 10(12) = 280$$

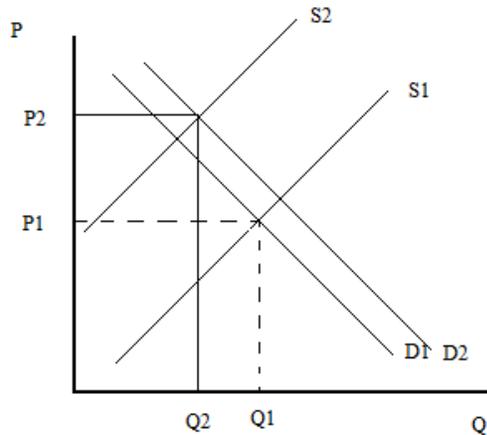
$$Q_s = 100 + 20(12) = 340$$

There is a surplus of 60 units ( $340 - 280 = 60$ ) because  $Q_s$  is greater than  $Q_d$ . We expect the price of the good to fall over time.

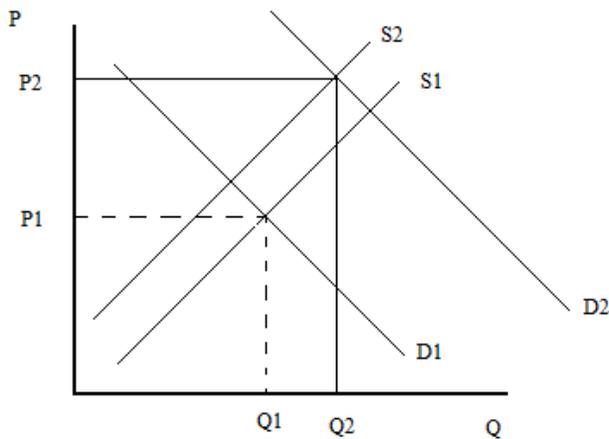


9. Price – Increase; Quantity – Cannot be determined

The trick to solving these problems is drawing two graphs. On the first graph, you shift demand a little bit and supply a lot. When you do this, you can see that Price is increasing while Quantity is decreasing.

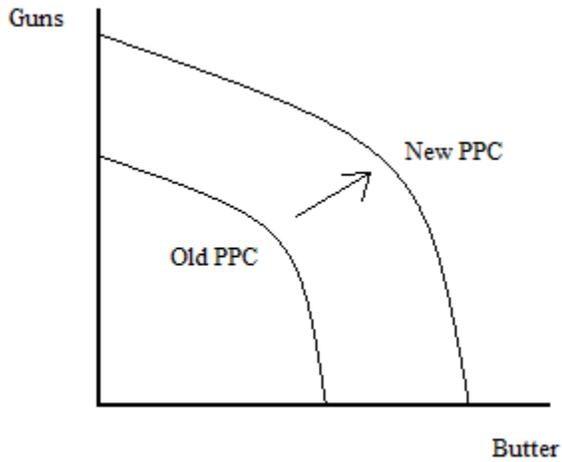


On the second graph, you shift demand a lot and quantity only a little. On this graph, you can see that both price and quantity are increasing.



Since price is increasing on both graphs, you know that price will increase. Since quantity decreases in the first graph and increases in the second graph, quantity cannot be determined based on the information you have been given.

10. The improvement in technology will cause the PPC to shift outward:



11. Opportunity cost of moving from point C to D = 80 sticks of butter

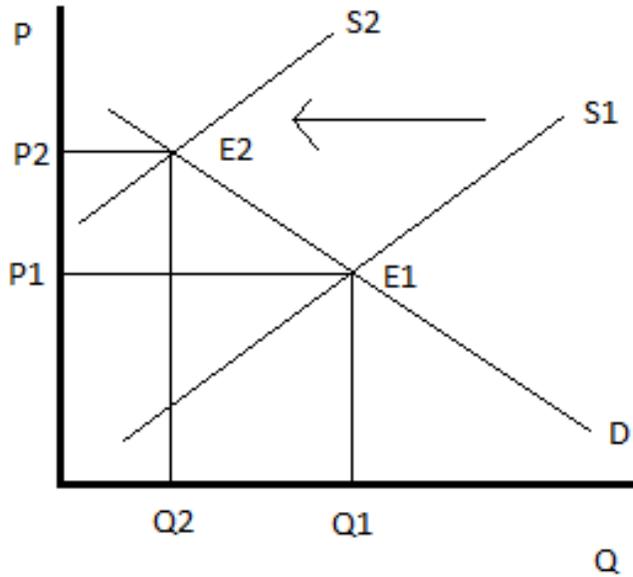
Make sure that you read this question carefully. We are moving from point C to point B. This means that we will need to give up 80 sticks of butter to produce 60 more guns. Since we are giving up 80 sticks of butter to move from point C to point B, the opportunity cost of the move is 80 sticks of butter.

Note that if the question had asked what the opportunity cost of moving from point B to point C was, the answer would have been 60 guns because you are giving up making 60 guns to move from B to C. It is important to pay attention to which way you are moving along the PPC.

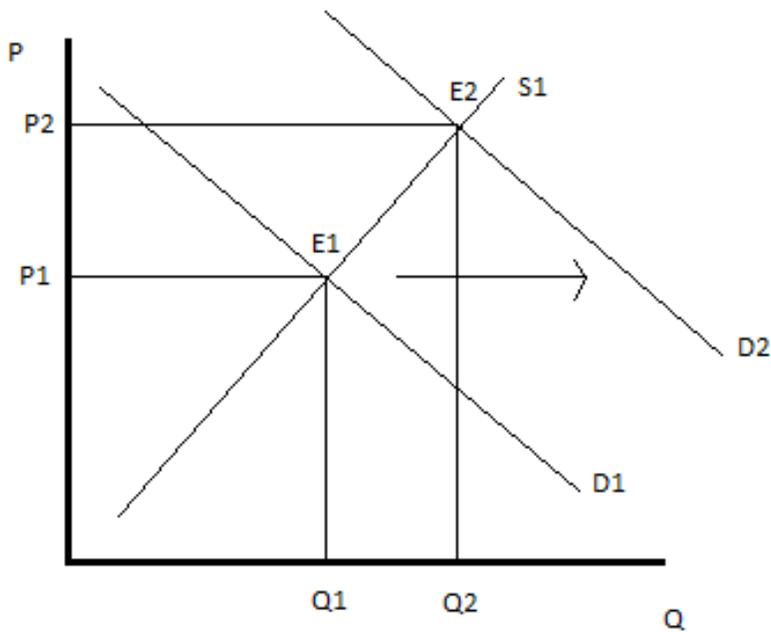
Inefficient point = Point E

Unattainable point = Point F

12. A change in the cost of inputs used to make a product will shift the supply curve inward to the left. Make sure to show the shift with an arrow pointing left (not up or down). Shifts of the supply and demand curves are always shown as right or left shifts.



13. An increase in the income level of the general population will cause the demand curve to shift outward to the right.



14. \$9,750

$$P = \$15$$

$$Q_d = 800 - 10(\$15) = 650$$

$$TR = \$15 * 650 = \$9,750$$

15. -0.119 (inelastic)

$$Q_1 = 800 - 10(\$8) = 720$$

$$Q_2 = 800 - 10(\$9) = 710$$

$$E_p = \frac{Q_{d2} - Q_{d1}}{(Q_{d1} + Q_{d2})/2} \div \frac{P_2 - P_1}{(P_1 + P_2)/2} = \frac{710 - 720}{(720 + 710)/2} \div \frac{\$9 - \$8}{(\$8 + \$9)/2} = \frac{-10}{715} \div \frac{\$1}{\$8.50} = -0.119$$

Alternatively...

$$E_p = \frac{Q_{d2} - Q_{d1}}{Q_{d1} + Q_{d2}} \div \frac{P_2 - P_1}{P_1 + P_2} = \frac{710 - 720}{(720 + 710)} \div \frac{\$9 - \$8}{(\$8 + \$9)} = \frac{-10}{1,430} \div \frac{\$1}{\$17} = -0.119$$

Note that both versions of the midpoint formula will give you the same answer. Use whichever form the equation you find easiest to remember.

16. -2.2 (elastic)

$$P = \$55$$

$$Q_d = 800 - 10(\$55) = 250$$

**Point elasticity = Coefficient for P \* (P / Q)**

$$E = -10 * (P / Q)$$

$$E = -10 * (\$55 / 250)$$

$$E = -2.2$$

17. Demand is elastic so the firm will need to decrease price to increase revenue.

18. \$40

A firm's revenue is maximized when its elasticity is unit elastic (-1). We will use -1 as the value for elasticity, and we will need to substitute the demand function in for Qd so we only have one variable in our equation. Then we do algebra and solve for P.

**Coefficient for P \* (P / Q) = Point elasticity**

$$-10 * (P / Q) = -1$$

$$-10 * (P / (800 - 10P)) = -1$$

$$-10P / (800 - 10P) = -1$$

$$-10P = -800 + 10P$$

$$800 = 20P$$

$$P = \$40$$