1. The town of Whooville wants to increase the amount of affordable housing in town. Assume that housing is a perfectly competitive industry in Whooville, and that firms have increasing marginal costs. The mayoral candidates propose different policies.

Candidate Lou wants the city to build a new housing complex. Draw graphs showing the effect of a new complex on the price and quantity of housing in the **short run** and in the **long run**.

Candidate Max wants to give construction companies a tax break and reduce the amount of taxes paid on each apartment unit. Candidate Lou opposes this plan, saying, “It will only line the pockets of the big business housing industry.” Draw graphs showing the effect of a tax break per apartment on the price and quantity of housing in the **short run** and in the **long run**.

**Lou’s policy:**

*There is no change to firm’s costs in the short or in the long run. In the Industry, in the short run, the industry supply curve shifts out because there is one new complex. This would lead to a lower price in the short run, causing private firms to reduce their short run quantity. Notice that the new price is below firm’s average costs, so that private firms are no longer making a profit. This would lead some firm to exit the industry. In the long run, because costs have not changed for private firms, the long run average costs is unchanged and therefore the long run supply curve does not change. All that has changed is that now the industry has one complex run by the government and one fewer complex run by a private firm.*

**Max’s policy:**

*The per-unit tax break reduces variable costs and marginal costs for each firm. As a result, the short run industry supply curve shifts out, leading to lower prices and a higher quantity. Remember that the lower price here does not mean negative profits, because firms have lower costs. In the long run, firm’s average cost curves are lower, resulting in a lower break even price. The industry price in the long run is lower and the quantity is higher.*

*This question should help you realize that the intentions of a policy are not always the same as the actual effects!!*

2. When comparing the markets for prostitution in Nevada and New Jersey, there are two important differences: (1) Prostitutes in New Jersey face higher costs because of government efforts to prosecute them; and (2) customers in New Jersey face higher risks of contracting diseases from prostitutes, because the illegal nature of the business makes reliable information about a prostitute’s health harder to obtain. In answering this question, assume that there are no factors, other than those mentioned
above, that would cause the supply and demand of prostitutes to differ between the two states.

a. Given these facts would you expect the price of prostitution services to be higher or lower in New Jersey compared to Nevada?
b. Which state would have the higher amount of services consumed?
c. Draw a demand and supply diagram to support your answer.

Higher costs to prostitutes means supply in NJ is shifted back, higher risk of disease means demand is shifted back in NJ. We cannot predict the net effect on the price, however, it is clear that the quantity traded in NV is higher than in NJ.

3. Water is essential for life, but practically free. Diamonds are inessential for life but very expensive. Does this mean that society values diamonds more than water? Use separate demand and supply diagrams for each good to show why prices are what we observe and to show the total societal value of water and of diamonds.

You should have a demand curve for water that is much higher than a demand curve for diamonds, but a supply curve for diamonds that is much further in than the supply curve for water. This will lead to a high P for diamonds and a low P for water. The total social value for diamonds and for water is the area under the demand curve up to the equilibrium Q—the area for water is much greater. The price reflects how scarce diamonds are, not social value.
4. Suppose the demand curve for workers is $P_D = 125 - \frac{1}{4} Q_D$

The supply function for workers is $P_s = \frac{1}{6} Q_s + 10$

Graph the above functions.

What is the equilibrium price and the equilibrium traded quantity in the labor market?

$Q = 276$
$P = 56$

At this equilibrium, what is total economic surplus, producer surplus and consumer surplus?

$CS = \frac{1}{2}(125 - 56)(276) = 9522$
$PS = \frac{1}{2}(56 - 10)(276) = 6348$

Total surplus = $9522 + 6348 = 15,870$