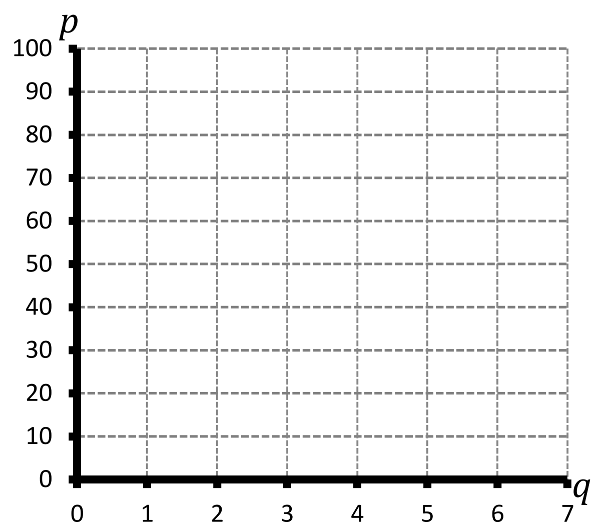
FIRST TEST. ECON 100C, SPRING 2014.   NAME: ___________________________

Fill in the blanks, and answer in the spaces provided. Show your work.

1. Demand (discrete). The table below gives Ariel's total benefit from sweatshirts in dollar amounts (TB), given the number of sweatshirts she buys (q). The price of sweatshirts is \$25.

q	TB	MB
1	100	
2	175	
3	225	
4	255	
5	270	
6	275	
7	275	

TE	CS



a) Fill in the MB column with Ariel's marginal benefit from each last sweatshirt.

b) Fill in the TE (total expenditure) and CS (consumer surplus) column with Ariel's total expenditure on sweatshirts and her consumer surplus.

c) On the blank graph above, draw Ariel's demand 'curve' (actually more of a staircase shape), and a line representing the price. Shade the area that represents Ariel's consumer surplus given the optimal quantity.

d) Using the information above, describe two distinct ways of determining the quantity of sweatshirts that is optimal (surplus-maximizing) for Ariel to purchase, and explain why they are equivalent.

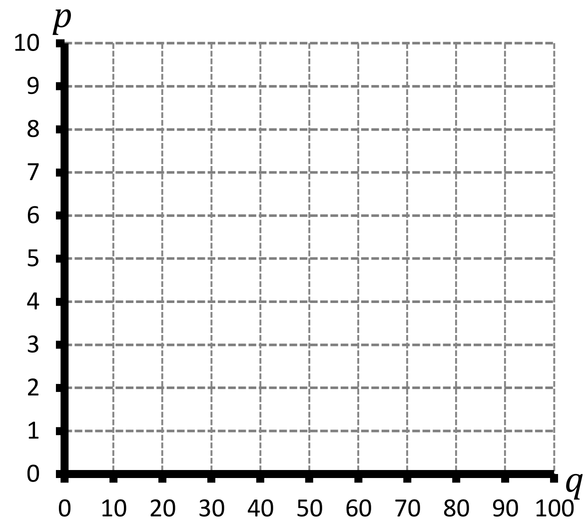
2. Supply (continuous). Nicole makes money by growing peanuts. Her marginal cost of growing peanuts is given by the function $MC = 3 + \frac{1}{10}q$, where q is the quantity of peanuts she grows.

a) Nicole's supply function is $q_s =$ ________ + ________p

For the rest of the problem, suppose that the price of peanuts is $p = 8$.

b) At this price, Nicole's optimal quantity is $q^* =$ ________, and her resulting producer surplus is $PS =$ ________.

c) On the blank graph to the right, draw Nicole's supply curve, and a line representing the price. Shade in the area that represents Nicole's producer surplus given her optimal quantity.



d) Explain as clearly as possible how you found the optimal quantity in part (b). That is, what is the initial equation you used, and why does it imply that producer surplus is maximized?

3. Market demand. Suppose that, in the market for mango chutney, there are 100 consumers, each with the same marginal benefit function, $MB_i = 12 - 4q$.

a) Each individual consumer has the demand function $q_{d_i} =$ ______ − ______p.

b) Market demand is given by the function $Q_d =$ ______ − ______p.

4. Elasticity. Suppose that the market demand for salsa is given by the function $Q_d = 800 - 10p$. Find ε_d, the price elasticity of demand for salsa, at a price of $p = 30$.

5. Excise tax. Demand and supply in the market for sarsaparilla (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 30 - \frac{3}{10}q$ and the marginal cost function $MC = 10 + \frac{1}{10}q$, where q is the quantity of sarsaparilla.

For parts (a) and (b), suppose that there is no tax.

a) In the market equilibrium, the price is $p^* =$_______, and the quantity is $q^* =$_______.

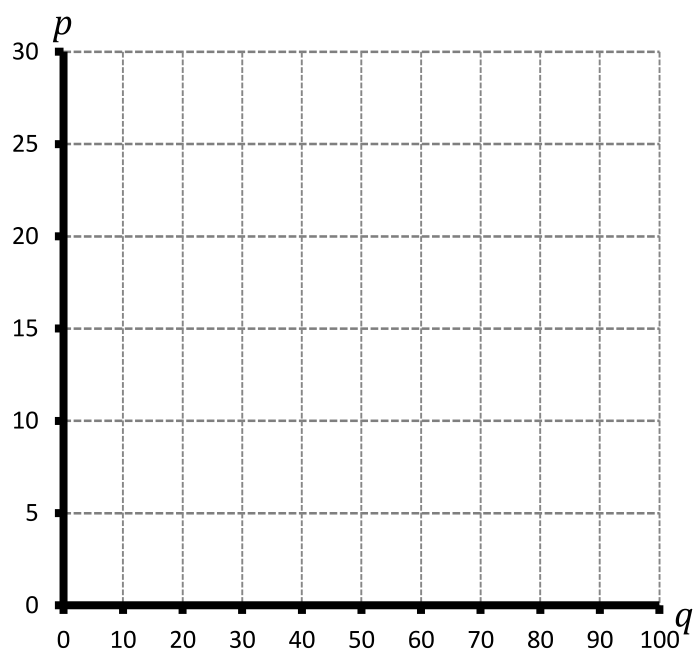
b) Consumer surplus is $CS =$_______, producer surplus is $PS =$_______, and total economic surplus is $TES =$_______.

For parts (c) through (f), suppose that there is a tax of $8 per unit.

c) In the market equilibrium, the price is $p^* =$_______, and the quantity is $q^* =$_______.

d) Consumer surplus is $CS =$_______, producer surplus is $PS =$_______, government revenue is $GR =$_______, total economic surplus is $TES =$_______, and deadweight loss is $DWL =$_______.

e) On the blank graph to the right, draw the demand curve, supply curve, and the supply curve with the tax. Use different colors or patterns to shade in consumer surplus, producer surplus, government revenue, and deadweight loss.



f) Explain as clearly as possible how you found the equilibrium with the tax in part (c). That is, what is the initial equation you used, and why does this equation imply that the market is in equilibrium?

6. Price floor. Demand and supply in the market for hummus (which is perfectly competitive, etc.) are determined by the marginal benefit function $MB = 80 - 2q$ and the marginal cost function $MC = 20 + q$, where q is the quantity of hummus.

For parts (a) and (b), suppose that there is no price control.

a) In the market equilibrium, the price is $p^* =$_______, and the quantity is $q^* =$_______.

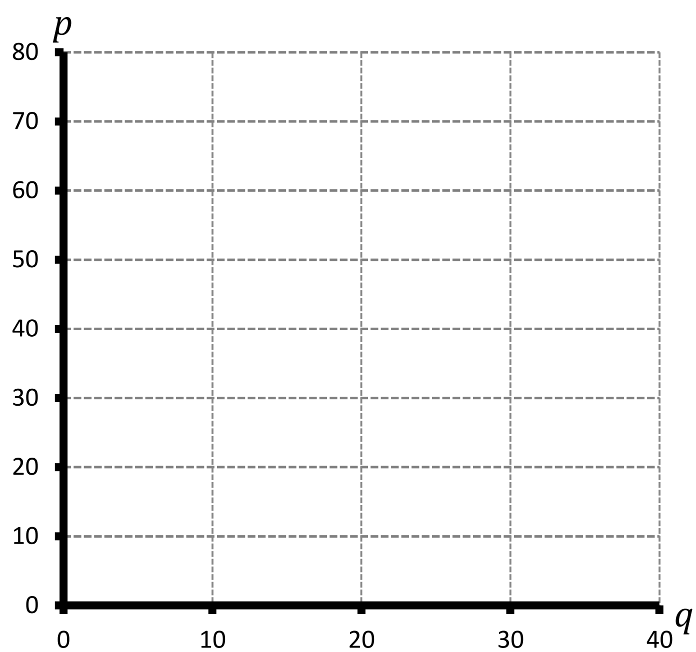
b) Consumer surplus is $CS =$_______, producer surplus is $PS =$_______, and total economic surplus is $TES =$_______.

For parts (c) through (f), suppose that there is a price floor of $60 per unit.

c) In the market equilibrium, the price is $p^* =$_______, and the quantity is $q^* =$_______.

d) Consumer surplus is $CS =$_______, producer surplus is $PS =$_______, total economic surplus is $TES =$_______, and deadweight loss is $DWL =$_______.

e) On the blank graph to the right, draw the demand curve, supply curve, and the price floor. Use different colors or patterns to shade in consumer surplus, producer surplus, and deadweight loss.



f) Explain as clearly as possible why total economic surplus decreases as a result of the price floor.

g) Why might a price floor be worthwhile despite its reduction of total economic surplus?