Practice problems for Price Ceilings, Price Floors and Excise Taxes

Dr. Amy McCormick Diduch

1. Price Ceilings

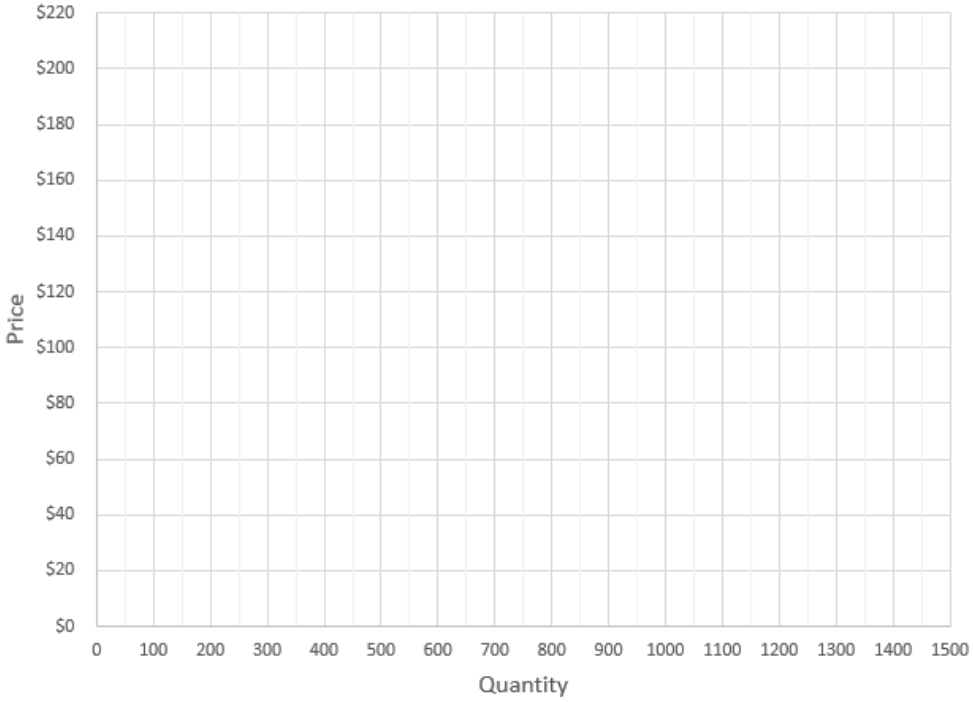
Many people believe that cable television is a necessity and that cable rates are too high. Suppose the market for cable television is competitive (a big "if"[1]) and the supply and demand schedules are as follows:

Price per month	Quantity supplied	Quantity demanded
$200	1200	750
$180	1150	850
$160	1100	950
$140	1050	1050
$120	1000	1150
$100	950	1250
$80	900	1350

a. What are the market equilibrium price and quantity of cable? P = _____, Q = _____

b. If the local government places a price ceiling of $100 on cable television, what is quantity supplied? _____. What is quantity demanded? _____. How large is the excess demand for cable? _____

c. Plot the supply and demand curves and indicate the price ceiling, the impact on quantity supplied, the impact on quantity demanded and the amount of excess demand.



Suppose the price ceiling on cable television had been set at $160. Would this create excess demand? Explain.

[1] In fact, cable television markets are highly *uncompetitive* and charge prices far above the "competitive" level. With this market structure, a binding price ceiling may not reduce the quantity supplied and might even increase it.

2. Price Floors

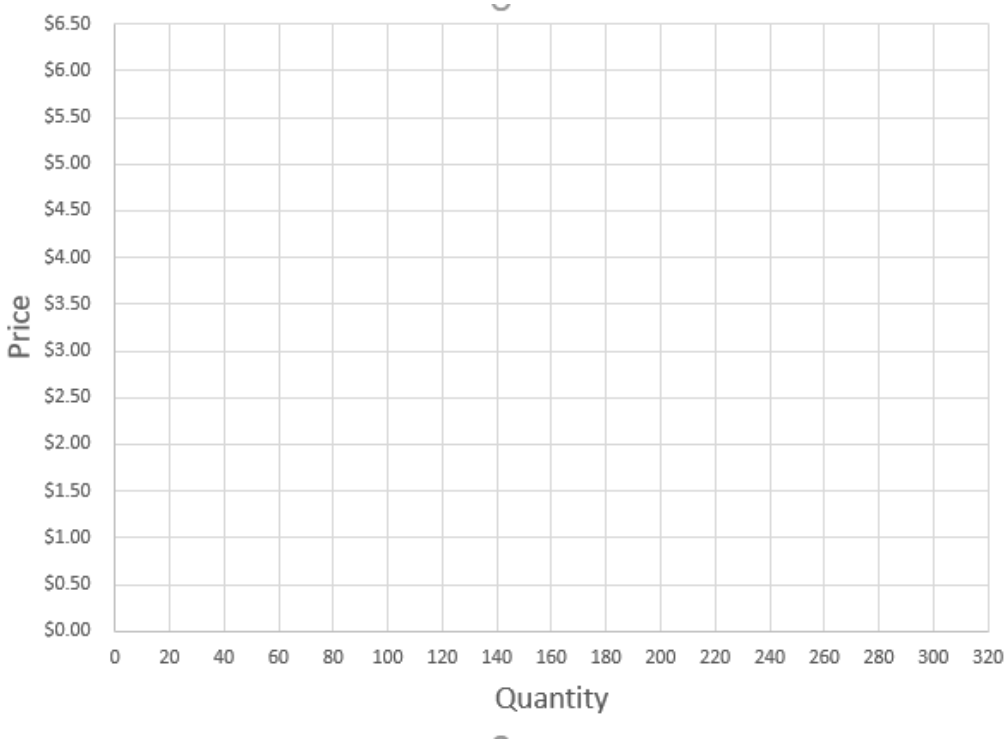
Imagine that the regional market for strawberries is as follows:

Price per quart	Quantity demanded	Quantity supplied
$6.00	120	300
$5.50	130	280
$5.00	140	260
$4.50	150	240
$4.00	160	220
$3.50	170	200
$3.00	180	180
$2.50	190	160
$2.00	200	140

a. What is the market equilibrium price? _____ What is the market equilibrium quantity? _____

Assume the regional government wants to help the local strawberry industry by placing a price floor of $4 per quart on strawberries.

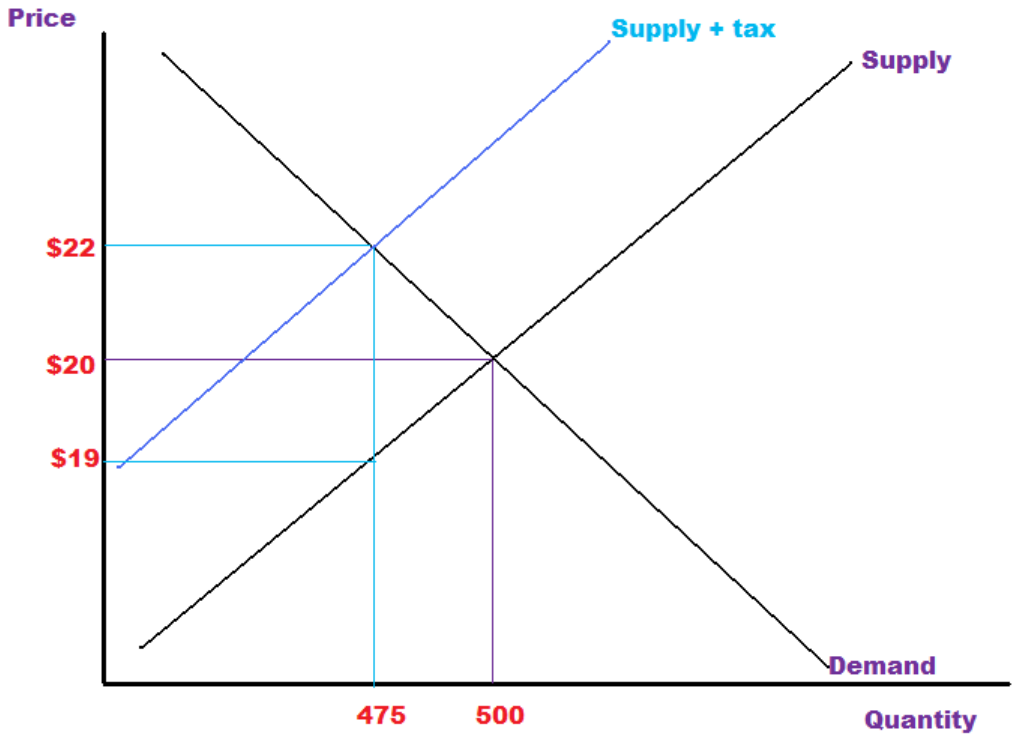
b. What is the quantity supplied when this price floor is in effect? _____ What is the quantity demanded when this price floor is in effect? _____ What is the amount of excess supply? _____
c. Plot the supply and demand curves in the space below. Indicate the price floor, the quantity supplied and the quantity demanded when the price floor is $4, and the excess supply strawberries.



Suppose the price floor was set at $2.50 per quart. What effect would this have on the market? Explain.

3. Excise taxes

Use the graph below to answer questions about the impact of a tax on manicures of $3 per manicure.



The equilibrium price and quantity prior to the tax were: _____

After the tax, consumers pay a price of $_____ per manicure and receive _____ manicures.

After the tax, suppliers of manicures receive a price of $ _____ per manicure.

The local government receives a total of $ _____ in revenue from this tax.

Does this tax create “deadweight loss?”

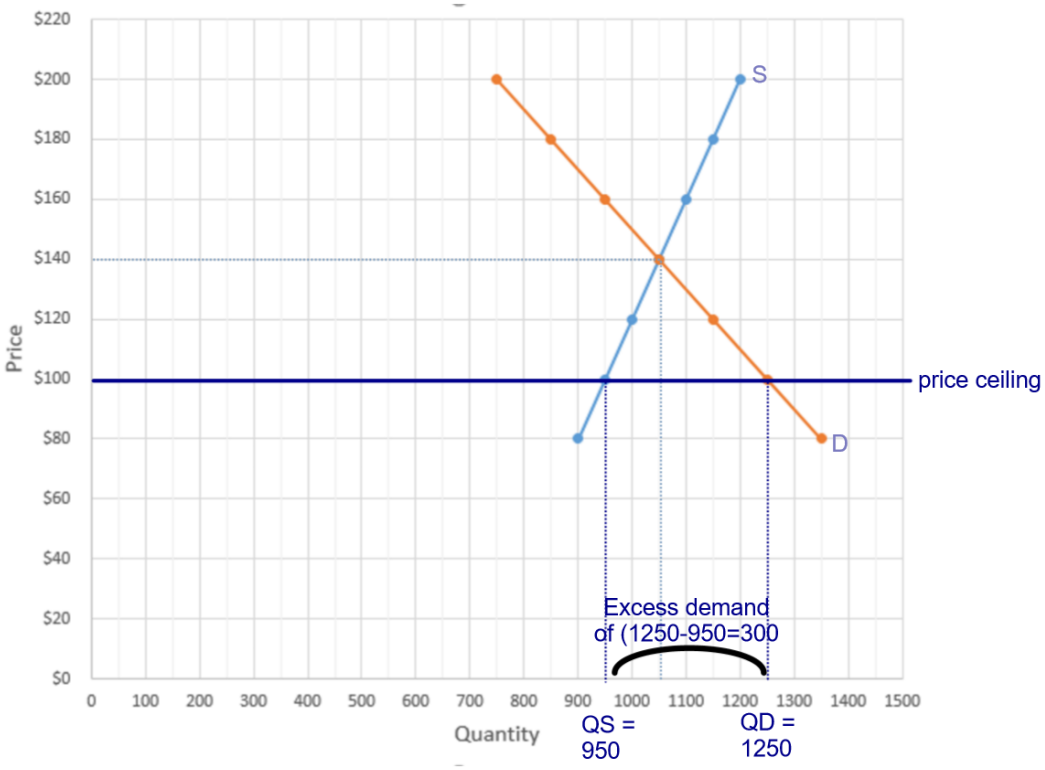
ANSWERS

Do not peek at the answers until you have worked all of the problems!

1. Price ceilings

Market equilibrium price is $140 and quantity is 1050

At a price ceiling of $100, quantity demanded is 1250 and quantity supplied is 950. Excess demand is the difference, or 300. (In other words, there are 300 people who would like to buy cable at a price of $100 who are not able to do so).



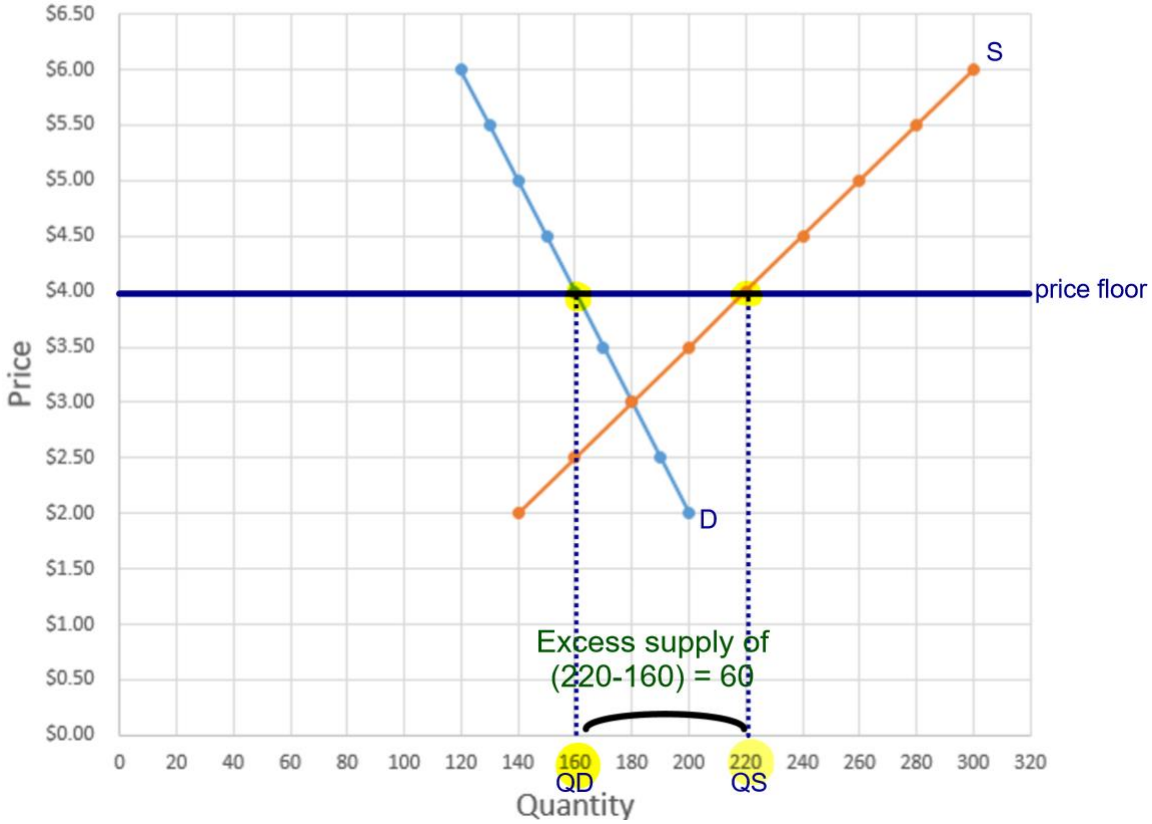
If the price ceiling had been set at $160, it would have no impact on this market. A price ceiling is a legal maximum price; since the equilibrium price of $140 is below this amount, the market is already in compliance with the law.

2. **Price floor**

Market equilibrium price = $3 per quart, quantity = 180

With (binding) price floor of $4 in place, quantity supplied = 220 and quantity demanded = 160. There is excess supply of (220-160) = 60 quarts.

Note that a price floor of $2.50 would have no impact on this market, since the market equilibrium price of $3 is already above the legal minimum price.



3. Excise Tax

- The equilibrium price and quantity prior to the tax were: P = $20, Q = 500
- After the tax, consumers pay $22 per manicure and receive 475 manicures.
- After the tax, manicurists receive $19 (= $22 - 3) per manicure.
- The local government receives $1,425 (= $3 x 475) in revenue from this tax. (Note that the tax revenue is defined by the area of the yellow rectangle in the graph below. The area of a rectangle equals length times width. The length of this rectangle is the quantity of 475. The width is the per unit tax of $3 (the vertical distance between the $22 that consumers pay and the $19 that sellers receive). Tax revenue = $3 * 475 = 1425).