## Chapter 3

[1](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idp70610304).

Since $1.60 per gallon is above the equilibrium price, the quantity demanded would be lower at 550 gallons and the quantity supplied would be higher at 640 gallons. (These results are due to the laws of demand and supply, respectively.) The outcome of lower Qd and higher Qs would be a surplus in the gasoline market of 640 – 550 = 90 gallons.

[2](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm44597008).

To make it easier to analyze complex problems. *Ceteris paribus* allows you to look at the effect of one factor at a time on what it is you are trying to analyze. When you have analyzed all the factors individually, you add the results together to get the final answer.

[3](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idp3857984).

1. An improvement in technology that reduces the cost of production will cause an increase in supply. Alternatively, you can think of this as a reduction in price necessary for firms to supply any quantity. Either way, this can be shown as a rightward (or downward) shift in the supply curve.
2. An improvement in product quality is treated as an increase in tastes or preferences, meaning consumers demand more paint at any price level, so demand increases or shifts to the right. If this seems counterintuitive, note that demand in the future for the longer-lasting paint will fall, since consumers are essentially shifting demand from the future to the present.
3. An increase in need causes an increase in demand or a rightward shift in the demand curve.
4. Factory damage means that firms are unable to supply as much in the present. Technically, this is an increase in the cost of production. Either way you look at it, the supply curve shifts to the left.

[4](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm630208).

1. More fuel-efficient cars means there is less need for gasoline. This causes a leftward shift in the demand for gasoline and thus oil. Since the demand curve is shifting down the supply curve, the equilibrium price and quantity both fall.
2. Cold weather increases the need for heating oil. This causes a rightward shift in the demand for heating oil and thus oil. Since the demand curve is shifting up the supply curve, the equilibrium price and quantity both rise.
3. A discovery of new oil will make oil more abundant. This can be shown as a rightward shift in the supply curve, which will cause a decrease in the equilibrium price along with an increase in the equilibrium quantity. (The supply curve shifts down the demand curve so price and quantity follow the law of demand. If price goes down, then the quantity goes up.)
4. When an economy slows down, it produces less output and demands less input, including energy, which is used in the production of virtually everything. A decrease in demand for energy will be reflected as a decrease in the demand for oil, or a leftward shift in demand for oil. Since the demand curve is shifting down the supply curve, both the equilibrium price and quantity of oil will fall.
5. Disruption of oil pumping will reduce the supply of oil. This leftward shift in the supply curve will show a movement up the demand curve, resulting in an increase in the equilibrium price of oil and a decrease in the equilibrium quantity.
6. Increased insulation will decrease the demand for heating. This leftward shift in the demand for oil causes a movement down the supply curve, resulting in a decrease in the equilibrium price and quantity of oil.
7. Solar energy is a substitute for oil-based energy. So if solar energy becomes cheaper, the demand for oil will decrease as consumers switch from oil to solar. The decrease in demand for oil will be shown as a leftward shift in the demand curve. As the demand curve shifts down the supply curve, both equilibrium price and quantity for oil will fall.
8. A new, popular kind of plastic will increase the demand for oil. The increase in demand will be shown as a rightward shift in demand, raising the equilibrium price and quantity of oil.

[5](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm34056656).

Step 1. Draw the graph with the initial supply and demand curves. Label the initial equilibrium price and quantity.

Step 2. Did the economic event affect supply or demand? Jet fuel is a cost of producing air travel, so an increase in jet fuel price affects supply.

Step 3. An increase in the price of jet fuel caused an increase in the cost of air travel. We show this as an upward or leftward shift in supply.

Step 4. A leftward shift in supply causes a movement up the demand curve, increasing the equilibrium price of air travel and decreasing the equilibrium quantity.

[6](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm229548640).

Step 1. Draw the graph with the initial supply and demand curves. Label the initial equilibrium price and quantity.

Step 2. Did the economic event affect supply or demand? A tariff is treated like a cost of production, so this affects supply.

Step 3. A tariff reduction is equivalent to a decrease in the cost of production, which we can show as a rightward (or downward) shift in supply.

Step 4. A rightward shift in supply causes a movement down the demand curve, lowering the equilibrium price and raising the equilibrium quantity.

[7](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm101525424).

A price ceiling (which is below the equilibrium price) will cause the quantity demanded to rise and the quantity supplied to fall. This is why a price ceiling creates a shortage.

[8](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm99740976).

A price ceiling is just a legal restriction. Equilibrium is an economic condition. People may or may not obey the price ceiling, so the actual price may be at or above the price ceiling, but the price ceiling does not change the equilibrium price.

[9](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm90329008).

A price ceiling is a legal maximum price, but a price floor is a legal minimum price and, consequently, it would leave room for the price to rise to its equilibrium level. In other words, a price floor below equilibrium will not be binding and will have no effect.

[10](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm43308864).

Assuming that people obey the price ceiling, the market price will be below equilibrium, which means that Qd will be more than Qs. Buyers can only buy what is offered for sale, so the number of transactions will fall to Qs. This is easy to see graphically. By analogous reasoning, with a price floor the market price will be above the equilibrium price, so Qd will be less than Qs. Since the limit on transactions here is demand, the number of transactions will fall to Qd. Note that because both price floors and price ceilings reduce the number of transactions, social surplus is less.

[11](http://openstax.org/books/principles-microeconomics-3e/pages/3-self-check-questions#fs-idm134359888).

Because the losses to consumers are greater than the benefits to producers, so the net effect is negative. Since the lost consumer surplus is greater than the additional producer surplus, social surplus falls.