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MSDS 8390

Homework Week 1

Question 1

1. A market is a place where goods and services are traded amongst people buying and selling. It does not have to be a physical space, and could also be on the Internet.
2. Money is what is used to trade goods and services. It acts as a placeholder with an agreed upon value. It is created by governments.
3. A firm is an organization with the intent of conducting business. Firms sell either goods or services in order to create profit. There are multiple types of firms such as corporations, partnerships, sole proprietors, and co-ops.
4. Demand is the idea that for a good or service, someone wants to buy it. The law of demand states that the higher the price of a commodity, the lower the quantity of demand. This is also true for the inverse where as the price of a commodity decreases, the quantity demanded of the commodity increases.
5. Supply is the amount of a commodity that a seller or provider will put out into the market. The law of supply states that as the price of a commodity increases, the quantity supplied increase. This is also true for the inverse where as the price of a commodity decreases, the quantity supplied decreases.
6. Utility is the benefit or satisfaction of a good after a purchase is made. It is used to describe while people would purchase one good over the other. It has an effect on the price of commodities and therefore the supply and demand of them. It is different from marginal utility which measures how much more utility is gained, when an additional of the chosen commodity is purchased.
7. Price is how much money is required to purchase a good or service. Besides the current price of goods and services, the future price of goods and services are tracked and measured. The law of supply and the law of demand illustrate how price relates to the concepts of supply and demand.
8. The law of supply and demand illustrates how a change in demand of a commodity affects the supply as well how a change in the supply of a commodity affects the demand for that commodity. This curved is used to help determine what the price of a good should theoretically be set at.

Question 2

1. The factor that causes a shift in the quantity supplied is price. According to the law of supply, when price increases, quantity supplied increases along the curve. When price decreases, the quantity supplied also decreases.
2. The supply curve shifts when the quantity supplied changes, but the price does not change. This could be due to several factors. For example, maybe a firm has decided to create a greater supply of their commodity, but is keeping the price the same.
3. The factor that causes a shift in the quantity demanded is price. According to the law of demand, when price increases, quantity supplied decreases along the curve. When price decreases, the quantity demanded instead increases.
4. A shift in the demand curve is when a component in the demand changes that is not the price. Consumer trends is an example of this. For example, a fad diet could suddenly make a certain fruit very popular and then, even though the price didn’t change, there is suddenly more of a demand for the fruit.

Question 3

1. The curve that is shifting is the supply curve. We can tell because the demand curve has not moved and as the supply curve shifts, it still is on the same demand curve.
2. The intersection points for the curves are called equilibrium points. The equilibrium points are where the supply of a commodity is equal to the demand for that commodity. As the supply curve shifts, a new equilibrium is calculated along the demand curve at the new spot they intersect.

Question 4

1. The most important part of this code is the terminating condition. Without a terminating condition, recursive code will compile forever. In this case the terminating condition is the “if (x==0) return (1)”. Since in the else statement when it calls itself it calls itself as my.recursive(x-1), x will eventually equal 0. Then, since when x==0 the function returns 1, then function at this points is not recursive anymore (doesn’t call itself again) and ends.
2. The line of code that makes this a recursive function is “else return(x \* my.recursive(x-1))”. This is because this is the line of code where our function my.recursive calls itself. This means that when we call our function as we did with my.recursive(x=8) and it runs, part of the code running the function my.recursive calls my.recursive in order to run my.recursive.
3. This is a factorial function which can also be written as ‘!’ as in ‘4!’. In the example 4!, 4!= 4\*3\*2\*1=24. For our given code, we are running the factorial of 8. Therefore it can be written as 8!=8\*7\*6\*5\*4\*3\*2\*1=40320. This is because the code goes for my.recursive(x=8): 8\*my.cursive(x=7)=8\*7\*my.recursive(x=6) …



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| --- | --- |
| x | y |
| 1 | 1 |
| 2 | 2 |
| 3 | 6 |
| 4 | 24 |
| 5 | 120 |
| 6 | 720 |
| 7 | 5040 |
| 8 | 40320 |
| 9 | 362880 |
| 10 | 3628800 |