We have three sequential activities. Paralegals can complete three contracts in 20 hours therefore each contract can be completed in 6.6667 hours. The second is the tax lawyer and and it takes 2 hours to complete one contract so this is simply 2 hours. The third one is senior partners which is 2 hours as well. What is the theoretical flow time of this process? Theoretical flow time of a contract is a problem very similar to the previous problem. Over there we had 2 parallel lines, here we just have one single line. We have three resource pools and three activities. Tp here is 20 divided by 3. Tp here is 2, and Tp here is 2. 6.67 one other thing we know is that there are four resources you need in the first resource pool. Three resources you need in the second resource pool. And there are 2 resources you need in the last resource pool. The first question is what is the theoretical flow time and that is simply the summation of these three numbers right? That is 6.667 plus 2 plus 2 which is 10 that is theoretical flowtime. Actual flowtime is equal to theoretical flowtime plus waiting times. It is 10.67 plus waiting time in the desk and drivers of these people right? Question we have 10.667 as theoretical flow time and 10.667 plus waiting times as flow time. Now let’s go and compute capacity of each recourse. Paralegal one contract in 6.667 hours. Therefore, on one hour they can produce 1/6.667 and that is .15. So in one hour one paralegal can complete .15 contracts. How many paralegal 4 so all of them together can complete 4 times .15 contracts which is .6 contracts per hour. We also could have said Tp is 6.6667 capacity of one resource unit is 1/Tp. And capacity of C resources is C/Tp which is four divided by 6.6667 and that is .6 per hour right any objection. Capacity of the first resource pool is .6 contracts per hour or if a day is 8 hours then 4.8 contracts per day. Second Resource, a tax lawyer can handle one contract in 2 hours therefore in one hour you can handle half a contract. There are 3 tax lawyer’s C is equal to 3 therefore they can complete 1.5 contracts per hour. Or we could have said Tp is two and capacity of one resource pool is 1/Tp which is one over two capacity of all resource pools is 3/Tp which is 1.5 per hour multiplied by 8 and you get 12 per day. The same is true for the last resource. Capacity of one is .5 and capacity of all is one at one and handle one an hour or 8 per day.

Compute the capacity of the process?

Capacity of the process is .15 and 4, .5 and 3, and .5 and 2. It is .6 per hour and 4.8, 12 and 8 per day. Capacity of the process is .6 per hour or 4.8 per day.

Compute the cycle time?

Cycle time means how often one product goes out. Flow time means from the time that the product comes into the system until the time it goes out how long does it take. In for motor company flow time may be 3 days and cycle time may be 1 minute every one minute one car may go. Here capacity is .6. so in one hour .6 product will go out. So how long will it take for one product to go. So that is X🡪1multiplied by 1 and divided by .6, that is how often it can go. So that is cycle time. Cycle time is usually one over capacity. Cycle time here we can say 1/4.8 day, because 4.8 is in terms of day. If I multiply 1/4.8 day by eight which is the number of hours per day I will get the same thing as I will get as 1/.6 that is the cycle time. Cycle time is 1/capacity. Cycle time is how often a product goes out cycle time 4.8 units you can look at it this way 4.8 units you need to go out every 8 hours so 8/4.8 is 1.67. alternatively, 1/.6 will give you the same result

Compute the average inventory?

If you can compute this question correctly, you should write down on a piece of paper that I am an A student in this class. What is the average inventory? How many people on average are in the system forget waiting lines so just consider theoretical flow time and let me know on average how many contracts are inside this system? Assuming that the system can perform at full capacity it is not possible but let’s assume that the system can perform at .6 contracts per hour or 4.8 contracts per day. On average how many contracts are in the system if the system is generating 4.8 contracts per day or .6 contracts per hour. Let’s compute the utilization of all three resources. Throughout is 4.8. In the first resources capacities is 4.8 therefore utilization is 1. It is not possible but we assume it is just for simplicity. Station 2 capacity is 12 and we produce 4.8, utilization is .4. Station 3 capacity is 8 throughput is 4.8 per day and utilization is .6. what does utilization mean? What does a utilization of one mean? It means I am always busy therefore always one person is with me. So one person is over there. So what does .4 utilization mean? It means that I am busy 40% of the time and idle 60% of the time. When I am idol I am with no one, and when I am busy I am with one person. 40% of the time I am busy, so 1 times .4 is equal to .4. therefore .4 persons are always there. What does the .6 mean? It means that 60% of the time I am busy with one person while 40% of the time I am idol and with zero persons, so on average I am with .6 persons. If my utilization is 50% that means that 50% of the time I am with a customer and 50% of the time am I idol with no customers. Therefore, if I add 1 plus .4 plus.6 I get 2 which means on average there are 2 people in the system. But look here what is the throughput of the system 4.8 per day or .6 per hour. So throughput R is equal to .6 per hour. What is flow time in this system? Remember go to the first page, what was our flow time 10.6667. What is Inventory? We know that throughput times flow time equals Inventory. What is 10.6667 times .6 we get 6.4. So I=.6 (R, throughput) time 10.6667 (T, Flow time) which equals 6.4. So littles law says 6.4 but we found 2. Where did we go wrong? Is 2 wrong or is 6.4 wrong? 2 is wrong. Why is 2 wrong because look at this resource it is always busy right, that resource is always with one person right, but if you have two resources then they both are busy with one person so they are with 2 people. So if we have four that would be 1 multiplied by 4. Now this resource says I am with .4 people you are with .4 people and you are with .4 people so you do .4 multiplied by 3 you get 1.2. the last utilization I am with .6 people and you’re with .6 people which means you do .6 multiplied by 3 which is 1.2 so you add 1.2 plus 1.2 plus 4 and you get 6.4 little law said 6.4