Formula Sheet

Chapter 14

$$(Q^*) = \sqrt{\frac{2DS}{H}} \qquad POQ\ interval = \frac{Q^*}{Average\ demand\ per\ week}$$

Chapter 15

$$Average\ Completion\ Time = \frac{sum\ of\ total\ flow\ time}{number\ of\ jobs}$$

$$Utilization = \frac{total\ job\ work\ (processing) time}{sum\ of\ total\ flow\ time}$$

$$Average\ Number\ of\ Jobs\ in\ The\ System = \frac{sum\ of\ total\ flow\ ime}{total\ job\ work\ (processing) time}$$

$$Average\ Job\ Lateness = \frac{total\ late\ days}{number\ of\ jobs}$$

$$Job\ Lateness = Max\{0, yesterday + flow\ time - due\ date\}$$

$$CR = \frac{due\ date - today's\ date}{work\ (lead)\ time\ remaining}$$

Chapter 12

$$Q^* = \sqrt{\frac{2DS}{H}}$$

$$Expected\ Number\ of\ orders = \frac{D}{Q^*} \qquad \text{Expected Time Between Orders} = \frac{\text{\# of working days}}{N}$$

$$ROP = D * L + SS \qquad TC = \frac{D}{Q}S + \frac{Q}{2}H + PD$$

$$Q_P^* = \sqrt{\frac{2DS}{H[1-(d/p)]}}$$

$$Number\ of\ Production\ Runs = \frac{D}{Q_p^*} \qquad \text{Time Between Runs} = \frac{\text{Number of working days}}{Number\ of\ Production\ Runs}$$

$$MAX\ inventory = Q\ [1 - (\frac{d}{p})] \qquad TC = \frac{D}{Q}S + \frac{Q}{2}\left[1 - \left(\frac{d}{p}\right)\right] H + PD$$

$$Q^* = \sqrt{\frac{2DS}{IP}}$$

$$TC = \frac{D}{Q}S + \frac{Q}{2}H + PD$$

$$Probabilistic\ models$$

$$ROP = d * L + ss$$

$$ROP\ for\ unknown\ demand = Expected\ demand\ during\ lead\ time + Z\sigma_{dLT}$$

$$ROP\ for\ variable\ demand\ and\ constatnt\ lead\ time = (Average\ daily\ demand * Lead\ time) + Z\sigma_{dLT}$$

$$\sigma_{dLT} = \sigma_d\sqrt{Lead\ time}$$

Formula Sheet

$$ROP\ for\ variable\ lead\ time\ and\ constatnt\ demand$$
$$= (Daily\ demand * Average\ lead\ time) + Z * Daily\ demand * \sigma_{LT}$$

$$ROP\ for\ both\ variable\ demand\ and\ lead\ time\ = (Average\ daily\ demand * Average\ lead\ time) + Z * \sigma_{dLT}$$

$$\sigma_{dLT} = \sqrt{(Average\ lead\ time * \sigma_d^2) + (Average\ daily\ demand)^2 * \sigma_{LT}^2}$$

$$C_s = Unit\ Price - Unit\ cost$$

$$C_o = Unit\ Cost - Salvage\ Value$$

$$Service\ Level = \frac{C_s}{C_s + C_o}$$

$$Optimal\ Quantity = \mu + Z\sigma$$

Chapter 17

$$R_s = R_1 * R_2 * \dots * R_n$$

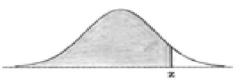
$$FR(\%) = \frac{number\ of\ failures}{number\ of\ units\ tested} * 100\%$$

$$FR(N) = \frac{number\ of\ failures}{number\ of\ units\ hours\ of\ operation\ time}$$

$$MTBF = \frac{1}{FR(N)}$$

$$R_s = probability\ of\ first\ component\ working + [probability\ of\ second\ component\ working$$
$$* probability\ of\ needing\ second\ component$$

Tables of the Normal Distribution



Probability Content from -oo to Z

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990