

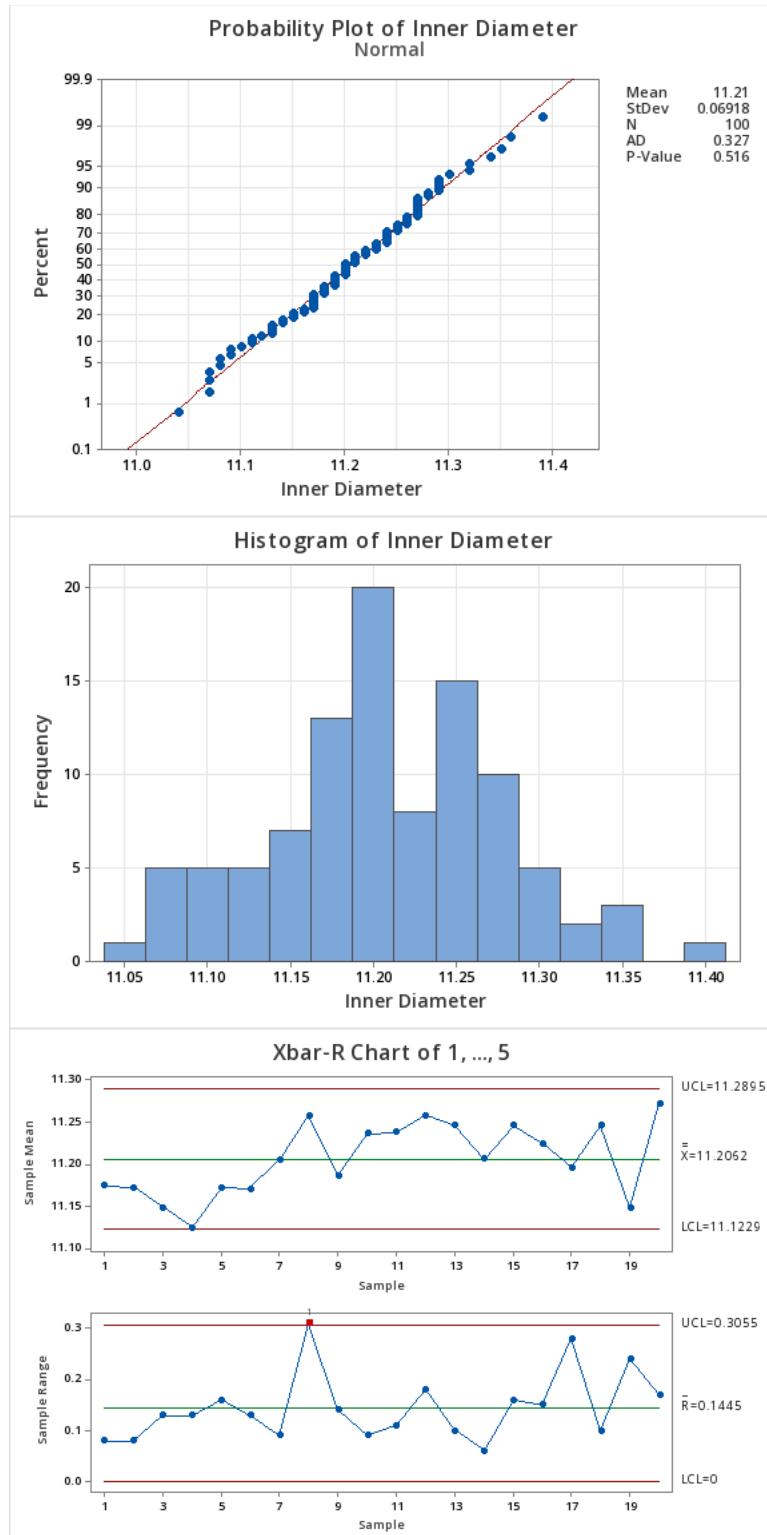
Washer Process

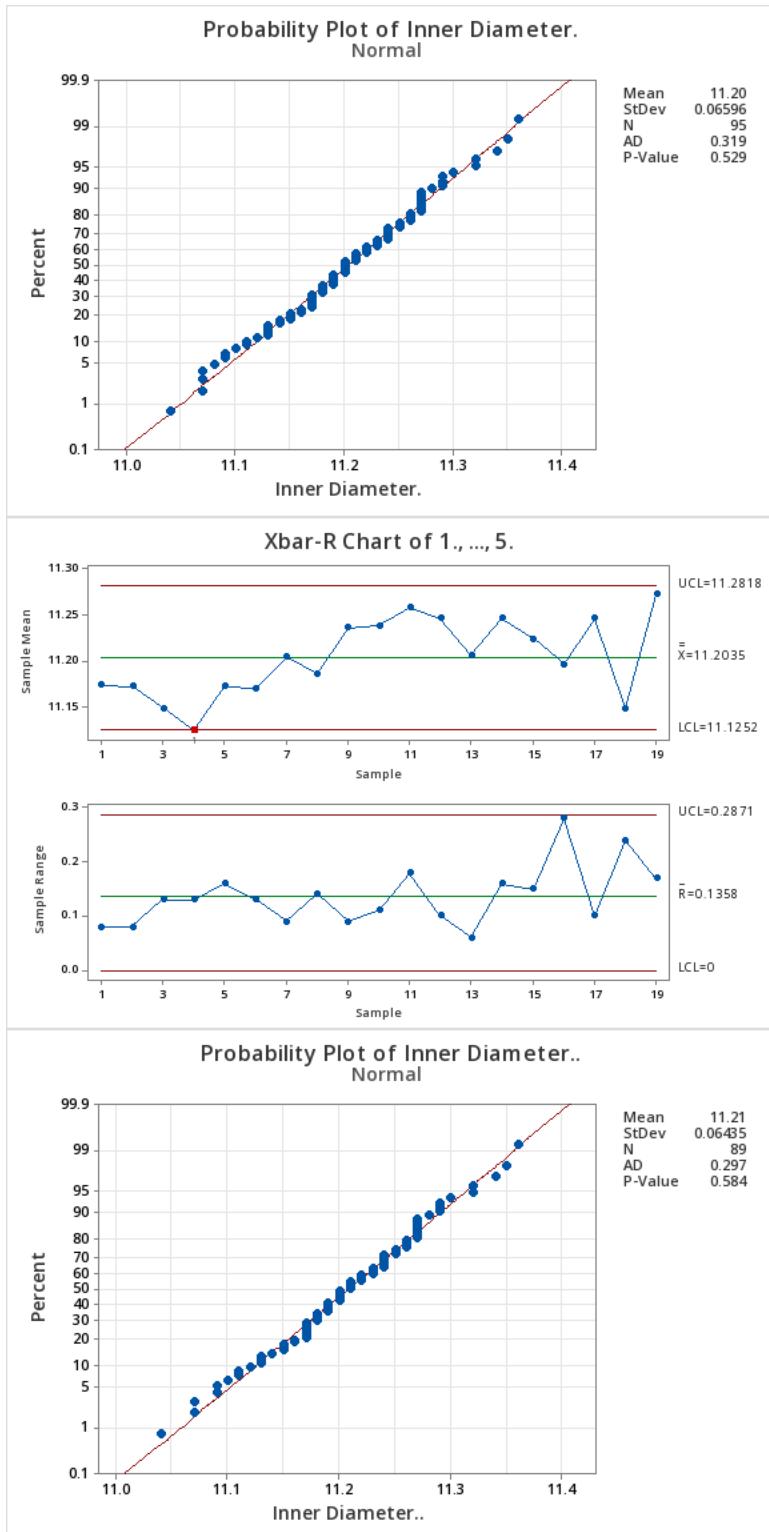
You have given 100 parts from a Washer process.

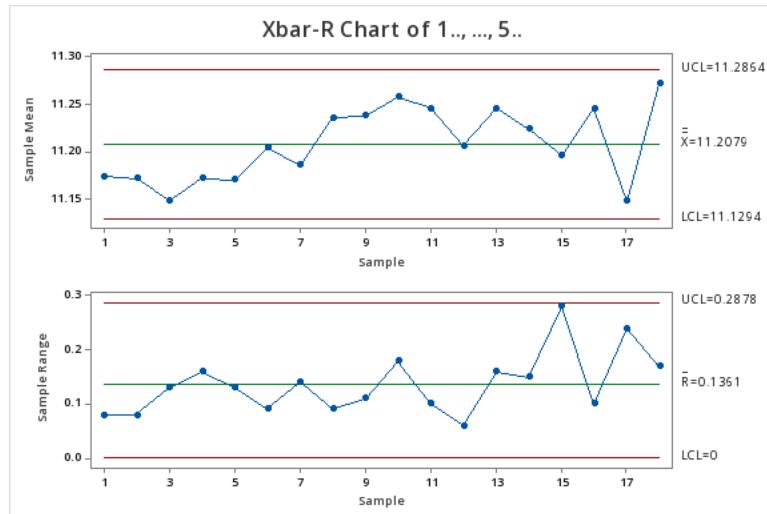
Sample Number	1	2	3	4	5
1	11.12	11.17	11.2	11.19	11.19
2	11.13	11.15	11.17	11.2	11.21
3	11.22	11.13	11.09	11.1	11.2
4	11.2	11.08	11.14	11.13	11.07
5	11.11	11.17	11.14	11.17	11.27
6	11.19	11.18	11.24	11.13	11.11
7	11.21	11.15	11.24	11.19	11.23
8	11.29	11.39	11.08	11.25	11.28
9	11.23	11.09	11.22	11.18	11.21
10	11.23	11.25	11.27	11.18	11.25
11	11.26	11.16	11.27	11.24	11.26
12	11.27	11.36	11.18	11.21	11.27
13	11.26	11.22	11.19	11.29	11.27
14	11.21	11.23	11.22	11.17	11.2
15	11.32	11.25	11.26	11.24	11.16
16	11.27	11.15	11.2	11.3	11.2
17	11.07	11.2	11.19	11.17	11.35
18	11.24	11.29	11.24	11.27	11.19
19	11.07	11.18	11.28	11.17	11.04
20	11.17	11.34	11.32	11.24	11.29

1. Set up (\bar{X} , R) Charts to Control the mean and variation of the inner diameter of washers.

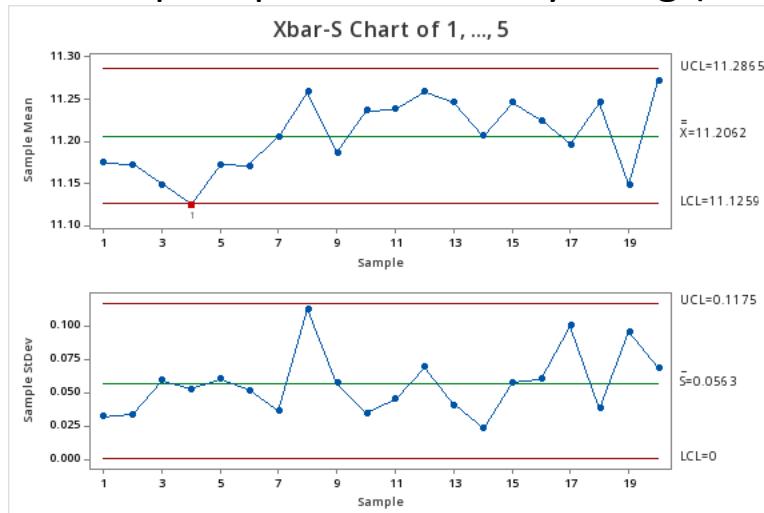
You have to check for the normality of your measurements. Assume any outlier as an assignable cause.

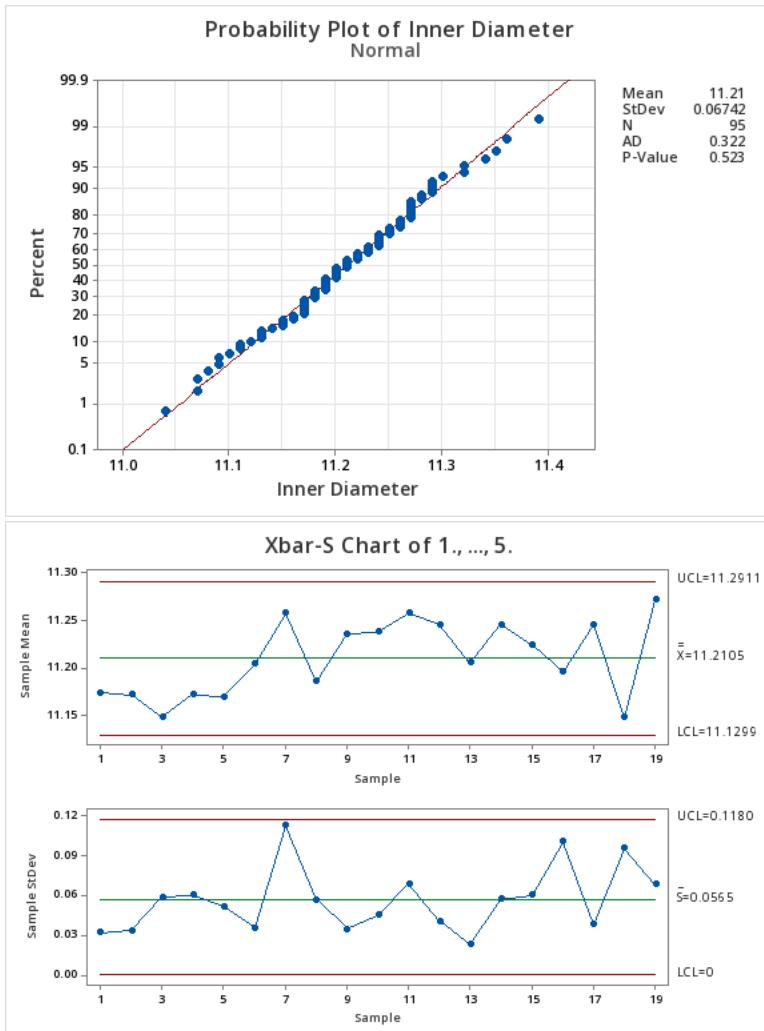






2. Is the process capable If the designer's requirements for the inner diameter of the washer are (USL=11.40 mm and 11.00 mm)? Assume the process is an existing process.
3. Find the defective rate of the process.
4. Repeat parts **1** and **2** by using (\bar{X} , S) charts





Note: You have to discuss the output of Minitab for every part.