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5.79. Two samples of sizes 4 and 8 are drawn from a normally distributed population. Is the probability that one variance is greater than 1.5 times the other greater than 0.05, between 0.05 and 0.01, or less than 0.01?

$$\frac{4S_1^2}{6^2} \sim \chi^2(3), \quad \frac{8S_2^2}{6^2} \sim \chi^2(7)$$

$$\frac{1 \cdot 7S_1^2}{6S_2^2} = \frac{4\frac{S_1^2}{6^2}/3}{8\frac{S_2^2}{6^2}/7} \sim F(3,7) > 1.5 \times \frac{7}{6} = 1.75.$$

$$p > 0.05.$$

$$\frac{2 \cdot 6S_1^2}{7S_2^2} \sim F(7,3) > 1.5 \times \frac{6}{7}$$

$$p > 0.05.$$

5.87. Table 5-17 shows the diameters in inches of a sample of 60 ball bearings manufactured by a company. Construct a frequency distribution of the diameters using appropriate class intervals.

Table 5-17											
0.738	0.729	0.743	0.740	0.736	0.741	0.735	0.731	0.726	0.737		
0.728	0.737	0.736	0.735	0.724	0.733	0.742	0.736	0.739	0.735		
0.745	0.736	0.742	0.740	0.728	0.738	0.725	0.733	0.734	0.732		
0.733	0.730	0.732	0.730	0.739	0.734	0.738	0.739	0.727	0.735		
0.735	0.732	0.735	0.727	0.734	0.732	0.736	0.741	0.736	0.744		
0.732	0.737	0.731	0.726	0.735	0.735	0.729	0.734	0.730	0.740		

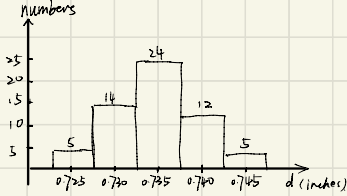
diameter.
0.723 - 0.727
5

0.728 - 0.732
14

0.733 - 0.737
24

0.738 - 0.742
12

0.743 - 0.747
5



5.107. (a) Find the mean and standard deviation for the data of Problem 5.28.
(b) Construct a frequency distribution for the data, and find the standard deviation.
(c) Compare the result of (b) with that of (a).

1a) $\bar{x} = 146.8$ $S = 12.89.$

1b) 频率.

118 - 126
3

127 - 135
5

136 - 144
9

145 - 153
12

154 - 162
5

163 - 171
4

172 - 180.
2.

1c) 1b中的标准差大于1a中的标准差.

$$\bar{x} = \frac{12 \times 3 + 13 \times 5 + 14 \times 9 + 14.5 \times 12 + 15.5 \times 5 + 16.5 \times 4 + 17.5 \times 2}{40}$$

$$= 146.975.$$

$$S = 12.72$$

5.82. Table 5-16 shows a frequency distribution of the lifetimes of 400 radio tubes tested at the L & M Tube Company. With reference to this table, determine the

- upper limit of the fifth class
- lower limit of the eighth class
- class mark of the seventh class

Table 5-16

Lifetime (hours)	Number of Tubes
300-399	14
400-499	46
500-599	58
600-699	76
700-799	68
800-899	62
900-999	48
1000-1099	22
1100-1199	6
TOTAL	400

- class boundaries of the last class
- class interval size
- frequency of the fourth class
- relative frequency of the sixth class
- percentage of tubes whose lifetimes do not exceed 600 hours
- percentage of tubes with lifetimes greater than or equal to 900 hours
- percentage of tubes whose lifetimes are at least 500 but less than 1000 hours

1a) 799.5. 1b) 999.5 1c) 949.5 1d) 1099.5 ~ 1199.5

1e) 100 1f) 76 1g) $62/400 = 0.155$. 1h) $\frac{14 + 46 + 58}{400} = 29.5\%$

1i) $\frac{48 + 22 + 6}{400} = 19\%$ 1j) $\frac{58 + 76 + 68 + 62 + 48}{400} = 78\%$