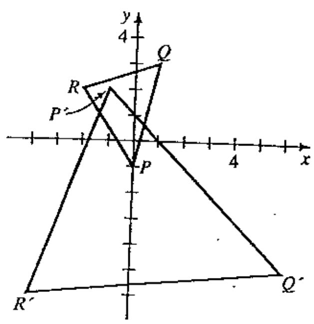
To

7.a. From $\begin{array}{cc} & \begin{array}{cc} \text{C} & \text{S} \end{array} \\ \begin{array}{c} \text{C} \\ \text{S} \end{array} & \begin{bmatrix} 0.94 & 0.06 \\ 0.02 & 0.98 \end{bmatrix} \end{array} = T$ **b.** $\begin{array}{c} \begin{array}{cc} \text{C} & \text{S} \end{array} \\ \begin{bmatrix} 0.70 & 0.30 \end{bmatrix} \end{array} = P_0$

c. $P_0T = [0.664 \quad 0.336]$;
66.4% in the city, and 33.6% in the suburbs

8.a, b.



c. $T = \begin{bmatrix} 3 & 1 \\ 1 & -2 \end{bmatrix}$; $|T| = -7$. The determinant -7 means that the area of $\triangle P'Q'R'$ is 7 times the area of $\triangle PQR$ and that the orientation of the triangle is reversed.

Chapter 15 Test

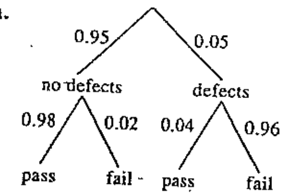
1. 45 2. 540 3. 7,923,840 4. 20,160 5. 45 6. 3150 7. The number of selections of 6 items from a collection of 10 is ${}_{10}C_6 = \frac{10!}{4!\,6!}$. The number of arrangements of 10 items where 6 are alike and the remaining 4 are alike is $\frac{10!}{6!\,4!}$. Therefore, there are 210 possibilities in each case. 8. $189x^5$; $-945x^4$

Chapter 16 Test

1. Consider flipping a fair coin. The theoretical probability of getting "heads" is always $\frac{1}{2}$. An empirical probability, however, can vary. For example, suppose the coin is flipped by two people 20 times each. If the first person gets 9 "heads," then that person assigns an empirical probability of $\frac{9}{20}$ to getting "heads." If the second person gets 11 "heads," then that person assigns an empirical probability of $\frac{11}{20}$ to getting "heads." Because these empirical probabilities are *approximations* of the theoretical probability, we cannot expect them to equal the theoretical probability or each other.

2.a. $\frac{1}{26}$ **b.** $\frac{5}{39}$ **c.** $\frac{25}{39}$ **3.a.** $\frac{1}{6}$ **b.** $\frac{1}{9}$ **c.** $\frac{1}{18}$
4.a. ≈ 0.656 **b.** ≈ 0.948 **5.a.** ≈ 0.053 **b.** ≈ 0.037

6.a.



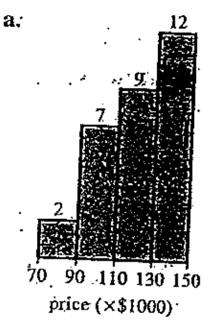
b. $\approx 6.7\%$ **c.** ≈ 0.284

7. The game is not fair; B has the advantage.

Chapter 17 Test

1. As its name implies, a *measure of central tendency* indicates some "center" of the data. (For example, the median is the halfway point in a set of ordered data.) A *measure of dispersion* indicates the spread of data about some center. Using only a measure of central tendency to characterize a set of data is inadequate, because we then have no knowledge of the variability of the data. For example, consider the two sets {7, 8, 8, 9} and {1, 4, 12, 15}. The mean in each case is 8, but the standard deviations are about 0.7 and 5.7, respectively, which indicate that the data in the second set are much more dispersed.

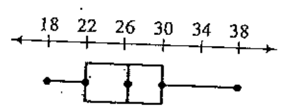
2.a.



b. mean: $120,667;
median: $120,000;
mode: $140,000

3.a. median: 26.5;
lower quartile: 22;
upper quartile: 30
b. range: 20;
interquartile range: 8

c.



4. the mathematics test 5. $\bar{x} = 24$; $s^2 \approx 61.3$; $s \approx 7.83$
6.a. 2.28% **b.** 15.87% **c.** 1230 **d.** 1170 7. 52%
8. 95% confidence interval: $0.808 < p < 0.858$;
99% confidence interval: $0.796 < p < 0.871$

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