

1. What are the odds in favor of randomly drawing the letter P from the letters in the word MISSISSIPPI?

*Solution.* MISSISSIPPI is written with 11 letters, 2 of them being “P” and 9 of them not being “P”. Thus the odds in favor of randomly drawing the letter P from the letters in the word MISSISSIPPI are 2:9.

2. Find the mean and the standard deviation of the following test scores.

20 95 40 70 90 70 80 80 90 95

*Solution.* First we obtain the mean  $\bar{x}$ .

$$\begin{aligned}\bar{x} &= \frac{20 + 95 + 40 + 70 + 90 + 70 + 80 + 80 + 90 + 95}{10} \\ &= 73\end{aligned}$$

We proceed to obtain the standard deviation  $\sigma$ .

$$\begin{aligned}\sigma &= \sqrt{\frac{[(20 - 73)^2 + (95 - 73)^2 + (40 - 73)^2 + (70 - 73)^2 + (90 - 73)^2 + (70 - 73)^2 + (80 - 73)^2 + (80 - 73)^2 + (90 - 73)^2 + (95 - 73)^2]}{10}} \\ &= \sqrt{\frac{5560}{10}} \\ &= \sqrt{556} \\ &= 23.58\end{aligned}$$

3. A standardized mathematics test given to 10,000 students has the scores normally distributed. The mean is 500 and the standard deviation is 60. A student scoring below 440 is considered deficient in mathematics. About how many students are considered deficient?

*Solution.*  $440=500-60$ . Thus we want the area under the normal distribution curve which is less than one normal distribution less than the median, i.e.,  $0.1+2.4+13.5 = 16$ . Thus 16% of the students are considered deficient, which is  $.16 \times 10,000 = 1,600$  students.

4. 2 Points. Who was the last California governor who served also as a U.S President?  
Ronald Reagan
5. 2 Points. Who was the US President who had to deal with the Watergate scandal?  
Richard. M. Nixon