

Probability Distribution Based on Empirical Probabilities - Guided Lesson Explanation**Explanation#1**

We are given all the information we need to calculate the "actual" or empirical probability, since we know the actual proportion of customers who purchased the cell phone. On the other hand, if the scenario was

"Last month, 350 customers responded to a survey, and 275 of them purchased one or more of cell phones." then we would not know the actual proportion, since there may be more customers than were surveyed. Thus, the probability would be estimated (being based on a sample, rather than the entire population).

Explanation#2

The sample space is the set of all possible hands of six cards.

$$n(S) = 20,358,520$$

The event E is the set of all possible hands of six cards excluding the hands of six red cards.

$$n(E) = 20,358,520 - 2,30230 = 20,128,290$$

Therefore,

$$P(E) = \frac{n(E)}{n(S)} = \frac{20128290}{20,358520} = 0.9951.$$

Explanation#3

Here, the sample space is the set of all possible hands of six red cards.

$$n(S) = 230,230$$

The event E is the set of all possible hands of six diamonds

$$n(E) = 1716$$

Therefore,

$$P(E) = \frac{n(E)}{n(S)} = \frac{1716}{230230} = 0.00745.$$

