

Probability

Example

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| Probability

- The following table presents probabilities for the number of times that a certain computer system will crash in the course of a week. Let **A** be the event that there are more than two crashes during the week, and let **B** be the event that the system crashes at least once.

- Find a sample space. ✓

- Then find the subsets of the sample space that correspond to the events A and B. ✓

- Then find $P(A)$ and $P(B)$.

$$P(B) = P(1) + P(2) + P(3) + P(4) \\ = 0.04$$

$$P(B) = 1 - P(0) = 1 - 0.6 = 0.4$$

Number of Crashes	Probability
0	0.60
1	0.30
2	0.05
3	0.04 ←
4	0.01 ←

Sample space

$$S = \{0, 1, 2, 3, 4\}$$

$$A = \{3, 4\} \leftarrow$$

$$B = \{1, 2, 3, 4\}$$

$$P(A) = 0.04 + 0.1 \\ = 0.05$$

$$P(A) = P(3) + P(4) \\ = 0.04 + 0.1 = 0.05$$

| Probability

- If A is an event containing outcomes O1, . . . , On,
that is, if $A = \{O1, \dots, On\}$, then
- $P(A) = P(O1) + P(O2) + \dots + P(On)$
- the probability of any event that contains a finite number of outcomes can be found by summing the probabilities of the outcomes that make up the event