



Review common probability terminology:

- What is the **sample space** of a single dice? Of two dice?
- Give two examples of **events** given  $X$  dice.
- Given two **random variables**  $D_1$  and  $D_2$ , describe a random variable for the sum of two dice.
- What is the **expected value** of  $D_1$  and  $D_2$ ? Of the sum of both?

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## Randomization in Algorithms

### 1. Assume input data is random to estimate average-case performance

Give an example of an average case analysis:

Where is the source of randomness?

What assumptions were made?

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### 2. Use randomness inside algorithm to estimate expected running time

Give an example of an expected case analysis:

Where is the source of randomness?

What assumptions were made?

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**3. Using randomness inside algorithm to estimate expected accuracy**

Give an example of an expected case accuracy:

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**What are the four outcomes in probabilistic accuracy?**

**Where is the source of randomness?**

**What assumptions were made?**

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What is the difference between a **Las Vegas** algorithm and a **Monte Carlo** algorithm?