

## Problem 8 Midterm

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Given a biased coin analogy, if a bit vector is 40% full, what are the odds that 5 bits randomly chosen all fall within the filled section. Simulate the results and compare to calculations.

Prob of picking 1 = 40% or 0.40

Prob of picking 2 =  $0.40 \times 0.40$

So the Prob of picking 5 =  $0.40^5$

$$0.40^5 = 0.01024 \text{ or } 1.024\%$$

Comparing to computer simulations:

Computer probability was: 1.0453%

Math method probability was: 1.024%

Pretty close to the simulation.