

Math 270 - Basic Discrete Mathematics
Practice Quiz on Section 9.1

Solutions

Directions: Answer the problems given below.

1. Suppose a coin is tossed four times in a row, and the side facing up is showing. We identify each outcome of this random process by a string of H 's and T 's of length 4. So, for example, $HHTH$ corresponds to the first two tosses showing heads, the third toss showing tails, and the fourth toss showing heads.

a. Write out the sample space S for this random process - how many elements are in S ?

$$S = \left\{ \begin{array}{l} HHHH, HHHH, HHTH, HHTT, \\ HTHH, HTHT, HTTH, HTTT, \\ THHH, THTT, THTH, THTT, \\ TTHH, TTHT, TTTH, TTTT \end{array} \right\} \quad \left. \vphantom{S} \right\} S \text{ has 16 elements.}$$

b. Let E be the event that the first two tosses show heads. Write E as a set.

$$E = \{ HHHH, HHHH, HHTH, HHTT \}$$

c. What is the probability of E ?

E has 4 elements, so the probability of E is

$$P(E) = \frac{4}{16} = \frac{1}{4}.$$