

Problem 8.20 Refer to Problem 8.19.

(a) What is the probability of throwing a red 5 and a white 2?

(b) If the dice are indistinguishable, what is the probability of throwing a sum of 7? If they are distinguishable, what is this probability?

Solution

$$(a) \mathbf{P}[\text{Red 5 and white 2}] = \frac{1}{6} \times \frac{1}{6} = \frac{1}{36}$$

(b) The probability of the sum does not depend upon whether the die are distinguishable or not. If we consider the distinguishable case the possible outcomes are (1,6), (2,5), (3,4), (4,3), (5,2), and (6,1) so

$$\mathbf{P}[\text{sum of 7}] = \frac{6}{36} = \frac{1}{6}$$