

Conditional Probability: Slam Dunk 1

Name:	Class:	Date:
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A coin is tossed twice. What is the probability that it shows heads both times, given that it shows heads the first time?

$$S = \{(H,H), (H,T), (T,H), (T,T)\}; \quad |S| = 4$$

Event A: The coin shows heads the first time.

$$\text{Then } A = \{(H,H), (H,T)\}; \quad |A| = 2$$

Event B: The coin shows heads both times.

$$\text{Then } B = \{(H,H)\}$$

$$\text{Then } B \cap A = \{(H,H)\}; \quad |B \cap A| = 1$$

$$P(A) =$$

$$P(B \cap A) =$$

Therefore, $P(\text{the coin shows heads both times, given that the coin shows heads the first time}) = P(B, \text{ given that } A)$

$$= \frac{P(B \cap A)}{P(A)} =$$