

an event occurring based on occurrence of previous event, probability of occurrence event 'A' when event (B) has already occurred.

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

A Conditional
on B

$$= \frac{1/6}{3/6} = \frac{1}{3}$$

3, 5, 1, 2, 3, 4
A = {1, 5, 3, 4}
B = {1, 2, 3}

دفعه اول A و B را با هم می بینیم

دفعه دوم A را می بینیم

Medical Example: -

$$P(\text{Cancer}) = 0.1$$

$$P(\neg \text{Cancer}) = 0.9 \quad \rightarrow 1$$

Cancer	Test	P()	
Y	P	$0.9 * 0.1 = 0.09$	} = 1
Y	N	$0.1 * 0.1 = 0.01$	
N	P	0.18	
N	N	0.72	

$$P(\text{Positive} | \text{Cancer}) = 0.9$$

$$P(\text{Negative} | \text{Cancer}) = 0.1$$

$$P(\text{Positive} | \neg \text{Cancer}) = 0.2$$

$$P(\text{Negative} | \neg \text{Cancer}) = 0.8$$

$$P(\text{Positive Result}) = 0.09 + 0.18 = 0.27$$