

# AI1110: Assignment-1

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**12.13.1.8 Question: Compute  $\Pr(E|F)$  where E and F are: A die is thrown three times, E : 4 appears on the third toss, F : 6 and 5 appears respectively on first two tosses.**

**Answer:**  $(\frac{1}{6})$

**Solution:**

F is the event that 6 and 5 occur respectively in first two tosses.

$$\Pr(F) = \frac{1}{6} \times \frac{1}{6} \quad (1)$$

$$\Pr(F) = \frac{1}{36} \quad (2)$$

The event EF consists of the only outcome 6,5,4 occurring in first three tosses.

$$\Pr(EF) = \frac{1}{6} \times \frac{1}{6} \times \frac{1}{6} \quad (3)$$

$$\Pr(EF) = \frac{1}{216} \quad (4)$$

We have,

Parameter	Value	Description
E	$\Pr(E) = \frac{1}{36}$	6 and 5 occurring respectively on first 2 rolls
EF	$\Pr(EF) = \frac{1}{216}$	6,5 and 4 occurring respectively on first 3 rolls

(5)

TABLE I  
FINAL PROBABILITIES OF THE EVENTS.

$$\Pr(E|F) = \frac{\Pr(EF)}{\Pr(F)} \quad (6)$$

$$\Pr(E|F) = \frac{\frac{1}{216}}{\frac{1}{36}} \quad (7)$$

$$\Pr(E|F) = \frac{1}{6} \quad (8)$$