Related Problem with Solution

A die is thrown three times,

E: 4 appears on the third toss, F: 6 and 5 appears respectively on first two tosses.

Solution:

Sample space will be $6 \times 6 \times 6 = 216$

$$E = \begin{Bmatrix} (1,1,4),(1,2,4),.........(1,6,4) \\ (2,1,4),(2,2,4),.......(2,6,4) \\ (3,1,4),(3,2,4),.........(3,6,4) \\ (4,1,4),(4,2,4),.......(4,6,4) \\ (5,1,4),(5,2,4),.........(5,6,4) \\ (6,1,4),(6,2,4),.........(6,6,4) \end{Bmatrix}$$

$$F = \{(6,5,1),(6,5,2),(6,5,3),(6,5,4),(6,5,5),(6,5,6)\}$$

$$\therefore E \cap F = \{(6,5,4)\}$$

$$P(F) = \frac{6}{216} \text{ and } P(E \cap F) = \frac{1}{216}$$

$$\therefore P(E|F) = \frac{P(E \cap F)}{P(F)} = \frac{\frac{1}{216}}{\frac{6}{216}}$$

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