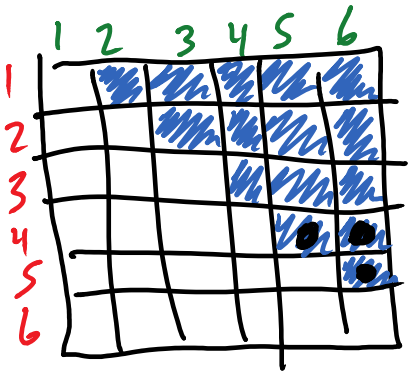
Roll two dice. Let B denote the event that the green die has a result strictly larger than the red.



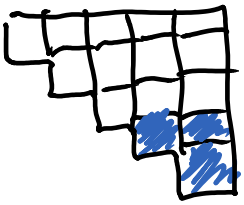
Let event A signify that the red die is ≥ 4.

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{3/36}{15/36} = \frac{3}{15} = \frac{1}{5}.$$

Are A, B independent? We can check $P(A|B) = P(A)$??

$P(A) = \frac{1}{2} \neq \frac{1}{5} = P(A|B)$

So A, B not independent; they are dependent.



← B "new world" "new sample space"

$P(A|B) = \frac{3}{15} = \frac{1}{5}$.