

Flip coins until 1st head appears.

Event B be that flips 1 and 2 are both tails.

Event A be the event at least 6 flips are needed to get 1st heads.

Event A: $\underline{T} \underline{T} \underline{T} \underline{T} \underline{T}$ } 1st head

Event B: $\underline{T} \underline{T}$

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{1/32}{1/4} = \frac{1}{8}$$

$P(A) = \frac{1}{32} \neq \frac{1}{8} = P(A|B)$
So A, B are dependent.

Another view: Given B

$\underline{T} \underline{T} \text{ ??? } \}$
need T's
to get A (given B)

$$P(A|B) = \frac{1}{8}$$