

$$\textcircled{1} \ a) \ A = \{HH, HTH, HTHH, THH, THTH, TTHH\}$$

$$b) \ B = \{HH, THH, TTHH, TTTTHH, \dots\}$$

$$c) \ \{HH, THH, HTH, TTHH, THTH, HTTH, TTHH, TTTTHH, \dots\} = A \cup B$$

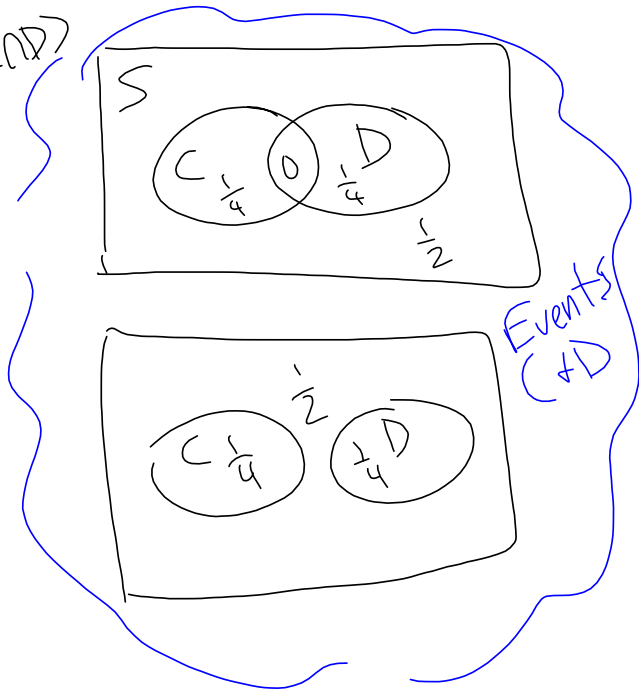
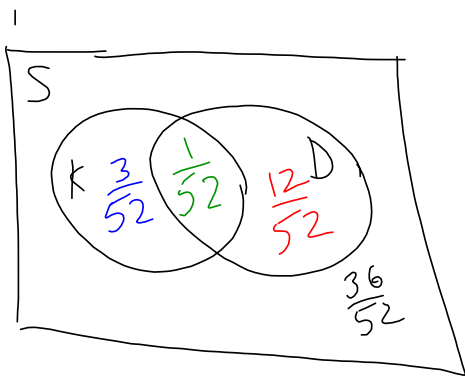
$$d) \ A \cap B = \{HH, THH, TTHH\}$$

$$\begin{aligned} \textcircled{1} \quad P(B) &= \frac{1}{2} & P(C) &= \frac{13}{52} \\ P(D) &= \frac{1}{4} & P(K) &= \frac{4}{52} \\ P(C \cup D) &= \frac{1}{2} & P(K \cup D) &= \frac{16}{52} \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad P(C \cup D) &= P(C) + P(D) & \text{True} \\ P(K \cup D) &= P(K) + P(D) \end{aligned}$$

$$P(K \cup D) = P(K) + P(D) - P(K \cap D)$$

$$\frac{3}{52} + \frac{12}{52} - \frac{1}{52}$$



$P(D|K)$ "prob of D, given K"

What is prob of a drawn card being a diamond, given that it is a king.

Answer: $\frac{1}{4}$

$$\textcircled{7} P(C|B) = \frac{1}{2}$$

$$P(B|C) = 1$$

$$P(K|D) = \frac{1}{13} = P(K)$$