

- (1) One card is randomly selected from a standard deck of 52 cards.  
 (a) What is the probability that the card is a 4 or a queen?  
 (b) What is the probability that the card is a diamond or a jack?

Disjoint

$$a) P(\text{select 4 or Queen}) = P(4) + P(\text{Queen})$$

$$\frac{4}{52} + \frac{4}{52} = \frac{8}{52} = \frac{2}{13} \approx 0.154$$

$$b) P(\text{select Diamond or Jack}) =$$

$$P(\text{Diamond}) + P(\text{Jack}) - P(\text{Jack and Diamond})$$

$$\frac{13}{52} + \frac{4}{52} - \frac{1}{52} = \frac{16}{52} = \frac{4}{13} \approx 0.308$$

- (2) There are 63 cars in a used car lot, 60 of which have air conditioning or are silver. There are 18 silver cars and 57 cars with air conditioning. What is the probability that a car selected at random from the lot is silver and has air conditioning?

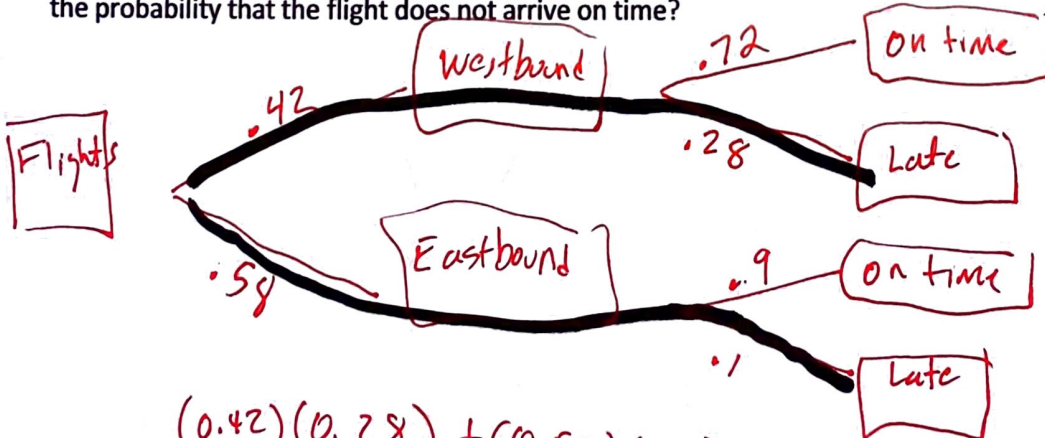
$$P(\text{air cond or silver}) = P(\text{air cond}) + P(\text{silver}) - \underline{\underline{P(\text{air cond and silver})}}$$

$$\frac{60}{63} = \frac{57}{63} + \frac{18}{63} - P$$

$$\frac{60}{63} = \frac{75}{63} - P$$

$$P = \frac{75 - 60}{63} = \frac{15}{63} = \frac{5}{21} \approx 0.238$$

- (3) An airline estimates that 90% of its eastbound flights arrive on time and 72% of its westbound flights arrive on time. This morning, 42% of the airline's schedule is westbound flights. If a flight is chosen at random, what is the probability that the flight does not arrive on time?



$$(0.42)(0.28) + (0.58)(0.1) = 0.1756$$

17.56%  
late