

10.4 Overlapping Events

Girls in class black hair



Called Compound event

$P(G)$ or $P(\text{Black})$

$$\rightarrow P(G) + P(\text{Black}) - \text{Overlap}$$

52 Card Deck. Probability you pick

① $P(10)$ or $P(KQJ)$

$$\frac{4}{52} + \frac{12}{52} = \frac{16}{52} \rightarrow \frac{4}{13}$$

② $P(KQJ)$ or $P(\text{spade})$ ← overlap
KP QP JP ♠

$$\frac{12}{52} + \frac{13}{52} - \frac{3}{52} = \frac{22}{52} \rightarrow \frac{11}{26}$$

③ Probability it isn't KQJ or spade?

$$52 - 22 = 30$$

$$\frac{30}{52} = \frac{15}{26}$$

Homework

Find the probability of

(20) King & diamond
 $\frac{1}{52}$

(22) Spade or club

(24) 6 & a Black card

(21) King or diamond
 $\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \frac{16}{52} = \frac{4}{13}$

(23) 4 or 5

(25) Not a heart

2 dice are rolled. How many outcomes? 36 total outcomes

(35) Sum is 3 or 4

(36) Sum is 2

(37) Sum is not 7

(38) Sum is not 2