

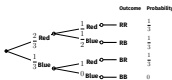
Push Tasks — Answers



1. Find $P(\text{one Red, one Blue, either order})$.

Solution

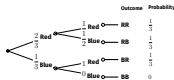
$$P(RB) + P(BR) = \frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$



2. Find $P(\text{at least one Blue})$.

Solution

$$1 - P(RR) = 1 - \frac{1}{4} = \frac{3}{4}$$



3. A student says “A card is shuffled and drawn, so every later draw must be independent of it.” What is wrong with this?

Solution

Later draws aren't independent.

4. Find $P(\text{Guitar} \mid \text{Left-handed})$ vs $P(\text{Guitar})$ overall. Independent?

Solution

$$P(G \mid L) = 0.3, \\ P(G) = 0.18: \\ \text{dependent.}$$

Hand/Guitar	Guitar	No guitar	Total
Left-handed	6	14	20
Right-handed	12	68	80
Total	18	82	100

Push Tasks — Answers



5. “I already rolled a 6, so the next roll is less likely to be a 6.” Explain the error.

Solution

Gambler's fallacy: $P(6) = \frac{1}{6}$ always.

7. If event A makes B more likely, what can you say about $P(B | A)$ compared with $P(B)$?

Solution

$P(B | A) > P(B)$.

6. A survey shows many left-handed students play guitar. Does that alone prove dependence? What else matters?

Solution

No – check $P(G | L)$ too.

8. Describe one real example of independent events and one of dependent (conditional) events.

Solution

Coin tosses; cards w/o replacement.