

Practice Questions on Playing Cards Probability

Name: _____ Date: _____

Playing Cards Probability MCQs

Q1: Total face cards in a deck:

- a) 4 b) 8 c) 12 d) 16

Answer: c) 12

Q2: P(drawing a black card) =

- a) $1/4$ b) $1/2$ c) $1/13$ d) $3/13$

Answer: b) $1/2$

Q3: P(drawing a King) =

- a) $1/52$ b) $1/26$ c) $1/13$ d) $1/4$

Answer: c) $1/13$

Q4: Number of red face cards =

- a) 3 b) 4 c) 6 d) 8

Answer: c) 6

Q5: P(Ace of Spades) =

- a) $1/4$ b) $1/13$ c) $1/52$ d) $1/26$

Answer: c) $1/52$

Q6: P(card is not a Heart) =

- a) $1/4$ b) $1/2$ c) $3/4$ d) $13/52$

Answer: c) $3/4$

$$\text{Non-hearts} = 39/52 = 3/4$$

Q7: P(red card or King) =

$$P = (26 + 4 - 2)/52 = 28/52 = 7/13$$

a) $1/2$ b) $2/13$ c) $7/13$ d) $3/13$

Answer: c) $7/13$

Q8: Two cards are drawn WITH replacement. P(both Aces) =

$$P = (4/52) \times (4/52)$$

$$= (1/13) \times (1/13)$$

$$= 1/169$$

a) $1/52$ b) $1/169$ c) $1/221$ d) $1/26$

Answer: b) $1/169$

Q9: Two cards drawn WITHOUT replacement. P(both Kings) =

$$P = (4/52) \times (3/51)$$

$$= 12/(52 \times 51)$$

$$= 12/2652$$

$$= 1/221$$

a) $1/169$ b) $1/221$ c) $1/52$ d) $2/221$

Answer: b) $1/221$

Q10: P(first card is Ace, second is King) without replacement:

$$P = (4/52) \times (4/51)$$

$$= 16/2652$$

$$= 4/663$$

a) 1/169 b) 4/663 c) 1/221 d) 2/663

Answer: b) 4/663

Playing Cards Probability Tree

SINGLE CARD DRAW:

Red (26) → $P = 26/52 = 1/2$

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Start -----

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Black (26) → $P = 26/52 = 1/2$

Total = 1

Without Replacement

TWO CARDS WITHOUT REPLACEMENT:

2nd Ace (3/51) → $P(\text{both Ace}) = 4/52 \times 3/51$

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1st Ace (4/52)

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Not Ace (48/51) → $P(\text{Ace then not Ace})$

1st Not Ace (48/52)

/

Ace (4/51) → $P(\text{not Ace then Ace})$

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Not Ace (47/51) → $P(\text{neither Ace})$

With Replacement

TWO CARDS WITH REPLACEMENT:

(Deck reset to 52 after each draw)

Each draw is INDEPENDENT:

$P(\text{Ace}) = 4/52$ always, both draws

$P(\text{both Ace}) = 4/52 \times 4/52 = 1/169$

Probability of Drawing Two Cards

Without Replacement

Card drawn, NOT returned. Second draw from 51 cards.

$P(\text{both red}) = 26/52 \times 25/51$

$$= 650/2652$$

$$= 25/102$$

$P(\text{Ace then King}) = 4/52 \times 4/51$

$$= 16/2652$$

$$= 4/663$$

With Replacement

Card drawn, RETURNED. Second draw from 52 cards.

$P(\text{both red}) = 26/52 \times 26/52$

$$= 1/2 \times 1/2$$

$$= 1/4$$

$P(\text{Ace then King}) = 4/52 \times 4/52$

$$= 1/13 \times 1/13$$

$$= 1/169$$

Independent and Dependent Events

WITH replacement → INDEPENDENT events

Each card drawn has NO effect on next draw

$$P(A \text{ and } B) = P(A) \times P(B)$$

WITHOUT replacement → DEPENDENT events

First draw AFFECTS the second draw

$$P(A \text{ and } B) = P(A) \times P(B|A)$$

($P(B|A)$ = probability of B given A occurred)

