

Q 1-1: Consider a biased coin toss. If $P(\text{heads}) = 0.6$, then $P(\text{tails}) = ?$

- A. 0.4
- B. 0.5
- C. 0.6
- D. 0.3

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Q 1-2: In a presidential election, there are 3 candidates, A, B and C. Based on our polling analysis, we estimate that A has a 30 percent chance of winning the election, while B has a 40 percent chance of winning. What is the probability that either A or B win the election?

- A. 50%
- B. 70%
- C. 40%
- D. 100%

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Q 1-3: What is the probability of selecting a black card or a number 6 from a deck of 52 cards?

A. $26 / 52$

B. $4 / 52$

C. $30 / 52$

D. $28 / 52$

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Q 2-1: Consider the joint probability distribution given below.

	weather = sunny	weather = cloudy	weather = rainy
temp= hot	150 / 365	40 / 365	5 / 365
temp = cold	50 / 365	60 / 365	60 / 365

What is the probability that the temperature is hot given the weather is cloudy?

- A. $40 / 365$
- B. $2 / 5$
- C. $3 / 5$
- D. $195 / 365$

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Q 2-2: Of a company's employees, 30% are women and 6% are married women. Suppose an employee is selected at random. If the employee selected is a woman, what is the probability that she is married?

- A. 0.06
- B. 0.3
- C. 0.2
- D. 0.24

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Q 3-1: It is estimated that 50% of emails are spam emails. Some software has been applied to filter these spam emails before they reach your inbox. A certain brand of software claims that it can detect 99% of spam emails, and the probability for a false positive (a non-spam email detected as spam) is 5%. Now if an email is detected as spam, then what is the probability that it is in fact a non-spam email?

- A. $5 / 104$
- B. $95 / 100$
- C. $1 / 100$
- D. $1 / 2$

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Q 3-2: If a fair coin is tossed three times, find the probability of getting 2 heads and a tail

A. $1/8$

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