

## Questions

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1. Tom draws two cards.

- a) What is the probability that his first card is hearts?
- b) What is the probability that his second card is hearts?

2. Tom draws two cards.

- a) If his first card is hearts, what is the probability that his second card will be hearts?
- b) If his second card is hearts, what is the probability that his first card was hearts?

3. Tom flips four coins.

- a) What is the probability that they all land on heads?
- b) What is the probability that they all land the same?

4. Forty percent of the students at Tom University are male. 25% of the males and 35% of the others are science majors.

- a) What is the probability that a random male is a science major?
- b) What is the probability that a random science major is male?

5. Out of three cards, one is blue on both sides, one is green on both sides, and one is blue on one side and green on the other. Tom sees one side of one card.

- a) What is the probability that he sees a blue side?
- b) If he sees a blue side, what is the probability that the other side is also blue?

6. Tom flips a nickel, a dime, and a quarter.

- a) If the quarter landed on heads, what is the probability that all three coins landed on heads?
- b) If at least one of the coins landed on heads, what is the probability that all three of the coins landed on heads?

7. Tom draws two cards.

- a) If the first card is hearts, what is the probability that the first card is an ace?
- b) If his first card is hearts, what is the probability that the second card is an ace?

8. Tom draws four cards.

- a) What is the probability that the first card is an ace?
- b) What is the probability that one of the four cards is the ace of spades?

9. Two jacks and an ace are shuffled face down. Tom guesses which card is the ace. Then Tim flips over another card, and it is a jack.

- a) What is the probability that the third card is the ace?
- b) What is the probability that the third card is an ace, given Tim knew which cards were jacks and chose one of them to flip?

10. Tom has two kids.

- a) If he has at least one daughter, what is the probability that he has two daughters?
- b) If at least one of his kids was born on a Sunday, what is the probability that both were born on a Sunday?

11. Tom and Tim are each rolling a 6-sided die. The first person to roll a 6 wins.

- a) If they roll at the same time and they reroll if there is a tie, what is the probability that Tom will win?
- b) If they take turns rolling and Tim goes first, what is the probability that Tom will win?

12. Tom has a bag with two marbles, each of which is equally likely to be black or white. He adds another marble, then pulls out two of the three marbles at random and they are both black.

- a) What is the probability the remaining marble is black if the marble he added was equally likely to be black or white?
- b) What is the probability that the remaining marble is black if the marble he added was black?