

17. **Coin Conundrum** Your friend flips two coins and tells you that at least one coin landed heads up. What is the probability that both coins landed heads up? (See Example 5.)



18. **Boy or Girl Paradox** Your friend has two children. At least one of the children is a boy. Considering the order that the children were born, what is the probability that the other child is a girl? (See Example 5.)

19. **Treasure Beyond Measure** You are a contestant on the fictional game show *Treasure Beyond Measure*. The host presents you with five unopened treasure chests. One chest contains \$1,000,000. The other four contain nothing. You randomly choose two of the chests. The host, knowing which chest contains the money, opens two of the remaining chests and shows that they contain nothing. The host then asks you, “Do you want to switch your two chests for the one chest that I didn’t open?” Based on probability, what should you do? (See Example 5.)



20. **Ultimate Monty Hall** You are a contestant on the fictional game show *Ultimate Monty Hall*. The host presents you with 101 unopened doors. Behind one door is a car. Behind the other 100 doors are goats. You randomly choose 50 of the doors. The host, knowing the location of the car, reveals the goats behind 50 of the remaining doors. The host then asks you, “Do you want to switch your 50 doors for the 1 door that I didn’t open?” Based on probability, what should you do? (See Example 5.)

Card Puzzle In Exercises 21 and 22, use the information below. (See Examples 5 and 6.)

You deal two of the cards shown to your friend.



21. Your friend says, “I have at least one ace.” What is the probability that your friend’s other card is an ace?
22. Your friend says, “I have the ace of spades.” What is the probability that your friend’s other card is an ace?