

Activity 2a: Tricky Probability Problems

Solve problems A and B.

For extra credit, solve either problem C or D.

- A) Amy has two children. You know Amy's youngest child is a female.
Betty has two children. You know one child is female; you know nothing about the other child.
What's the probability that Amy has two female children?
What's the probability that Betty has two female children?
- B) Chris tells you, "I have two children. One is a boy born on a Tuesday." He does not tell you anything about the other child. What's the probability that Chris has two boys?
- C) Suppose you're on the *Let's Make a Deal* game show. You see 3 doors before you: behind one door is a car; behind the other two doors are goats. You choose one door (Door #1) and the host, who knows what's behind all 3 doors, opens another door (Door #2) to show a goat behind it. He then gives you a choice – you can stay with Door #1 or you can switch to Door #3. Is it to your advantage to switch to Door #3? What's the probability you win the car if you stay with your first choice? What's the probability you win the car if you switch to the other door?
- D) Suppose we have 25 students in this class. What's the probability of finding two students in this class with the same birthday (month and day)? How large would the class need to be to give us a 99% chance of finding two students with the same birthday?