The Twelfth
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Nerd Alert!

Three nerds are waiting on line to see a special double feature of Lord of the Rings III and Star Wars: Episode III. To try and impress some potential mates, they pull out their most expensive Star Wars collectible trading cards. All together, they have ten cards. However, they are so excited about their cards that they forget to move with the line. The person behind them gets annoyed and shouts, "Nerds!" They promptly get shoved to the sidewalk and, in the struggle, break their glasses and drop their cards.
The three of them desperately have to get their cards back, but they can't see a thing.

(a) If each nerd randomly picks up cards, what is the probability that every nerd ends up with their cards?

(b) If someone else picks up the Star Wars cards and distributes them, what is the probability they do it correctly? (Assume this person doesn't know how many cards each nerd gets)

Even Pythagoras could do this.

Coin Toss Puzzle

Flip a coin. It either lands heads or tails. Given a "normal" coin, you would expect that the coin is just as likely to land heads as it is to land tails. That is, after flipping the coin many times, you would expect to get heads about 50% of the time. We would then say that for a normal coin the probability of getting heads is 0.5 (which, in turn, means that the probability of getting tails is a corresponding 1 - 0.5 = 0.5). Such a coin is unbiased, that is, the probability of getting heads equals the probability of getting tails. Consider now a biased coin. When tossed, this coin is more (or less) likely to land heads than tails. The probability is no longer 50%/50% - it may be something like 20%/80% instead.

Devise a method to generate random unbiased bits (0 or 1) by flipping a biased coin. Given a probability p of your coin landing heads and using your method, how many times will you need to flip your coin on average to write 10 bits? 20 bits? n bits?

Credits to Jim Fix for this puzzle.

Even Aristotle could do this.

All bloops

All bloops are inanimate objects, and you've probably seen them before. When placed in order, they form the following sequence of colors:

Yellow, Blue, Red, Green, Orange, Dark red, Black, ...

What's the next color in the sequence, and what the heck are these things?

Even Freud could do this.

So what if Freud can do it??

Even Freud could do this.	Easy
Even Pythagoras could do this.	Not easy
Even Aristotle could do this.	More challenging
Even Kant could do this.	This is a hard problem.
Even Ray Mayer could do this.	Go ask him for help.

Questions? Blitz: **puzzles@reed.edu**

Think you know the answer?
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