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What Are the Probabilities of Couples Having Twins?

by Shyamal Kumar

Here's a picture of me with my new born twins—two of the faces here are those that, I wish, will always be smiling beautifully: Divya, which means “Divine,” and Ananth, which means “Endless” or “Infinite,” the names of the 175-day old fraternal twins, with me as their undeservingly lucky and proud father.

Very early in the gestation, my wife and I found out that they had their own amniotic sacs; we came to know that this alone did not indicate fraternal twins. This is because identical twins, depending on the date of their separation, could also be in separate sacs. An interesting statistic is, given separate sacs, the odds are 3:1 in favor of fraternal twins. Assuming the odds being equal for either gender, the “products,” as the gynecologist and radiologist insensitively called them at the time, could be one of the following, with the associated probabilities (see table below).

The mode was our preferred due to the sheer symmetry by gender; hence we just wanted not to be lucky. Being humans, despite our education, we feel lucky.

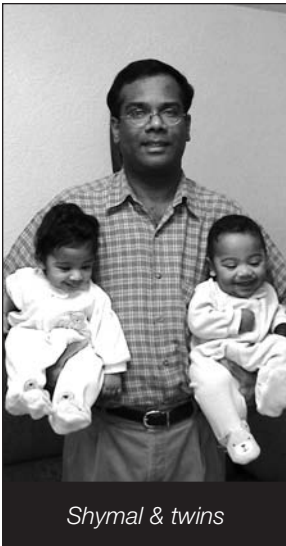
Continuing with my calculations: my blood type is O+ and my wife's, B+. Assuming 50 percent chance that my wife was a pure B+, this would imply that with fraternal twins, there would be a 75 percent chance for them to have the same blood type. In the case of the same gender twins, the odds would be 17:3, in favor of having the same blood type. And given the same gender and the same blood type, the odd would be 18:16 in favor of non-identical twins. We were curious about the latter, given the same gender and blood type, for we would have had to wait quite a few months to confirm

or negate their genetic similarity (we were against subjecting our newborns to genetic testing). Fortunately, these latter workings turned out to be in vain.

Regressions from <http://www.medal.org/> helped me estimate the fetal vital statistics. Using the IISO web server and ASPÖ, my home page published the estimated vital statistics—everyday we eagerly waited. The fetal vital was important to monitor, as a difference of 500g or more in the weights of the fetuses would cause problems during childbirth. As it turns out, the fetuses were 530g apart and arrived without complications (the twins would definitely appreciate that six is a passing score—should they choose to take actuarial exams later on).

The above and other tidbits I had learned—from the books of my medic wife and endlessly questioning many people including my wife, our gynecologist, radiologist and my gynecologist sister-in-law, plus tirelessly browsing the Internet—cost me my Course 8 exam last fall. This year I have the smiles, naughty pranks and fights to replace dabble for an excuse, much to the chagrin of my employer and my wife. Oops! I forgot to mention that I am the web liaison for the International Section, the ambassador in Mexico for the SOA and ISC, besides being an associate professor of Actuarial Science at ITAM, Mexico City, Mexico. □

Editor's Note: Such a loving account full of suspense was unexpected when I asked each person on the ISC to write something for this collection. However, one would understand where it's coming from simply by looking at the picture of Shyamal with his twins!



| Identical (I) or Fraternal | Sex Combination | Probability |
|----------------------------|-----------------|-------------|
| I | M & M | 12.5% |
| I | F & F | 12.5% |
| F | M & F | 37.5% |
| F | F & F | 18.75% |
| F | M & M | 18.75% |