

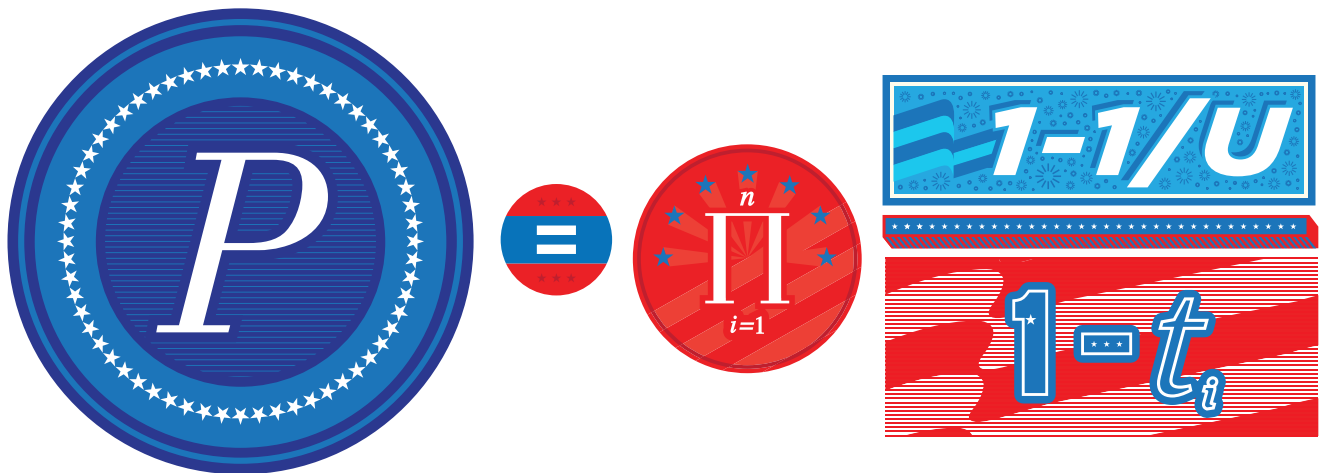
EQUATION

Counting Votes

How do you know if ballot results are right? Check a few precincts and run the numbers.

Elections have a dirty secret: Counting lots of ballots with absolute precision is impossible. Those infamous hanging chads from a decade ago are just one of the many glitches that can—and do—arise. Many states require a super careful hand count in selected precincts to double-check close results, and they nearly always find miscounted ballots. A few such slipups don't matter, but too many could alter

the election results. Most laws leave the determination of that threshold to the discretion of registrars. But not California—at least not since earlier this year, when the state assembly passed a bill mandating a new method to make sure the vote isn't rocking a little too hard. The formula comes from UC Berkeley statistician Philip Stark; he uses the error rate from audited precincts to calculate a key statistical number called the P-value. Election auditors are already calculating the degree of error in any given precinct; the P-value tells them the likelihood of that particular error rate occurring if the whole election result was wrong. A low P-value means everything is copacetic: The purported winner is probably the one who indeed got the most votes. But a high value? Maybe hold off on those balloon drops. —JULIE REHMEYER



P

The probability that you'd see a given error rate if the election result is wrong. If P is higher than about 10 percent, the result might well be incorrect, so keep double-counting more precincts.

$\prod_{i=1}^n$

The product of multiplying results for all the audited precincts (**n**). For each precinct, you calculate **u** and the fraction at the right of this symbol. Then multiply all those ratios together.

u

The maximum possible error if every vote for the "winner" is miscounted and is really a vote for the "loser."

t_i

The error rate you actually find in a precinct, as a proportion of the maximum possible error.

Most Dangerous Object in the Office This Month: Shomer-Tec Sap Cap

We don't normally countenance violence, but if the color printer gets one more paper jam, we're going to send it to the great Circuit City in the sky. Of course, management frowns on armed employees, which means you need a well-concealed weapon. That's where the Sap Cap comes in. It's Gilligan's greatest nightmare—the ultimate stealth cudgel. On the back of this normal-looking baseball cap is a reinforced pouch filled with about a pound of tiny metal balls. Grip the bill firmly and swing. *Pow!* Used in self-defense, the impact can break fingers and knock out teeth. That's more than enough destructive potential to vent our appliance-induced fury. —Aaron Rowe



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