# Re: quality control

***Source:*** http://sci.tech−archive.net/Archive/sci.stat.math/2006−11/msg00384.html

- *From*: David Winsemius <doe_snot@xxxxxxxxxxx>
- *Date*: Tue, 14 Nov 2006 10:00:53 −0600

Richard Ulrich <Rich.Ulrich@xxxxxxxxxxx> wrote in
news:6fkil2560tr7t2uac2burppvem3eohol2t@xxxxxxx:

> On Mon, 13 Nov 2006 10:04:03 −0600, David Winsemius
> <doe_snot@xxxxxxxxxxx> wrote:
>
> > Richard Ulrich <Rich.Ulrich@xxxxxxxxxxx> wrote in
> > news:vnsfl2d685snrulj63m9iel784mhgnjop8@xxxxxxx:
> >
> > > On 12 Nov 2006 17:00:04 −0800, "Frank"
> > > <deps_bear@xxxxxxxxx> wrote:
> > >
> > > > If I know a product fails .01% of the time
> > > > and I have 1500 items
> > > > I'm running through a process. How many
> > > > items do I need to check
> > > > with, say, 99% confidence that all the items
> > > > are built correctly.
> > >
> > > How many failures do you expect? Almost always, zero.
> > > This is dealing with exact probabilities. For a higher failure
> > > rate, you might want to look at the p of success, and raise
> > > to a power, e.g., (.9999)^n . For the tiny p of 0.01%,
> > > the figuring can be pretty much additive
> > >
> > > You want to have only so many items *unchecked* that
> > > there
> > > will be, on the average, only 1 bad item in 100 samplings −−
> > > so that 99 times out 100, there will be none.
> > >
> > > You expect 1 failure in 10,000. One hundred samplings
> > > that each fail to test 100 items will meet that condition.
> > > So you need to check 1400 of each 1500.

How did you go from 100 samplings of size 100 to the number 1400?

What I got was 100 samplings of 100, with a long−term average of 1 defect per 10,000. The 1500 and subsequently 1400 are largely irrelevant to the problem, as I construed it. I agree that it is not necessarily a good way to devise a real−life test of defects. As you point out, it is even more difficult to assure that there are *no* defects, than what you get with this strong assumption. Basically, you might as well go with 100% testing.

If the long term rate is 1 per 10,000, then any sample of 100 has a (very close to) 99% chance of being clean. That's easy arithmetic, following stern log