Untitled

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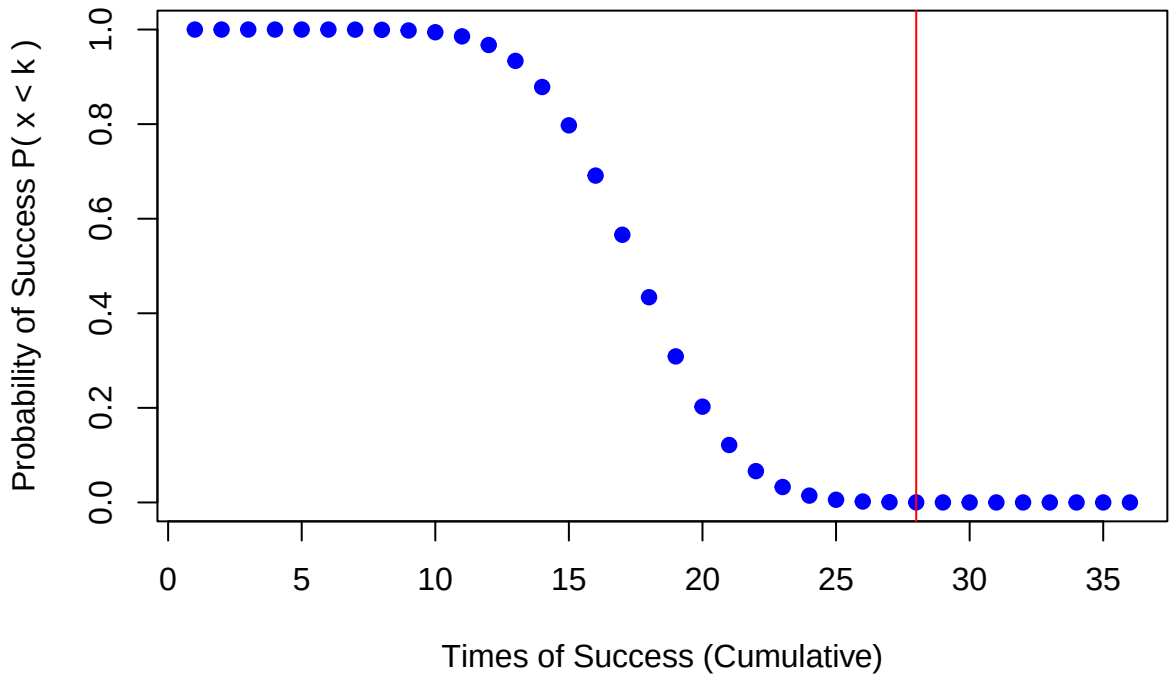
2022-04-30

Binomial Distribution If prob = 0.5 (pureguess)

```
success.times <- 1:36

probability.acc <- pbinom(q = success.times, size = 36, prob = 0.5)

plot(success.times, 1 - probability.acc,
  pch = 19, col = "blue",
  xlab = "Times of Success (Cumulative)",
  ylab = "Probability of Success P( x < k )"
)
abline(v = 28, col = "red")
```




```
pureguess.prob <- 1 - pbinom(q = 28, size = 36, prob = 0.5)
```

If a 95% probability of winning the competition is guaranteed, then the required probability of correct

diagnosis is prob.real

```
prob.real <- seq(0, 1, by = 0.01)
probability.succ <- 1 - pbinom(q = 28, size = 36, prob = prob.real)
plot(prob.real, probability.succ,
  pch = 19,
  col = "red",
  xlab = "Required probability (Diagnosis Accuracy)",
  ylab = "Probability of Winning the Challenge",
  xlim = c(0.7, 1)
)
abline(h = 0.95, col = "blue")
```