

1. (a), (b), and (d)
2. reciprocal inequalities = (c)
developed capabilities = (e)
innate potentialities = (a)
3. (b) and (e)
5. (a) 99.7% (b) When $np \geq 10$ and $n(1-p) \geq 10$
6. (c) It's an estimator of μ , the population mean difference in corneal thickness between an eye with glaucoma and a healthy eye.
(f) A bootstrap sample here satisfies these criteria
 - draw from the original with replacement
 - obtain a sample of the same size as original (violated here)
- (g) A 99% bootstrap percentile interval should extend from the 0.5-percentile to the 99.5-percentile. With 1000 points, these percentiles are 5 away from the two ends. Estimating, that is approximately $(-11.1, 5.8)$.
- (h) $qt(0.995, df = 7)$
- (i) $-2.125 \pm (3.4995) \frac{9.5982}{\sqrt{8}}$, or $(-14.00, 9.75)$
7. (a) $qnorm(0.08)$
- (b) $\hat{p} = \frac{33}{100} = 0.33$, $E(\hat{p}) = p = 0.35$, $Var(\hat{p}) = \sqrt{\frac{p(1-p)}{n}} = \sqrt{\frac{(0.35)(0.65)}{100}} = 0.047697$

$$\Rightarrow Z = \frac{\hat{p} - p}{\sqrt{p(1-p)/n}} = \frac{0.33 - 0.35}{0.047697} = -0.4193$$
- (c) $pnorm(-0.4193)$ or $pbinom(33, 100, 0.35)$
- (d) liii)
- (e) The rejection region is $Z < -1.405$, and so $Z = -0.4193$ is in the nonrejection region. We fail to reject H_0 .
- (f) We reject H_0 when the Z-score

$$Z = \frac{0.33 - 0.35}{\sqrt{(0.35)(0.65)/n}} < -1.4051 \Rightarrow \left(\frac{0.02}{1.4051} \right)^2 > \frac{(0.35)(0.65)}{n}$$

$$\Rightarrow n > \frac{(0.35)(0.65)}{(0.02/1.4051)^2} = 1122.89$$

So $n = 1123$ is minimal.

