

(c) CI for proportion
 $n = 25$.

JMS

(a) assume $p = 0.5$.

$$E(X) = np = 25(0.5) = 12.5$$

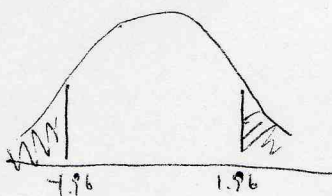
$$SD(X) = \sqrt{np(1-p)} = \sqrt{25(0.5)(0.5)} = 2.5$$

(b) $\hat{p}^* = \frac{X}{n}$

$$E(\hat{p}^*) = E\left(\frac{X}{n}\right) = \frac{1}{n} E(X) = \frac{1}{n} np = p = 0.5$$

$$SE = \sqrt{\frac{p(1-p)}{n}} = \sqrt{\frac{0.25}{25}} = \frac{0.5}{5} = 0.1$$

(c)



~~$$P(\hat{p}^* \in [-1.96, 1.96])$$~~

~~$$= 2P(\hat{p}^* \leq 1.96)$$~~

~~$$= 2P\left(\frac{X}{n} \leq 1.96\right)$$~~

(d) 95% CI for $p = p \pm 1.96 \sqrt{\frac{p(1-p)}{n}}$