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C.  $p = 0.5$   
 $n = \left( \frac{1.96}{0.05} \right)^2 \times 0.5 \times 0.5$

2.  $e = \frac{\sigma}{\sqrt{n}} \times Z_{\frac{\alpha}{2}}$

(1)  $\Delta = 3$   $e = 0.5$   $1 - \alpha = 0.95$

$n = \left( \frac{3}{0.5} \right)^2 \times 1.96^2 = 138.3 \div 139$

(2)  $\Delta = 0.2$   $e = 0.03$   $1 - \alpha = 0.9$

$n = \left( \frac{0.2}{0.03} \right)^2 \times 1.645^2 = 120.27 \div 121$

(3)  $\Delta = 0.05$   $e = 0.02$   $1 - \alpha = 0.98$

$n = \left( \frac{0.05}{0.02} \right)^2 \times 2.326^2 = 33.8 \div 34$

1a.  $\mu_1 - \mu_2 = \bar{x} - \bar{y} = 85 - 78 = 7$

(2)  $7 \pm 1.645 \sqrt{\frac{54}{55} + \frac{146}{40}}$

$= 7 \pm 1.645 \times 2.59$

$= 7 \pm 4.26$

$\Rightarrow (2.74, 11.26)$

$1250 \pm 7_{0.025} \sqrt{\frac{140^2}{20}}$

$= 1250 \pm 25.05$

$\Rightarrow (1224.95, 1275.05)$