PSYC 2317 – Hw #8 Solutions

(#1) $95\%\ CI = 35.2 \pm 2.064 \cdot \frac{4.14}{\sqrt{25}} = 35.2 \pm 1.71 = (33.49, 36.91)$

(#2) (a) $14.8 \pm 2.145 \cdot \frac{4.1}{\sqrt{15}} = 14.8 \pm 2.27 = (12.53, 17.07)$

(b) $14.8 \pm 2.045 \cdot \frac{4.1}{\sqrt{30}} = 14.8 \pm 1.53 = (13.27, 16.33)$

(c) increased sample size → better precision (i.e, smaller CI)

(#3) $\overline{D} = 3,\ \hat{\sigma}_D = 2.45$

so $95\%\ CI = 3 \pm 2.571 \cdot \frac{2.45}{\sqrt{6}} = 3 \pm 2.57 = (0.43, 5.57)$

(#4) $\hat{\sigma}_p = \sqrt{\frac{398 + 370}{17 + 15}} = 4.90$

so $95\%\ CI = (48.6 - 42) \pm 2.042 \cdot 4.90 \sqrt{\frac{1}{18} + \frac{1}{16}}$

$= 6.6 \pm 3.44 = (3.16, 10.04)$

(#5) $\hat{\sigma}_p = \sqrt{\frac{510 + 414}{14 + 14}} = 5.74$

so $95\%\ CI = (40.8 - 34.0) \pm 2.048 \cdot 5.74 \sqrt{\frac{1}{15} + \frac{1}{15}}$

$= 6.8 \pm 4.29 = (2.51, 11.09)$