STAT 1301 - Exam III Key

I. 1-d 3-b 5-c 7-a 9-d 11-a 13-b 15-c
    2-c 4-a 6-a 8-a 10-c 12-a 14-c

II. (a) 20 draws from 10 15 5 15 10
    or reduced box 2 10 5 5 5 10
    (b) 50 draws from 1 0 1 0 1 0

III. (a) $4.8 \pm 2 \frac{1.5}{\sqrt{50}}$, i.e. $4.8 \pm 2(0.1225)$
     or $4.8 \pm 0.245$
     or $4.555$ to $5.045$
     (b) 90% interval would be (ii) shorter

IV. (a) (1) $Z = \frac{161-146}{12} = 1.25$
     (2) Chance $= \frac{100-78.87}{2}$
         $= 10.565\%$
     (b) $SE(\bar{x}) = \frac{12}{\sqrt{36}} = 2$
        (1) $Z = \frac{147-146}{2} = .5$
        $Z = \frac{149-146}{2} = 1.5$
        (2) Chance $= \frac{86.64-38.29}{2}$
            $= 24.175\%$
(C) Normality needed for (i) (a) only
(Central limit theorem says we could use normality for chances about average even if the original population is not normal.)

V. AVG(BOX) = 20
So, EV(\(\bar{X}\)) = 20

\[
SE(\bar{X}) = \frac{14}{\sqrt{49}} = 2
\]

So, 95% of area should be within 20 ± 2(2)
18. 20 ± 4  or  16 → 24