8. (a) ___iii___   (b) ___ii___   (c) ___iv___   (d) ___i___

1. Histogram (b) goes with Boxplot ii, which appears to have $Q_1 \approx 10$ and median ≈ 14. The 0.3-quartile, or 30th percentile is somewhere in between, probably around 11.

2. Histogram (d) is roughly symmetric and bimodal.

3. As Histogram (a) is right-skewed, the mean is larger.

4. The standard deviation is somewhere around 3.

5. Boxplot iv likely has min ≈ 7, and max ≈ 22. So, range $= 22 - 7 = 15$.

6. Boxplot iv likely has Q_1 around 13 and Q_3 around 17. So, $IQR = 17 - 13 = 4$.

7. The boxplotter will not allow a whisker to be longer than $1.5 \times IQR$. These are values that lay farther out than $1.5 \times IQR$ from Q_3, so were plotted individually.

9. (a) ___iv___   (b) ___i___   (c) ___v___   (d) ___iii___

10. (a) A and B are independent, since

$$P(A \mid B) = \frac{1}{4} = P(A) \qquad \left(\text{Similarly, } P(B \mid A) = \frac{1}{13} = P(B).\right)$$

Knowledge of B does not affect the probability of A, nor vice versa.

(b) A and B are not disjoint, but they are independent. So, false.

12. (a) $Pr(X = 4) = 1 - P(X = 0) - P(X = 1) - P(X = 2) - P(X = 3) = 0.25$

(b) $Pr(X \leq 3) = P(X = 0) + P(X = 1) + P(X = 2) + P(X = 3) = 0.75$

(c) $Pr(X \text{ is even}) = P(X = 0) + P(X = 2) + P(X = 4) = 0.05 + 0.4 + 0.25 = 0.7$

(d) $\mu_x = \sum x p(x) = 0(0.05) + 1(0.15) + 2(0.4) + 3(0.15) + 4(0.25) = 2.4$

(e) $Var(X) = \sum (x - \mu_x)^2 p(x)$

$= (-2.4)^2(0.05) + (-1.4)^2(0.15) + (-0.4)^2(0.4) + (0.6)^2(0.15) + (1.6)^2(0.25)$

$= 1.34$

So $\sigma_x = \sqrt{1.34} \doteq 1.157$
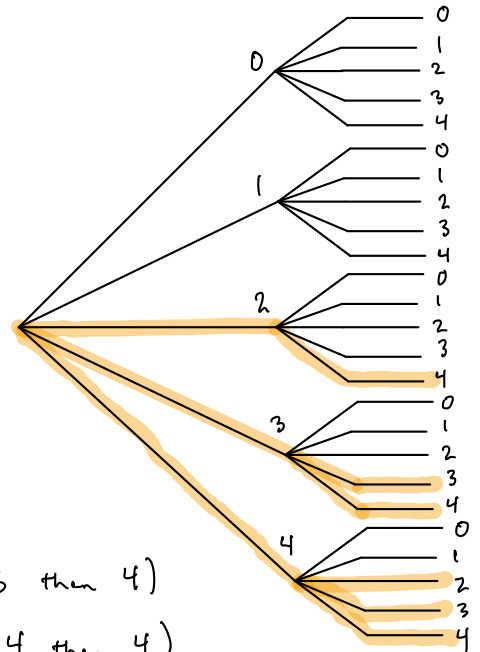
(f) 6 or more is achieved by

    2 then 4

    3 then 3

    3 then 4

    4 then 2

    4 then 3

    4 then 4

(g) $\Pr(\text{at least } 6)$

$= \Pr(2 \text{ then } 4) + \Pr(3 \text{ then } 3) + \Pr(3 \text{ then } 4)$

$\quad + \Pr(4 \text{ then } 2) + \Pr(4 \text{ then } 3) + \Pr(4 \text{ then } 4)$

$= (0.4)(0.25) + (0.15)^2 + (0.15)(0.25) + (0.25)(0.4)$

$\quad + (0.25)(0.15) + (0.25)^2$

$= 0.36.$

13. Answers vary. I will send an email with comments.