Practice Problem Solutions

1. Range = high score – low score = 149 – 84 = 65 ounces

Mean = $\bar{X} = \frac{\sum X}{n} = \frac{1146}{10} = 114.6$ ounces

Variance = $S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{135916 - \frac{(1146)^2}{10}}{9} = 509.378$

Standard deviation = $\boldsymbol{S} = \sqrt{S^2} = \sqrt{509.378} = 22.569$ ounces

2. Range = high score – low score = 7 – 2 = 5

$$\bar{X} = \frac{\sum X}{n} = \frac{82}{18} = 4.556$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{418 - \frac{(82)^2}{18}}{17} = 2.614$$

$$S = \sqrt{S^2} = \sqrt{2.614} = 1.617$$

3. Range = high score – low score = 105 – 40 = 65

$$\bar{X} = \frac{\sum X}{n} = \frac{2037}{27} = 75.444$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{161533 - \frac{(2037)^2}{27}}{26} = 302.026$$

$$S = \sqrt{S^2} = \sqrt{302.026} = 17.379$$

4. Range = high score – low score = 44 – 18 = 26 years

$$\bar{X} = \frac{\sum X}{n} = \frac{614}{20} = 30.70 yrs$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{19956 - \frac{(614)^2}{20}}{19} = 58.221$$

$S = \sqrt{S^2} = \sqrt{58.221} = 7.63$ years

5. Range = high score – low score = 45 – 15 = 30 hours

$$\bar{X} = \frac{\sum X}{n} = \frac{460}{16} = 28.75 \text{ hours}$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{14628 - \frac{(460)^2}{16}}{15} = 93.53$$

$S = \sqrt{S^2} = \sqrt{93.53} = 7.63$ hours

6. Range = high score – low score = 10 – 2 = 8 hours

$$\bar{X} = \frac{\sum X}{n} = \frac{109}{20} = 5.45 \text{ hours}$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{691 - \frac{(109)^2}{20}}{19} = 5.103$$

$S = \sqrt{S^2} = \sqrt{5.103} = 2.259$ hours

7 Range = high score – low score = 9 – 5 = 4 hours

$$\bar{X} = \frac{\sum X}{n} = \frac{72}{6} = 7 yrs$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{306 - \frac{(42)^2}{6}}{5} = 2.40$$

$S = \sqrt{S^2} = \sqrt{2.40} = 1.549$ hours

Range = high score – low score = 7 – 2 = 5 hours

$$\bar{X} = \frac{\sum X}{n} = \frac{41}{10} = 4.10 \text{ hours}$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{197 - \frac{(41)^2}{10}}{9} = 3.211$$

$$S = \sqrt{S^2} = \sqrt{3.211} = 1.792 \text{ hours}$$

8. Range = high score – low score = 9.40 – 0.40 = 9.00 msec

$$\bar{X} = \frac{\sum X}{n} = \frac{57.30}{20} = 2.865 \text{ hours}$$

$$S^2 = \frac{\sum X^2 - \frac{\sum (X)^2}{n}}{n-1} = \frac{281.74 - \frac{(62.20)^2}{20}}{19} = 4.647$$

$$S = \sqrt{S^2} = \sqrt{4.647} = 2.157$$