Standard Deviation

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Question: 5

$$\overline{x} = \frac{(1 * 89600) + (2 * 92500) + (3 * 45000) + (4 * 37100) + (5.5 * 19400)}{89600 + 92500 + 45000 + 37100 + 19400} = 2.34$$

$$\sigma_x = \sqrt{\frac{(1^2 * 89600) + (2^2 * 92500) + (3^2 * 45000) + (4^2 * 37100) + (5.5^2 * 19400)}{89600 + 92500 + 45000 + 37100 + 19400} - 2.34^2} = 1.31$$

Question: 13

a

$$44.999$$

b

$$\overline{x} = \frac{(8 * 21707) + (20.5 * 22921) + (35 * 40894) + (55 * 27645) + (85 * 19345)}{132512} = 39.5$$

$$\sigma_x = \sqrt{\frac{(8^2 * 21707) + (20.5^2 * 22921) + (35^2 * 40894) + (55^2 * 27645) + (85^2 * 19345)}{132512} - 39.5^2} = 24.2$$

Question: 17

i

$$5.8 = \sqrt{\frac{\sum w^2}{75} - 52.3^2}$$

$$\sum w^2 = 75 * \left(5.8^2 + 52.3^2\right) = 207669.75$$

$$= 208,000$$

ii

$$\overline{s} = \frac{(52.3 * 75) + 5760}{100 + 75} = 65.6$$

$$\sigma_s = \sqrt{\frac{207669.75 + 335497}{175} - 65.6^2} = 34.6i???$$

Question: 4

i

$$\overline{m} = 0.74 + 5 = 5.74$$
$$\sigma_m = 0.13$$

ii

$$\overline{m} = \frac{(5.74 * 10) + (5.6 * 15)}{25} = 5.66$$

iii

The second group guessed closer even though they were more spread out (higher σ_m), which means that this claim is false - likely confusing accuracy and precision.