

Total: / 14 Unit 3 Quiz: Analyzing One-Variable Data**Only complete and organized solutions will receive full marks.**

- Carol's golf drives have a mean of 185 m with a standard deviation of 25 m, while her friend Chi-Yan shoots a mean distance of 170 m with a standard deviation of 10 m. Explain which of the two friends is likely to have a better score in a round of golf. Justify your answer. [2]
- The number of points scored by two players is shown.

| | | | | | | | | |
|--------|----|----|----|----|----|----|----|----|
| Pascal | 35 | 13 | 34 | 45 | 29 | 14 | 42 | 19 |
| Fryer | 29 | 45 | 27 | 35 | 13 | 32 | 24 | 26 |

 - Calculate \bar{X} and the median for each player. [4]
 - Calculate the standard deviation for each player. [6]
 - How many of each player's scores fell within one standard deviation of the mean? [2]

Solution:

- Chi-Yan seems to have better control over her drives (a lower standard deviation in their distances). If their putting abilities are essentially equal, then Chi-Yan is more likely to have a better score in a round of golf since she is more consistent than Carol. In other words, there is a much greater spread in Carol's drives than Chi-Yan's drives.

2.

a) Pascal: $\bar{X} \square 28.9$

$$\text{Median} = \frac{t_4 + t_5}{2}$$

$$= \frac{29 + 34}{2}$$

$$= 31.5$$

Fryer: $\bar{X} \square 28.9$

$$\text{Median} = \frac{t_4 + t_5}{2}$$

$$= \frac{27 + 29}{2}$$

$$= 28$$

b) Pascal:

$$\sigma = \sqrt{\frac{(35 - 28.9)^2 + (13 - 28.9)^2 + (34 - 28.9)^2 + (45 - 28.9)^2 + (29 - 28.9)^2 + (14 - 28.9)^2 + (42 - 28.9)^2 + (19 - 28.9)^2}{8}}$$

$$= \sqrt{\frac{(6.1)^2 + (-15.9)^2 + (5.1)^2 + (16.1)^2 + (0.1)^2 + (-14.9)^2 + (13.1)^2 + (-9.9)^2}{8}}$$

$$= \sqrt{\frac{1066.88}{8}}$$

$$= \sqrt{133.36}$$

$$\approx 11.55$$

Fryer:

$$\sigma = \sqrt{\frac{(29 - 28.9)^2 + (45 - 28.9)^2 + (27 - 28.9)^2 + (35 - 28.9)^2 + (13 - 28.9)^2 + (32 - 28.9)^2 + (24 - 28.9)^2 + (26 - 28.9)^2}{8}}$$

$$= \sqrt{\frac{(0.1)^2 + (16.1)^2 + (-1.9)^2 + (6.1)^2 + (-15.9)^2 + (3.1)^2 + (-4.9)^2 + (-2.9)^2}{8}}$$

$$= \sqrt{\frac{594.88}{8}}$$

$$= \sqrt{74.36}$$

$$\approx 8.6$$

c) Pascal :

$$\bar{X} - \sigma \square 28.9 - 11.5 = 17.4$$

$$\bar{X} + \sigma \square 28.9 + 11.5 = 40.4$$

4 scores fall within one standard deviation of the mean (scores that fall between 16.5 and 41.2).

Fryer:

$$\bar{X} - \sigma \square 28.9 - 8.6 = 20.3$$

$$\bar{X} + \sigma \square 28.9 + 8.6 = 37.5$$

6 scores fall within one standard deviation of the mean (score that fall between 19.7 and 38.2)