

Chapter 3

Self Test: 1. $n=12$, data list: 1, 2, 4, 4, 6, 7, 8, 9, 10, 12, 16, 18

25th percentile=? 30th percentile=? 50th percentile=? 60th percentile=? Third quartile=?

Is what you get the right answer? Check your answers by the definition of percentile.

2. If the coefficient of variation is 40% and the mean is 70, then the variance is

- a. 28
- b. 2800
- c. 1.75
- d. 784

Solutions:

1.

$$i = (25/100) \times 12 = 3$$

$$25^{\text{th}} \text{ percentile} = (4+4)/2 = 4$$

Check: at least 25% values ≤ 4 $4/12 = 33.3\% > 25\%$
at least 75% values ≥ 4 $10/12 = 83.3\% > 75\%$

$$i = (30/100) \times 12 \approx 4$$

$$30^{\text{th}} \text{ percentile} = 4$$

Check: at least 30% values ≤ 4 $4/12 = 33.3\% > 30\%$
at least 70% values ≥ 4 $10/12 = 83.3\% > 70\%$

$$i = (50/100) \times 12 = 6$$

$$50^{\text{th}} \text{ percentile} = (7+8)/2 = 7.5$$

Check: at least 50% values ≤ 7.5 $6/12 = 50\% \geq 50\%$
at least 50% values ≥ 7.5 $6/12 = 50\% \geq 50\%$

$$i = (60/100) \times 12 \approx 8$$

$$60^{\text{th}} \text{ percentile} = 9$$

Check: at least 60% values ≤ 9 $8/12 = 66.7\% > 60\%$
at least 40% values ≥ 9 $5/12 = 41.7\% > 40\%$

$$i = (75/100) \times 12 = 9$$

$$\text{Third quartile} = (10+12)/2 = 11$$

Check: at least 75% values ≤ 11 $9/12 = 75\% \geq 75\%$
at least 25% values ≥ 11 $3/12 = 25\% > 25\%$

2. Answer: d