

Maths MCQ

Q1: What is the mean of the following set of numbers?

45, 58, 62, 62, 78

- a) 61
- b) 305
- c) 62
- d) 0.02

$$45 + 58 + 62 + 62 + 78 = 305$$

$$305/5 = 61$$

Q2: If the variance (σ^2) = 9, what is the value of the standard deviation (σ)?

- a) 81
- b) 30
- c) 3
- d) 0.9

$$\text{Sqrt } 9 = 3$$

Q3: Using the equation below, calculate the upper and lower boundaries of a 95% confidence interval (CI), when the mean is 10 and the standard error (SE) is 0.5.

$$95\% \text{ CI} = \bar{X} \pm 1.96 \times SE$$

- a) Upper boundary = 10.98, lower boundary = -10.98
- b) Upper boundary = 10.98, lower boundary = 9.02
- c) Upper boundary = 5.98, lower boundary = -5.98
- d) Upper boundary = 5.98, lower boundary = -4.02

$$1.96 \times 0.5 = 0.98$$

$$10 + 0.98 = 10.98$$

$$-1.96 \times 0.5 = -0.98$$

$$10 - 0.98 = 9.02$$

Q4: The results of a linear model indicates that when x is zero, the value of y is 49.22 units (b_0) and that for every one unit increase in x , y increases by 0.46 units (b_1). Using the equation below, calculate y when the value of x is 10.

$$y_i = b_0 + b_1x$$

- a) 53.82
- b) 514.84
- c) 492.66
- d) 49.68

$$\text{CognitiveFunction}_i = 49.22 + (0.46 \times \text{TeaDrinking})$$

$$= 49.22 + (0.46 \times 10)$$

$$= 49.22 + 4.60$$

$$= 53.82$$

Q5: If the number of observations (N) = 100, and the standard deviation (s) = 3, what is the value of the standard error (SE)?

$$N = \left(\frac{s}{SE} \right)^2$$

a) 0.3

b) 3.33

c) 0.2

d) 2

Rearrange the equation to make SE the subject:

- First remove the square by taking the square root of both sides:

$$\sqrt{N} = \frac{s}{SE}$$

- As the subject is the denominator, multiply both sides by the subject to remove it:

$$\sqrt{N} SE = s$$

- Finally, isolate the subject by dividing by the sqrt of N to get:

$$SE = \frac{s}{\sqrt{N}}$$

Plug in the values and solve:

$$SE = \frac{3}{\sqrt{100}}$$

$$SE = \frac{3}{10}$$

$$SE = 0.3$$