

Self-assessment answers: 16 Summarising data

1. Ordering data gives: 11, 21, 36, 44, 54, 62, 71, 84, 87

$$Q_1 = \frac{21+36}{2} = 28.5 \text{ and } Q_3 = \frac{71+84}{2} = 77.5$$

$$\text{IQR} = 77.5 - 28.5 = 49$$

[3 marks]

2. Mean for 15 students is 5.2, so

$$5.2 = \frac{\sum_{i=1}^{15} x_i}{15}$$

$$\Rightarrow \sum_{i=1}^{15} x_i = 78$$

$$\therefore \sum_{i=1}^{16} x_i = 78 + 4 = 82$$

$$\text{So the mean for the whole class} = \frac{82}{16} = 5.125.$$

[4 marks]

3. (a) mean = 75.48, standard deviation = 15.37 (4SF)

[2 marks]

(b) 0.719 (3SF)

[2 marks]

(c) $y = 2.724x + 5.327$

[2 marks]

(d) $y = (2.724 \times 29) + 5.327 = 84.32$ (4SF)

[1 mark]

- (e) Outside range of given data – extrapolation needed.

[1 mark]

4. (a)

Time in minutes (t)	Frequency
$6 < t \leq 10$	6
$10 < t \leq 15$	6
$15 < t \leq 20$	10
$20 < t \leq 30$	16
$30 < t \leq 45$	7

(b) Mean = 21.3 min, Variance = 82.8 min²

(c) Actual data values are not given, only groups.

[10 marks]

5. Average monthly expenditure from January to August is \$620, means:

$$620 = \frac{\sum_{i=1}^8 x_i}{8}$$

$$\Rightarrow \sum_{i=1}^8 x_i = 4960$$

Average monthly expenditure over the whole year is \$586, means:

$$586 = \frac{\sum_{i=1}^{12} x_i}{12}$$

$$\sum_{i=1}^{12} x_i = 7032$$

So, total expenditure for September to December = 7032 – 4960 = 2072

Therefore, the mean for September to December $\frac{2072}{4} = 518$

[5 marks]