

$$1a) \quad 160 + \left(\frac{13}{15} \times 10\right) = 168.6$$

$$= \underline{\underline{169}} \quad (3sf)$$

$$b) \quad 145 \times 7 + 155 \times 10 + 165 \times 15 + 175 \times 19 + 190 \times 9 \\ = 10075$$

$$\frac{10075}{60} = 167.916666$$

$$= \underline{\underline{168}} \quad (3sf)$$

$$c) \quad \sum fx^2 = 7 \times 145^2 + 10 \times 155^2 + 15 \times 165^2 + 19 \times 175^2 + 9 \times 190^2 \\ = 1702575$$

$$\sigma = \sqrt{\frac{\sum fx^2}{n} - \left(\frac{\sum fx}{n}\right)^2}$$

$$= \sqrt{\frac{1702575}{60} - (167.916)^2}$$

$$= \underline{\underline{13.4}} \quad (3sf)$$

$$2a) \quad 10 + \frac{15}{19} \times 5 = \underline{\underline{13.9}} \text{ (3sf)}$$

$$b) \quad \sum fx = 1 \times 2.5 + 9 \times 7.5 + 19 \times 12.5 + 14 \times 20 + 7 \times 32.5 \\ = 815$$

$$\sum fx^2 = 1 \times 2.5^2 + 9 \times 7.5^2 + 19 \times 12.5^2 + 14 \times 20^2 + 7 \times 32.5^2 \\ = 16475$$

$$\sigma = \sqrt{\frac{16475}{50} - \left(\frac{815}{50}\right)^2} \\ = \underline{\underline{7.99}} \text{ (3sf)}$$

$$c) \quad \text{Median: } "13.9" \times 2 + 20 \\ = 47.9 \text{ (3sf)}$$

$$\text{St. Dev: } "7.99" \times 2 \\ = \underline{\underline{15.0}} \text{ 3sf}$$

$$3a) \quad 19.5 + \frac{27}{41} \times 10$$

$$= 26.1 \text{ (3sf)}$$

$$b) \quad \frac{2651}{100} = \underline{\underline{26.51}}$$

$$c) \quad \sigma = \sqrt{\frac{80434.25}{100} - \left(\frac{2651}{100}\right)^2}$$
$$= \underline{\underline{10.1}} \text{ (3sf)}$$

$$4a) \quad \Sigma x = 551.8$$
$$\Sigma x^2 = \cancel{23364.38}$$
$$25380.38$$

$$a) \quad \text{mean} = \frac{551.8}{12} = \underline{\underline{46.0}} \text{ (3sf)}$$

$$b) \quad \sigma = \sqrt{\frac{25380.38}{12} - \left(\frac{551.8}{12}\right)^2}$$
$$= \underline{\underline{0.751}} \text{ (3sf)}$$

c) median	45.9
l. q.	45.4
u. q.	46.3