## Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

**2.1**

- $\bar{x} = 24/4 = \mathbf{6}$.

**2.2**

- Sort to $1, 3, 5, 6, 8$; the middle is **5**.

**2.3**

- Most frequent gives **mode 6**; $R = 11 - 2 = \mathbf{9}$.

**2.4**

- $\bar{x} = (0(2) + 1(4) + 2(2))/(2 + 4 + 2) = 8/8 = \mathbf{1}$.

**3.1**

(a)

- $\bar{x} = 48/6 = \mathbf{8}$; median $M = (7 + 8)/2 = \mathbf{7.5}$.

(b)

- **Mode 7**; $R = 13 - 4 = \mathbf{9}$.

(c)

- New sum is 60: $\bar{x} = 60/6 = \mathbf{10}$; median stays **7.5**, so **median changes less**.

**3.2**

(a)

- Weighted total $T = 1(2) + 2(3) + 3(4) + 4(1) = 24$; total frequency 10, so mean **2.4 kg**.
- Positions 5 and 6 are 2 and 3, so median **2.5 kg**.
- Highest frequency gives mode **3 kg**.

(b)

- New total $T_n = 11(2.5) = 27.5$.
- Added mass $x = T_n - 24 = \mathbf{3.5}$ kg.
- Extremes stay 1 and 4, so new range $R = 4 - 1 = \mathbf{3}$ kg.

**3.3**

- The total of the five numbers is $5 \times 12 = 60$.
- Fifth number $= 60 - (9 + 15 + 10 + 14) = 60 - 48 = \mathbf{12}$.

**3.4**

(a)

- The highest frequency is 8, for **1** pet.

(b)

- $\sum fx = 0 \times 5 + 1 \times 8 + 2 \times 4 + 3 \times 3 = 25$.
- Mean $= \dfrac{\sum fx}{\sum f} = \dfrac{25}{20} = \mathbf{1.25}$ pets.