

Lesson Worksheet 6.2A(II)

Objectives: To calculate mean from a set of grouped data.

The mean of a set of grouped data is calculated as follows:

(a) Discrete data not grouped into intervals 不以區間分組的離散數據

Consider the following set of data: 考慮以下的數據組：

Number of people	1	2	3
Frequency	10	6	4

$$\begin{aligned} \text{Mean} &= \frac{1 \times 10 + 2 \times 6 + 3 \times 4}{10 + 6 + 4} \leftarrow \begin{array}{l} \text{sum of 'data \times frequency' 「數據 \times 頻數」的總和} \\ \text{sum of frequencies 頻數的總和} \end{array} \\ &= \underline{1.7} \end{aligned}$$

(b) Data grouped into intervals 以區間分組的數據

Consider the following set of data: 考慮以下的數據組：

Weight (kg)	40 – 42	43 – 45	46 – 48
Frequency	9	8	3

Class marks of the intervals 組區間的組中點

$$\begin{aligned} \text{Mean} &= \frac{41 \times 9 + 44 \times 8 + 47 \times 3}{9 + 8 + 3} \text{ kg} \leftarrow \begin{array}{l} \text{sum of frequencies 頻數的總和} \end{array} \\ &= \underline{43.1 \text{ kg}} \end{aligned}$$

1. The following table shows the heights (in cm) of some potted plants.

Height (cm)	9 – 12	13 – 16	17 – 20	21 – 24
Class mark (cm)	10.5	14.5	18.5	22.5
Frequency	4	13	7	6

- (a) Complete the above table.
 (b) Find the mean height of the potted plants.

(b) The mean height of the potted plants

$$\begin{aligned} &= \frac{4 \times (10.5) + 13 \times (14.5) + 7 \times (18.5) + 6 \times (22.5)}{[(4) + (13) + (7) + (6)]} \\ &= \underline{16.5} \text{ cm} \end{aligned}$$

Demonstration

The following table shows the scores of students of class 3B in a Mathematics examination.

Score (marks)	61–70	71–80	81–90	91–100
Class mark (marks)				
Number of students	6	13	10	3

- (a) Complete the above table.
 (b) Find the mean score of class 3B.

Solution

(a)

Score (marks)	61–70	71–80	81–90	91–100
Class mark (marks)	65.5	75.5	85.5	95.5
Number of students	6	13	10	3

(b) Mean score of class 3B

$$\begin{aligned} &= \frac{65.5 \times 6 + 75.5 \times 13 + 85.5 \times 10 + 95.5 \times 3}{6 + 13 + 10 + 3} \text{ marks} \\ &= \underline{78.625 \text{ marks}} \end{aligned}$$

2. The table below shows the weight (in kg) of participants in a taekwondo class.

Weight (kg)	42 – 46	47 – 51	52 – 56	57 – 61
Class mark (kg)	44	49	54	59
Frequency	6	13	10	1

- (a) Complete the above table.
 (b) Find the mean weight of the participants in the class.
 (b) The mean weight of the participants

$$= \frac{[6 \times (44) + 13 \times (49) + 10 \times (54) + 1 \times (59)]}{[(6) + (13) + (10) + (1)]}$$

$$= \underline{\underline{50}} \text{ kg}$$

3. The table below shows the daily time (in h) spent watching TV by a group of children.

Time spent (h)	1.5 – 1.9	2.0 – 2.4	2.5 – 2.9	3.0 – 3.4	3.5 – 3.9
Class mark (h)	1.7	2.2	2.7	3.2	3.7
Frequency	7	8	16	20	9

- (a) Complete the above table.
 (b) Find the mean daily time spent watching TV by the group of children.
 (Give the answer correct to 2 decimal places.)

The mean daily time spent

$$= \frac{[7 \times (1.7) + 8 \times (2.2) + 16 \times (2.7) + 20 \times (3.2) + 9 \times (3.7)]}{[(7) + (8) + (16) + (20) + (9)]}$$

$$= \underline{\underline{2.83}} \text{ h (corr. to 2 d.p.)}$$

Challenging Question(Optional)

- *4. The following table shows the prices of the drinks sold in a convenience store.

Price (\$)	10	15	20	25	30
Number of drinks	3	y	4	2	1

If the mean price of drinks is \$17.5,

$$\frac{[3 \times (10) + y \times (15) + 4 \times (20) + 2 \times (25) + 1 \times (30)]}{[(3) + (y) + (4) + (2) + (1)]} = (17.5)$$

$$\frac{15y + 190}{y + 10} = 17.5$$

$$15y + 190 = 17.5y + 175$$

$$2.5y = 15$$

$$y = \underline{6}$$

mean (平均值) median (中位數) mode (眾數) frequency (頻數)