

## Lesson Worksheet 6.2B(I)

*Objectives: To find median from a set of grouped data.*

The median of a set of grouped data is found 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：

<b>Number of bags</b>	10	11	12	13
<b>Frequency</b>	4	3	7	5

∴ Total number of data 數據總數 = 4 + 3 + 7 + 5 = 19

∴ Median of the set of data = the 10th datum 第 10 個數據  
 數據組的中位數 = 12 ← The data in the table are already in ascending order. The first four data are 10, the next three data are 11 and so on.

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

When a set of data is grouped into intervals, we can find the median by the steps below:

當數據以區間分組，我們可以根據以下的步驟求出中位數：

Step 1: Draw the corresponding cumulative frequency polygon or curve.

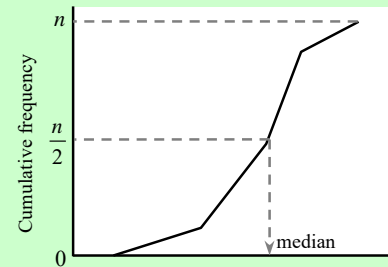
繪畫對應的累積頻數多邊形或累積頻數曲線。

Step 2: Find the total frequency  $n$  of the data.

找出數據的總頻數  $n$ 。

Step 3: Find the value on the horizontal axis corresponding to

half of the total frequency (i.e.  $\frac{n}{2}$ ). 找出在橫軸上對應總頻數的一半 (即  $\frac{n}{2}$ ) 的值。



1. The following table shows the numbers of correct answer got by a group of students in a quiz.

<b>Number of correct answers</b>	0	1	2	3	4
<b>Number of students</b>	3	4	8	9	5

Find the median number of correct answers.

Total number of students = 3 + 4 + 8 + 9 + 5 = 29

The median is the 15th datum.

∴ median = 2

Demonstration

The following table shows the number of movies watched by a group of people in a week.

<b>Number of movies</b>	1	2	3	4
<b>Number of people</b>	12	8	9	11

Find the median number of movies watched.

Solution

Total number of people = 12 + 8 + 9 + 11  
 = 40

∴ The data in the table is in ascending order.

∴ The median is the mean of the 20th datum and the 21th datum.

∴ median =  $\frac{2+3}{2} = \underline{2.5}$

2. The following table shows the ages of the players in a soccer team.

<b>Age</b>	16	17	18	19	20	21	22
<b>Frequency</b>	2	1	0	4	3	3	1

Find the median age of the players in the soccer team.

Total number of players =  $2 + 1 + 0 + 4 + 3 + 3 + 1 = 14$

The median is the mean of the 7th datum and the 8th datum.

$$\frac{19 + 20}{2} = 19.5$$

$\therefore$  median = 19.5

3. The table below shows the daily number of trucks passing through a tunnel in a month.

<b>Number of trucks</b>	20	21	22	23	24
<b>Frequency</b>	4	10	8	6	2

Find the median number of trucks passing through the tunnel.

Total frequency =  $4 + 10 + 8 + 6 + 2 = 30$

The median is the mean of the 15th datum and the 16th datum.

$$\frac{22 + 22}{2} = 22$$

$\therefore$  median = 22

4. The following table shows the lengths of some pipes.

<b>Length (m)</b>	25	26	27	28	29	30
<b>Frequency</b>	6	5	3	4	2	4

Find the median length of the pipes.

Total number of pipes =  $6 + 5 + 3 + 4 + 2 + 4 = 24$

The median is the mean of the 12th datum and the 13th datum.

$$\frac{27 + 27}{2} \text{ m} = 27 \text{ m}$$

$\therefore$  median length = 27 m

Challenging Question(Optional)

5. The following table shows the number of credit cards owned by a group of students in a university.

<b>Number of credit cards</b>	1	2	3	4	5
<b>Frequency</b>	$x$	6	3	4	2

It is known that the median of the number of credit cards owned is 2.5. Find the value of  $x$ .

2.5 is the mean of 2 and 3.

$\therefore$  The middle two data should be 2 and 3.

$$\therefore x + 6 = 3 + 4 + 2$$

$$x = 3$$

mean (平均值)

median (中位數)

mode (眾數)

frequency(頻數)