Averages from tables: fact sheet

Planner week 17 · Learn these facts

Mean from a table

total of (value × frequency)
÷ total frequency

Add a third column

value × frequency

Mode

the value with the highest frequency

Not the frequency itself

Grouped: modal class

Median

(n + 1) ÷ 2

80 values: the 40.5th

Count down the frequencies

Grouped mean

midpoint × frequency
÷ total

It is an **estimate**

We don't know exact values

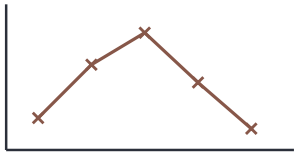
Midpoints

150 < h ≤ 160

midpoint 155

Add the ends, divide by 2

Frequency polygon



Plot at the **midpoints**

Join with straight lines

Range

biggest − smallest

Grouped data: estimate only

Check

Mean	inside the range of data
Polygon	do not join last to first

Key words

- **Frequency** how many times
- **Class interval** a group such as 150 < h ≤ 160
- **Midpoint** the middle of a class
- **Estimate** because the exact values are unknown

Exam tips

- Add a column: value (or midpoint) × frequency.
- Divide by the **total frequency**, not the number of rows.
- Check the mean is a sensible size.
- Median: find which class the middle value is in.
- Frequency polygons: plot at midpoints, straight lines, don't close it.
- Mode is a value, not a frequency.

Averages from tables: fact sheet

Averages from tables · Planner week 17 · Work out which type it is, follow the example

1 MODE from a table: highest frequency

The table shows the goals scored in 20 matches. Find the mode.

Goals	Frequency
0	4
1	7
2	6
3	3

1. The mode is the value with the **highest frequency**
2. Highest frequency is 7
3. Mode = **1 goal** (the value, not the frequency)

Use this when: they ask for the mode, or "the most common", from a table

2 MEAN from a table

The table shows the goals scored in 20 matches. Work out the mean.

Goals	Frequency	Goals × freq
0	4	0
1	7	7
2	6	12
3	3	9
	20	**28**

1. **Multiply** each value by its frequency
2. **Add them**: 0 + 7 + 12 + 9 = 28 goals
3. **Divide by the total frequency** (20)
4. Mean = 28 ÷ 20 = **1.4**

Use this when: the data is in a table with a frequency column

3 GROUPED table: estimate the mean

The table shows the times, in minutes, 30 people took. Work out an estimate for the mean.

Time (min)	Freq	Midpoint	Mid × freq
0 < t ≤ 10	6	5	30
10 < t ≤ 20	14	15	210
20 < t ≤ 30	10	25	250
	30		**490**

1. Groups, not single values: use the **midpoint** of each group
2. **Multiply** each midpoint by its frequency
3. **Add them**: 30 + 210 + 250 = 490
4. **Divide by the total frequency**: 490 ÷ 30 = **16.3 minutes**

Use this when: the values are in groups (like 10 < t ≤ 20) and they say "estimate"

The big question

Is the data a **list**, a **frequency table**, or do I know the **mean** and need to **work backwards**?

List: Mean, median, mode and range. Table: Averages from tables. Mean given: Working backwards from the mean.

Careful: in a table, the frequency tells you how many times each value appears.

Watch out

- Dividing by the number of rows instead of the total frequency.
- Adding the frequencies and dividing by 4.
- Using the end of each group instead of the midpoint.
- Giving the frequency (7) as the mode instead of the value (1).