

Bank Note Frequency Table

The following table gives the number of bank notes in circulation in the UK at the end of February 2015:

| Note | Number (in millions) | | |
|------|-------------------------|--|--|
| £5 | 320 | | |
| £10 | 737 | | |
| £20 | 1946 | | |
| £50 | 236 | | |

1. Write down the modal bank note in circulation:

2. Work out the total number of bank notes in circulation:

3. If the notes are lined up in order of size, what type would the 1000-millionth one be?

4. Find the median bank note value:

5. Work out the total *value* of all the £10 notes in circulation:

6. Work out the total value of all notes in circulation:

7. Calculate the mean value of bank notes in circulation:

Bank Note Frequency Table HINTS

The following table gives the number of bank notes in circulation in the UK at the end of February 2015:

| Note | Number (in millions) | Cumulative Frequency | <i>Data</i> × <i>Frequency</i> |
|------|-------------------------|-------------------------|-----------------------------------|
| £5 | 320 | | |
| £10 | 737 | | |
| £20 | 1946 | | |
| £50 | 236 | | |

The first column gives the *data* (there are only 4 different types), and the second column gives the *frequency* (there are lots of each sort. Eg, there are 236 million £50 notes).

1. Write down the modal bank note in circulation:

To find the mode (or modal group), look for the largest frequency. This column tells you how many of each category (in this case, bank note) there are in total.

2. Work out the total number of bank notes in circulation:

The frequency column gives the number of each type of note. To work out the overall total, just add these together. Take care with the final value: check the title of this column.

3. If the notes are lined up in order of size, what type would the 1000-millionth one be?

The first 320 million notes are £5 notes, and the next 737 million are £10 notes. Use a cumulative frequency column (running total) to write the total number *up to and including* each category, and use that.

4. Find the median bank note value:

Using your cumulative frequency column you should be able to identify the middle note. Work out how far along the middle note will be by thinking about the total frequency.

5. Work out the total *value* of all the £10 notes in circulation:

Use the information about the *number* of £10 notes and then use their value to calculate the total. Don't forget that the frequency here is measured in millions of notes.

6. Work out the total value of *all* notes in circulation:

Do the same thing for £5, £20 and £50 as you just did for £10, then put it all together.

7. Calculate the mean value of bank notes in circulation:

The mean average is the *total value* divided by the *total number of notes*. Use your previous answers to calculate this.

Bank Note Frequency Table SOLUTIONS

The following table gives the number of bank notes in circulation in the UK at the end of February 2015:

| Note | Number (in millions) | Cumulative Frequency | <i>Data × Frequency</i> |
|------|-------------------------|-------------------------|-----------------------------|
| £5 | 320 | 320 | 1600 |
| £10 | 737 | 1057 | 7370 |
| £20 | 1946 | 3003 | 38920 |
| £50 | 236 | 3239 | 11800 |

1. Write down the modal bank note in circulation:

The largest frequency is 1946 million, so the modal bank note is £20.

2. Work out the total number of bank notes in circulation:

The total of the frequency is the total number of notes, which is 3239 million notes.

3. If the notes are lined up in order of size, what type would the 1000-millionth one be?

Using the cumulative frequency column, the first 320-million notes are £5, and after that, up to note number 1057-million are £10, so the 1000-millionth note is £10.

4. Find the median bank note value:

Using the cumulative frequency column, the middle note will be the $\frac{3239+1}{2}$ millionth one, which is the 1620-millionth note. This is after 1057-million but before 3003-million, so it must be £10.

5. Work out the total value of all the £10 notes in circulation:

There are 737-million £10 notes, each worth £10, which gives £7370 million.

6. Work out the total value of all notes in circulation:

By adding up the *Data × Frequency* column, which will give the total value of each type, we get an overall total of £59690 million.

7. Calculate the mean value of bank notes in circulation:

The mean can be calculated by dividing the total value by the total number of notes, which is $\frac{£59690 \text{ million}}{3239 \text{ million}} = £18.43$ to the nearest penny.