1. **Benefits and Limitations of Using Spreadsheets for Data Analysis**

**Benefits**:

1. **User-Friendly Interface**: Spreadsheets provide an intuitive way to organize data in a table format, making it easy to view and analyze the top results, such as the first 100 rows.
2. **Data Comparison**: Functions like VLOOKUP and XLOOKUP allow for quick comparisons between fields, facilitating simple data matching tasks.
3. **SQL Table Emulation**: Custom formulas can simulate SQL table functionality within Excel, enabling relational data management on a small scale.
4. **Versatile Tools**: Features like pivot tables, charts, and formulas support basic data summarization, visualization, and calculation tasks.
5. **Ideal for Small Datasets**: Spreadsheets handle datasets of up to 20,000 records effectively, making them a great choice for light, straightforward analyses.
6. **Accessibility**: Widely available and easy to learn, spreadsheets are accessible for beginners and professionals alike.

**Limitations**:

1. **Lack of Reproducibility**: Actions like filtering, sorting, or applying formulas lack a built-in log, making it difficult to retrace steps or reproduce analysis accurately.
2. **Performance Issues**: Spreadsheets struggle with large datasets; handling records exceeding 100,000 rows may result in crashes or slow performance.
3. **Limited Scalability**: They are not suitable for complex analyses, such as advanced statistical modeling or machine learning, due to limited functionality and computational power.
4. **Error-Prone**: Manual data entry and formula adjustments increase the risk of errors, especially for large or intricate datasets.
5. **Collaboration Challenges**: Multi-user editing in real-time can be cumbersome, leading to version control issues unless using advanced tools like Google Sheets.
6. **Automation Constraints**: Spreadsheets lack the automation and repeatability offered by programming languages like Python or R, limiting efficiency in iterative tasks.
7. **Data Integration**: Combining data from multiple sources is possible but can become tedious without tools like Power Query or dedicated software.

2. When should we use the Waterfall and funnel chart?

**Waterfall-**

- Shows how values increase/decrease over time

Used in: -

Budget Tracking

**Funnel: -**

Shows drop-off across process stages

Used in: -

Customer Journey

* 1. When should we use donut chart and pie chart?

**When to Use Pie Chart: -**

To show the relative proportion of different categories in a dataset.

When there are few categories (ideally less than 6).

When exact percentage comparisons are important.

When labels and values are easy to distinguish.

**Donut Chart**

**When to Use?**

When you want a modern, cleaner look with a center space.

To show proportions while allowing space in the center for extra labels or text.

When comparing multiple datasets (e.g., side-by-side donut charts).

For dashboard visualizations (less cluttered than pie charts).

**1. General Shortcuts**

| **Shortcut** | **Function** |
| --- | --- |
| Ctrl + N | Create a new workbook |
| Ctrl + O | Open an existing workbook |
| Ctrl + S | Save the workbook |
| Ctrl + P | Print the worksheet |
| Ctrl + Z | Undo last action |
| Ctrl + Y | Redo last undone action |
| Ctrl + C | Copy selected cells |
| Ctrl + X | Cut selected cells |
| Ctrl + V | Paste copied/cut cells |
| Ctrl + F | Find in the worksheet |
| Ctrl + H | Find and replace |

**2. Navigation Shortcuts**

| **Shortcut** | **Function** |
| --- | --- |
| Arrow Keys | Move between cells |
| Ctrl + Arrow Key | Jump to the edge of the data range |
| Ctrl + Home | Go to the **A1** cell |
| Ctrl + End | Go to the last used cell |
| Page Up / Page Down | Scroll up/down one screen |
| Alt + Tab | Switch between open workbooks |

**3. Cell Editing Shortcuts**

| **Shortcut** | **Function** |
| --- | --- |
| F2 | Edit selected cell |
| Alt + Enter | Insert a line break inside a cell |
| Ctrl + D | Copy value from the cell above |
| Ctrl + R | Copy value from the left cell |
| Ctrl + Shift + "+" | Insert a new row or column |
| Ctrl + "-" | Delete a row or column |

**4. Formatting Shortcuts**

| **Shortcut** | **Function** |
| --- | --- |
| Ctrl + B | Bold text |
| Ctrl + I | Italic text |
| Ctrl + U | Underline text |
| Ctrl + 1 | Open Format Cells dialog box |
| Ctrl + Shift + $ | Apply currency format |
| Ctrl + Shift + % | Apply percentage format |
| Ctrl + Shift + # | Apply date format |

**5. Selecting Data**

| **Shortcut** | **Function** |
| --- | --- |
| Ctrl + A | Select the entire worksheet |
| Ctrl + Shift + Arrow Key | Select data in a direction |
| Ctrl + Space | Select entire column |
| Shift + Space | Select entire row |

**6. Working with Formulas**

| **Shortcut** | **Function** |
| --- | --- |
| = (Equals sign) | Start a formula |
| Alt + = | AutoSum (Σ) selected cells |
| Ctrl + Shift + Enter | Enter an array formula |
| F4 | Repeat last action / Toggle absolute & relative references in formulas |

**7. Pivot Table & Charts**

| **Shortcut** | **Function** |
| --- | --- |
| Alt + N + V | Insert a Pivot Table |
| Alt + F1 | Create a chart from selected data |
| F11 | Create a chart in a new sheet |