1) Bar — Attrition Rate by Department

Skill: calculated fields, percent of total, sorting, labels

Goal: Show % of employees who left per department.

Calculated field (Attrition Flag):

```
IF [Attrition] = "Yes" THEN 1 ELSE 0 END
```

Steps:

1. Connect to the HR data in Tableau.
2. Create the calculated field `Attrition Flag` (formula above).
3. Drag **Department** to Columns.
4. Drag `Attrition Flag` to Rows — it will sum by default (SUM(Attrition Flag)).
5. Convert `SUM(Attrition Flag)` to a percent of total: right-click the pill → **Quick Table Calculation → Percent of Total**.
    - OR, for percent within department: keep SUM(Attrition Flag) and create `Attrition Rate` calc:

    ```
    SUM([Attrition Flag]) / COUNT([Employee Number])
    ```

    then format as Percentage.
6. Put the `Attrition Rate` on Rows (or replace the quick table calc).
7. Drag `Attrition Rate` (or SUM) to **Label** on the Marks card; set **Mark Type → Bar**.
8. Sort Departments by descending attrition (right-click Department → Sort).
9. Add color: drag `Attrition Rate` to Color; adjust color ramp.
10. Add tooltips: include counts (drag `Employee Number` to Tooltip and show COUNT).

Tip: Show actual counts side-by-side by dual axis or add a small table below.

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2) Histogram — Age Distribution

Skill: creating bins, histogram, formatting

Goal: Visualize age spread of employees.

Steps:

1. Right-click **Age → Create → Bins...**; choose bin size (e.g., 5 years). Name it `Age (bins)`.
2. Drag `Age (bins)` to Columns.
3. Drag **Number of Records** or **Employee Number** (COUNT) to Rows.
4. On Marks, set **Bar**.
5. Label bars with counts (drag COUNT(Employee Number) to Label).
6. Add color by `Attrition` (drag Attrition to Color) to see which age groups have more leavers.
7. Format axis and bins for readability (axis title, grid lines off).

Tip: If you want density look, use **Analytics → Distribution Band** for mean ± stdev.

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3) Box-and-Whisker — Monthly Income by Job Level

Skill: Box plot, categorical comparison, outlier detection

Goal: Compare salary distribution across job levels.

Steps:

1. Drag **Job Level** (or Job Role) to Columns.
2. Drag **Monthly Income** to Rows.
3. In the top menu **Show Me**, select **Box-and-Whisker Plot** (or from the Analytics pane choose Box Plot).
4. On the Marks card, show **Box-and-Whisker**; add `Attrition` to Color if desired.
5. Add jittered points: drag `Monthly Income` again to Detail → right-click the axis → **Show Mark Labels** or use **Circle** mark on a dual axis to display points.
6. Format axis to currency (right-click axis → Format → Currency).

Teaching point: Box plots quickly show medians, spread and outliers.

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4) Scatter Plot + Trend — Years At Company vs. Total Working Years

Skill: scatter plots, trend line, correlation, filtering, color

Goal: Explore relationship between tenure at company and total experience and how it relates to attrition.

Steps:

1. Drag **Years At Company** to Columns.
2. Drag **Total Working Years** to Rows.
3. Drag **Employee Number** to Detail (or use COUNT for point size if grouping).
4. On Marks, set **Circle**.
5. Drag `Attrition` to Color (to see leavers vs stayers).
6. Use **Analytics** pane → drag **Trend Line → Linear** onto the view to add a line of best fit (right-click trend line → view equation & R^2).
7. Optionally add **Years At Company** bin or filter out extreme outliers (Filters → Years At Company).

Tip: Teach students to interpret R^2 and slope of the line.

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5) Stacked Bar — Headcount by Job Role, split by Gender

Skill: stacking, proportion labels, sorting, colors

Goal: Show number of employees in each job role and gender composition.

Steps:

1. Drag **Job Role** to Rows.
2. Drag **Employee Number** to Columns and change it to **COUNT(Employee Number)** (or drag Number of Records).
3. Drag **Gender** to Color to split bars by gender.
4. On Marks set **Bar** and **Stacking** should be automatic (check Analysis → Stack Marks: On).
5. Add labels: drag COUNT(Employee Number) to Label; use **Label → Show mark labels** and enable "Show totals" (Analysis → Totals → Show Row Grand Totals) if desired.
6. Sort Job Roles by total headcount (right-click Job Role → Sort).
7. Add percent labels: create calculated field `Pct by Role`:

```
COUNT([Employee Number]) / TOTAL(COUNT([Employee Number]))
```

Then use **Quick Table Calculation → Percent of Total** on the measure and show labels as percent.

Teaching point: stacking vs. side-by-side bars — pros/cons.

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6) Heatmap — Attrition Rate by Job Role and Age Band

Skill: heatmap, table calculations, two-dimension analysis

Goal: Identify combinations of job role and age bands with higher attrition.

Steps:

1. Drag **Job Role** to Columns.
2. Drag **CF_age band** (or Age bins) to Rows.
3. Create `Attrition Flag` if not already:

```
IF [Attrition] = "Yes" THEN 1 ELSE 0 END
```

4. Drag `Attrition Flag` to Color. Change aggregation to `AVG(Attrition Flag)` (which is attrition rate).
    - Or create `Attrition Rate`:

    ```
    SUM([Attrition Flag]) / COUNT([Employee Number])
    ```

    and place that on Color.
5. On Marks, set **Square** or **Automatic** and increase square size for visibility.
6. Show exact %: drag `Attrition Rate` to Label and format as percent (Format → Percentage, 1 decimal).
7. Sort age bands or keep natural order.

Tip: Use diverging color palette so higher attrition stands out.
