Line Charts
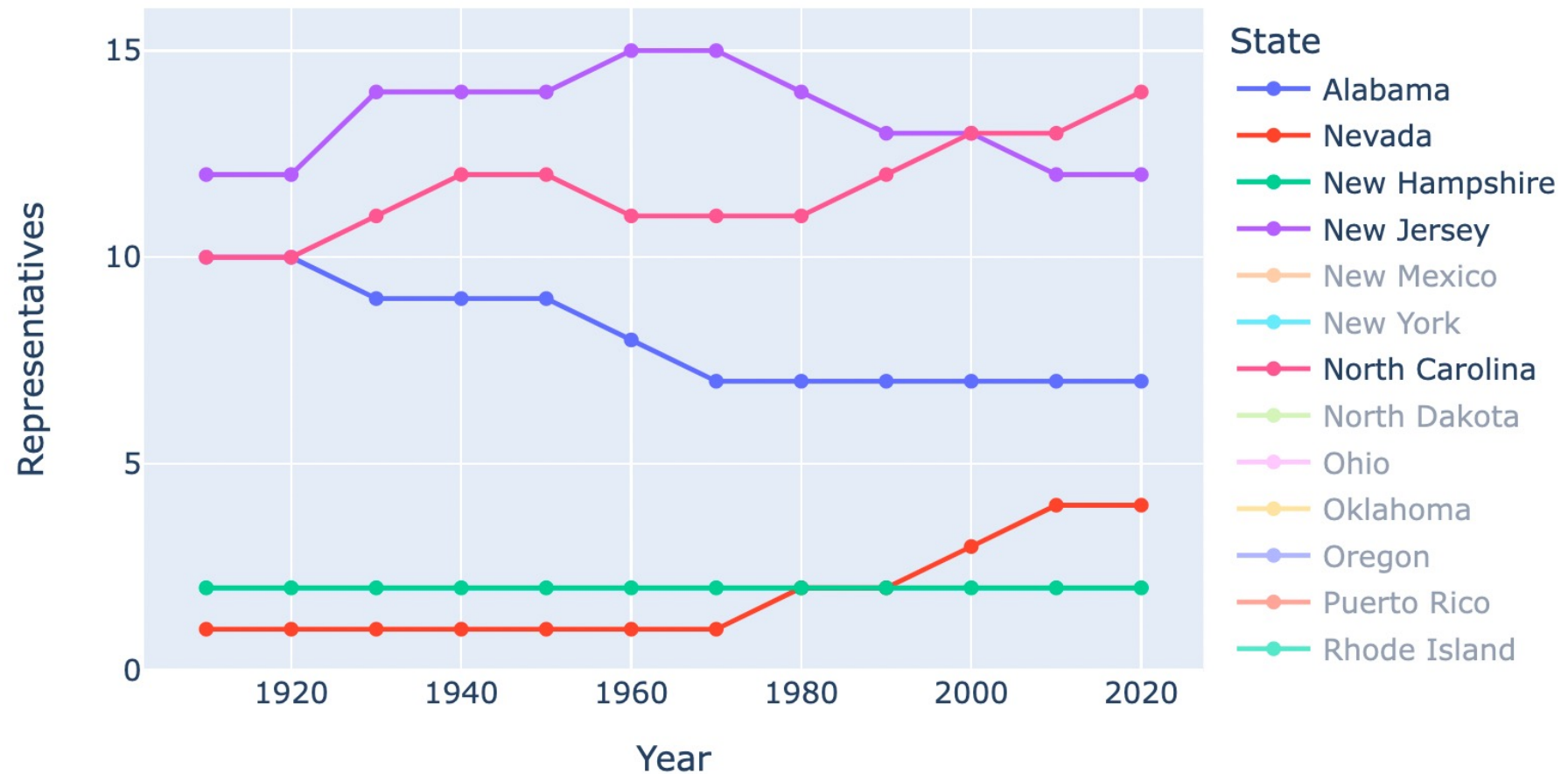
How to Plot Change Over Time
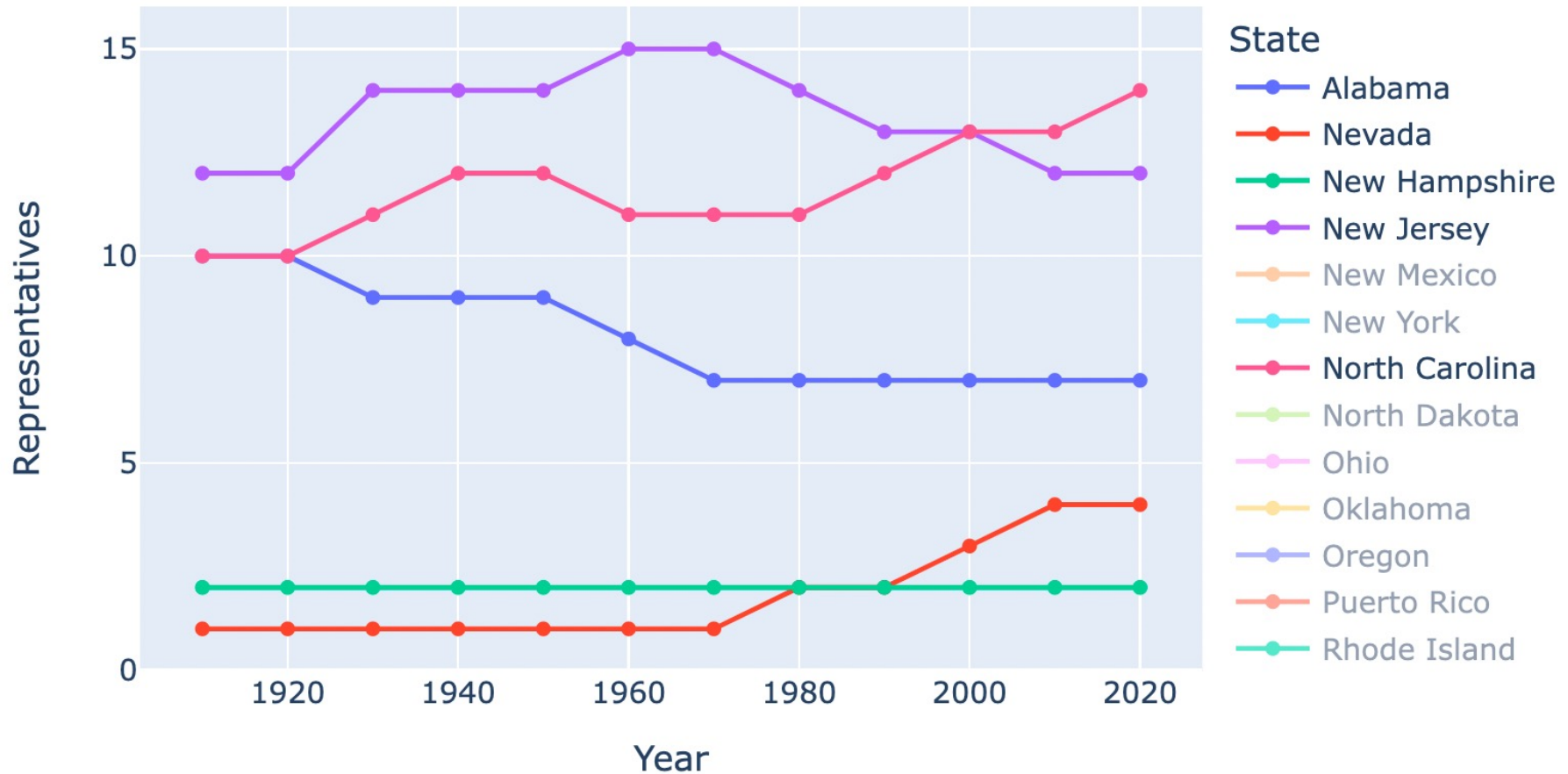
Think Share Activity

- What are the parts of the chart?

Number of US Representatives by State (1910-2020)
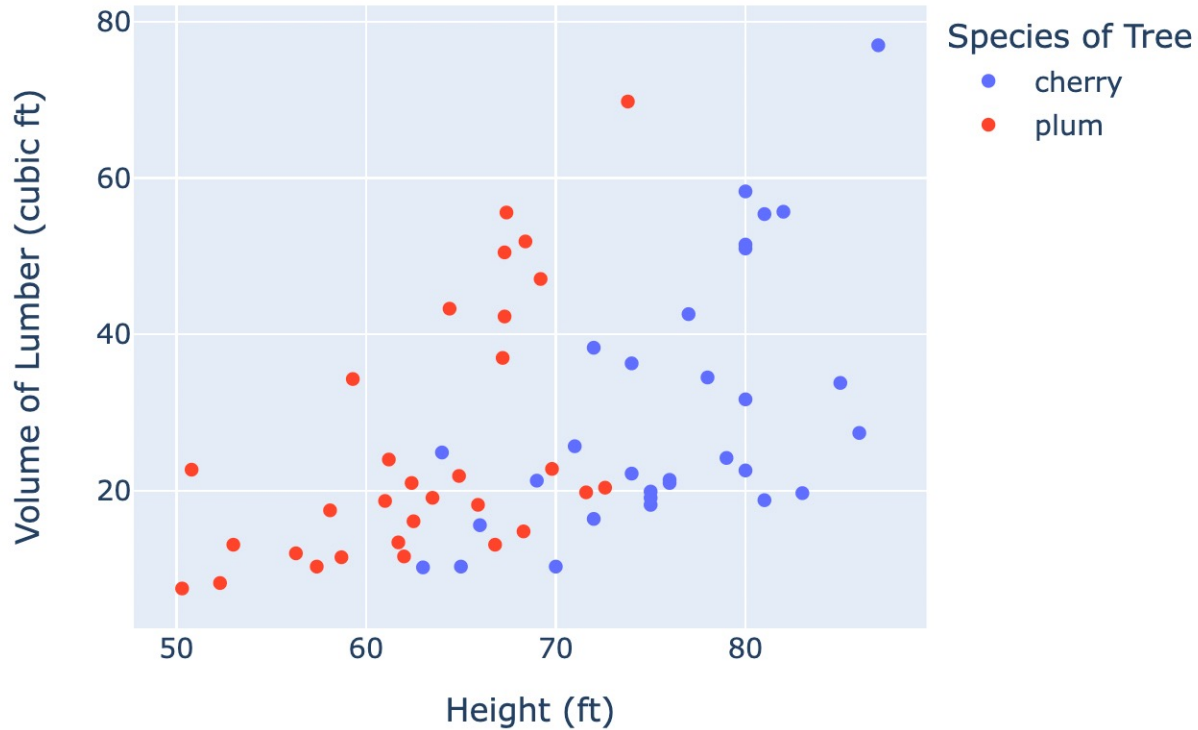
Parts of a Chart

- Title
- Chart body
  - Axes
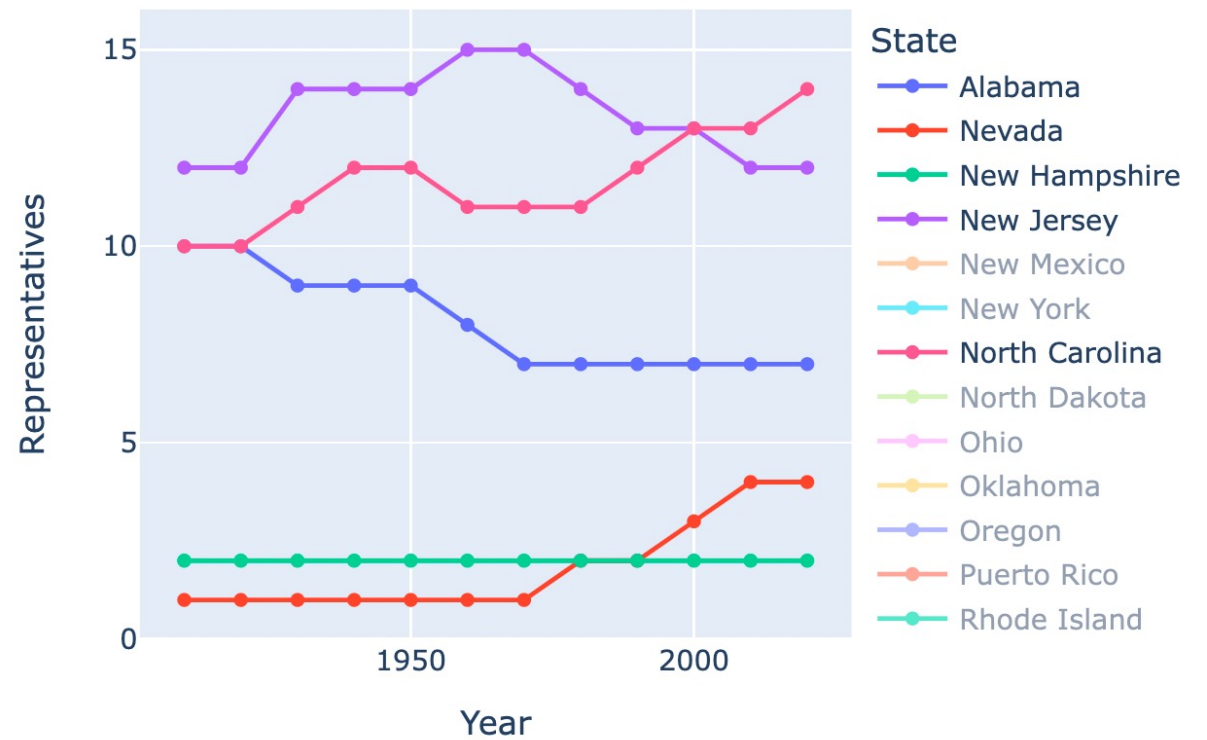 - Coordinate space
  - Points, lines
- Axis labels
- Color legend

Number of US Representatives by State (1910-2020)

# Think Share: Scatter Plots vs Line Charts

Scatter Plots vs Line Charts

- Independent variable
  - Scatter: any numerical value
  - Line: unit of time
- Number of y values for each x
  - Scatter: as many as have been observed
  - Line: only one y for each x
- Connected points
  - Scatter: no connections
  - Line: connected by line

Volume of Lumber vs Height for Cherry and Plum Trees
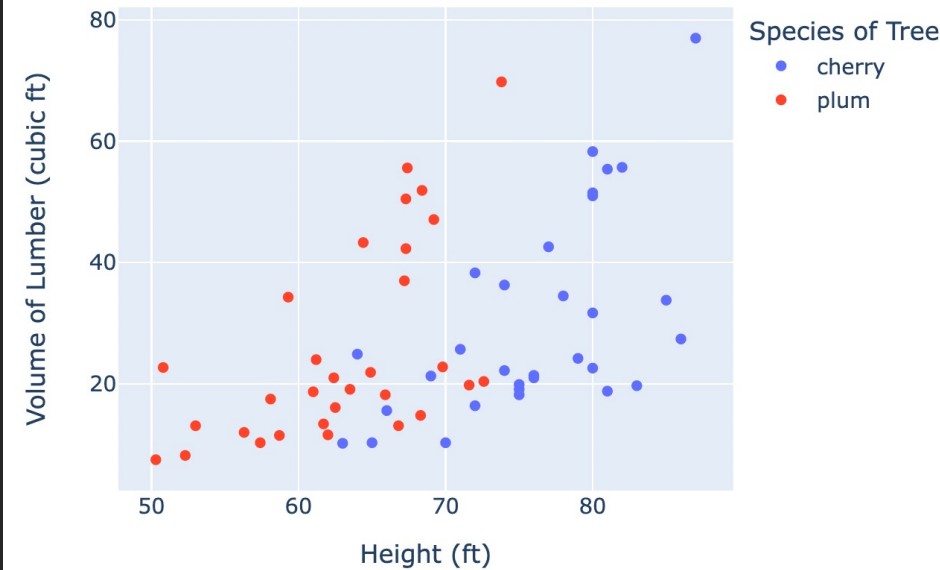
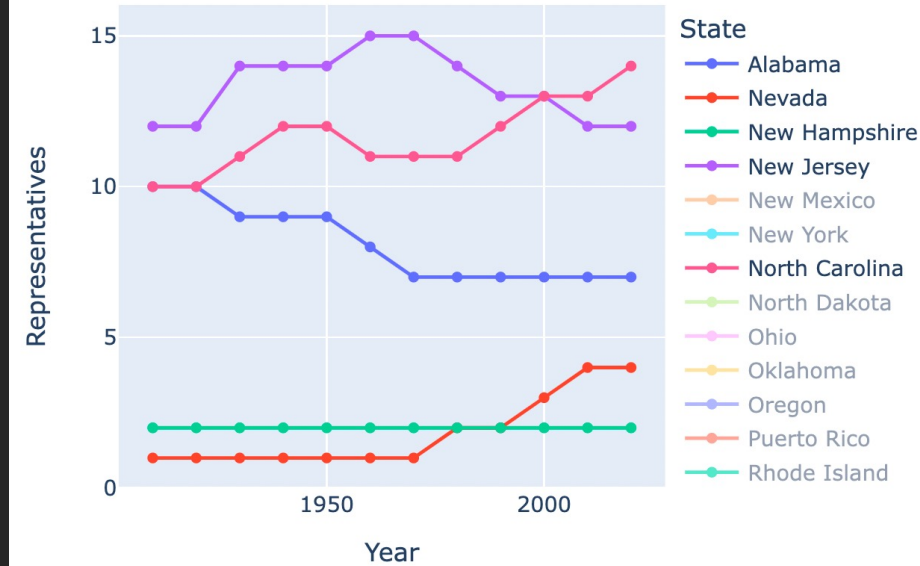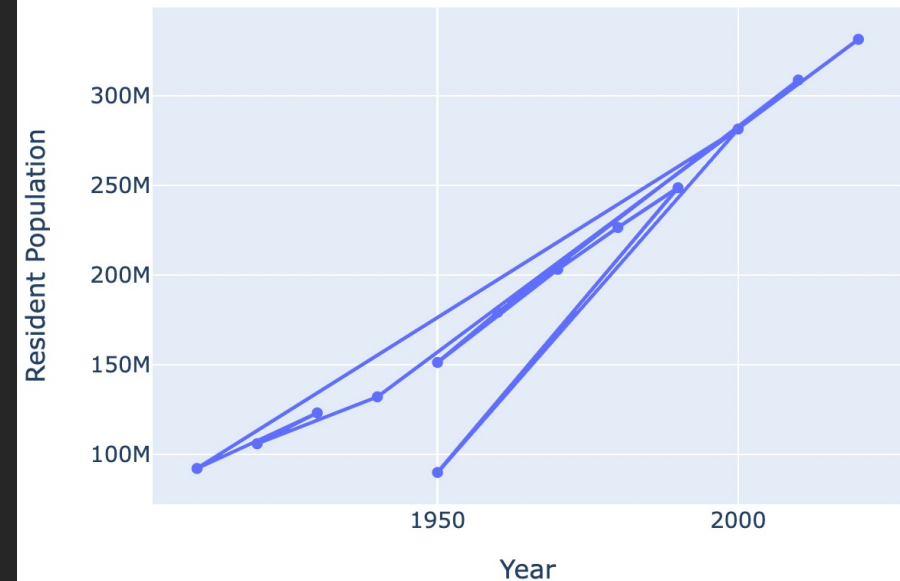Number of US Representatives by State (1910-2020)
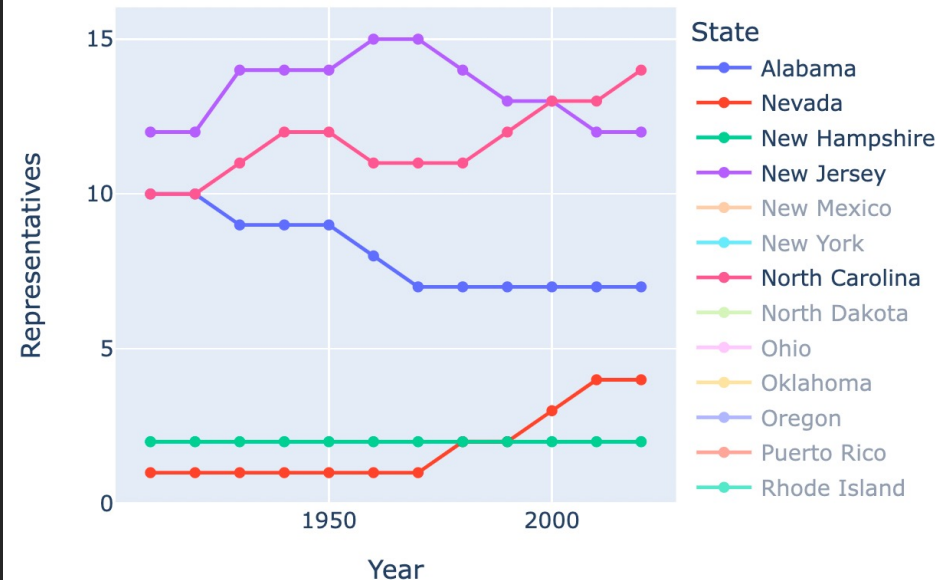
Line Charts

- Important! Lines should connect points in order by x axis value so the data must be sorted first!

- If we have unsorted data ... yikes

Number of US Representatives by State (1910-2020)

US Resident Population by Year (1910-2020)

How-to: Make Line Charts in Jupyter

1. Read CSV Data into Pandas Dataframe
   - Import Pandas Library
   - Read CSV data and Save in Variable
   - Sort Data
   - Display Dataframe Contents
2. Generate Plotly Line Chart
   - Import Plotly Express Library
   - Set Columns as x and y
   - Set Additional Plot Options (Optional)
   - Generate Chart

How-to: Sort Data with Blockly

How-to: Adding Datapoints on Line Chart
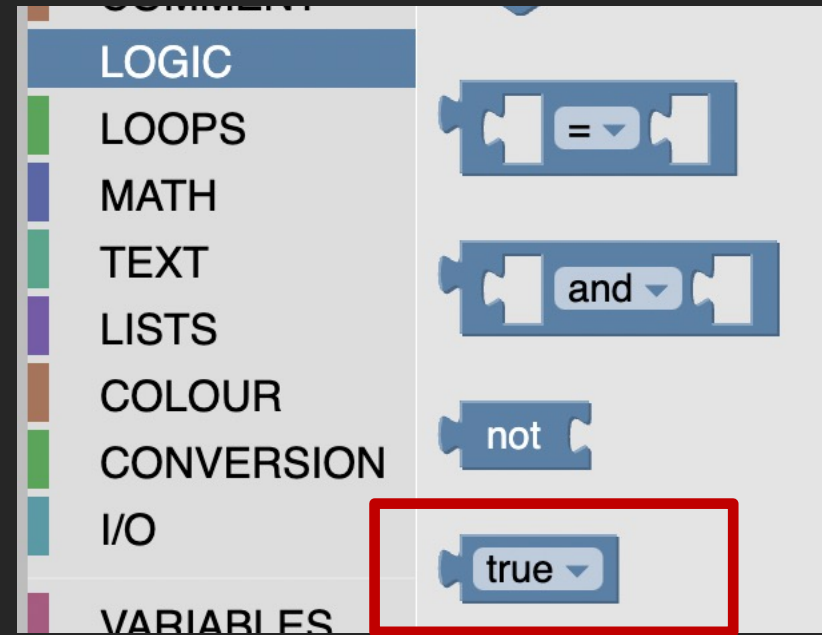

`markers = True`

set markers to true

LOGIC
LOOPS
MATH
TEXT
LISTS
COLOUR
CONVERSION
I/O
VARIABLES

`= ▾`

`and ▾`

`not`

`true ▾`

```
px.line(df, x=x, y=y, title=title, markers=markers)
```

Summary

- Parts of a chart
- Line charts
- Line charts vs scatter plots
- Plotly line charts with Blockly