

### 3.1 Scatterplots

#### Univariate Data

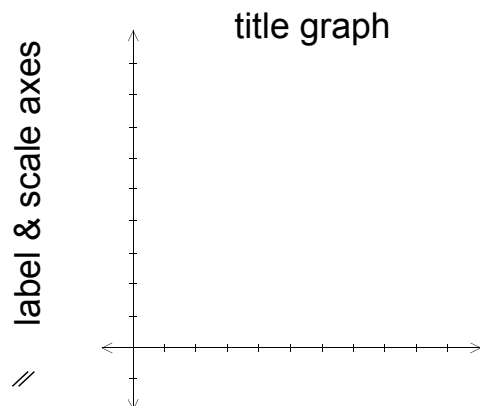
- one variable measured for one group of individuals
- purpose is to describe something
- graphical display is for describing distribution
- numerical summaries used to discuss center & spread
- nothing to compare against - just interested in one thing

#### Bivariate Data

- two variables measured for the same group of individuals
  - explanatory (may explain the outcome if there is correlation)
  - response (measures the outcome)
- graphical display is for describing correlation
  - look for patterns and deviations from patterns, outliers
  - form, direction and strength are the describing concepts
- data can be organized
  - numerically (with a chart or table)
  - visually (scatterplot)
- numerical summaries will involve strength of correlation (3.2 & 3.3)

Load the data from P127/Ex 3.4

Drawing a Scatterplot by hand:



use whole grid

if categorical needs to be shown use different symbols

if there is an explanatory variable - plot it on the x-axis.

show break in axis if necessary

Using the Calculator:

- Enter data into  $L_1$  and  $L_2$  (should be in pairs, same # in each list)
- **2nd|Stat Plot** - choose 1st plot type use your two lists for X and Y
- **ZOOM 9** (you can go into **WINDOWS** now and clean up the scaling of your axes)
- Use **TRACE** to help hand draw your scatterplot

## Adding Categorical to a Scatterplot

Split up DEGDA and GAS data into 4 lists:

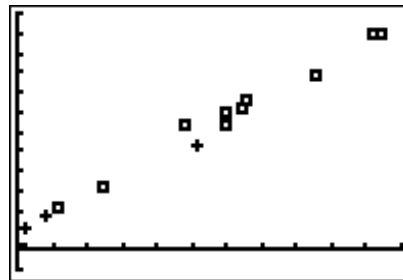
Fall/Winter - Sept through Feb

Spring/Summer - Mar through Apr

24	6.3
51	10.9
43	8.9
33	7.5
6	2.1
12	3.1
30	6.4
32	7.2
52	11
30	6.9

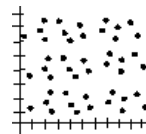
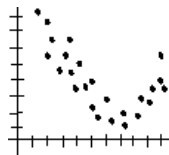
26	5.3
13	4
4	1.7
0	1.2
0	1.2
1	1.2

now turn on stat plots 1 ( $L_1$  &  $L_2$ ) and 2 ( $L_3$  &  $L_4$ ), but change the mark to the + for the second plot.



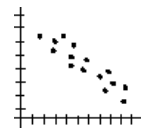
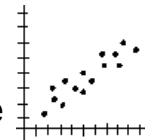
Form:

- Are the points clustered together?
- Is there a pattern of any type?
  - linear
  - curved



Direction:

- positive association: as one variable increases, so does the other (think positive slope)
- negative association: as one variable increases, the other decreases (think negative slope)



Strength:

- How closely do the points follow a clear form of any type?

