Organizing a Problem

4-Step Process

1. *State the problem*

- Write a clear statement of the question you are trying to answer.
- *e.g.,* "Do women keep more pets than men?"

2. *Plan the action*

- Write a clear statement how you are going to answer this question.
- This includes the data you will use and any diagrams you will construct or calculations you will make.
- *e.g.,* "We shall use a table of the number of pets owned by a sample of men and women attending Whatsamatta U. We shall calculate one-variable statistics of the men's and women's data, then construct a box plot of the data. We'll answer our question by comparing the box plots and statistics."

3. *Do it*

- Carry out the actions itemized in step 2, list the results of the calculations, and describe the shape of the data (see below).

4. *Conclude with the answer to your question*

- Analyze the results of step 3 to produce a reasoned answer to your question.

Interpreting Data

Calculations

- *Symetrical data* (no strong skewing or significant outliers): Calculate mean and standard deviation
- *Asymetrical data* (strongly skewing or significant outliers): Calculate median and IQR.

Description ("SOCS")

- *Shape:* Skewed left, right, not at all; unimodal/bimodal, uniform, etc.
- *Outliers:* How many outliers, their values (if appropriate)
- *Center:* Mean, median
- *Spread:* Amount of variation (*IQR, standard deviation, etc.)*