## Quantitative Skills \& Reasoning - Math 1001

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Zoom Video Conference 9-12-2019

1. Test 1 Data
2. Quick Recap of how to keep up
3. Sampling Clarification
4. Emphasis on Accurate/Careful Calculations
5. Preview for Next Week


## How to Keep Up

1. Check Email Ever Day - Repeated in D2L
2. Do homework on time, do practice test also, ask questions
3. Run Your Course from
http://faculty.ega.edu/facweb/bbrown/Quantitative\ Reasoning.htm and http://faculty.ega.edu/facweb/bbrown/Math1001-Daily.htm
4. Sampling Clarification
5. Emphasis on Accurate/Careful Calculations
6. Preview for Next Week

## Stratified sampling

In stratified sampling, a population is divided into a number of subgroups (or strata). Random samples are then taken from each subgroup with sample sizes proportional to the size of the subgroup in the population.

## Cluster sampling

In cluster sampling, the population is divided into subgroups (clusters), and a set of subgroups are selected to be in the sample

In stratified sampling, the sampling is done on elements within each stratum. In stratified sampling, a random sample is drawn from each of the strata, whereas in cluster sampling only the selected clusters are sampled. A common motivation of cluster sampling is to reduce costs by increasing sampling efficiency.

Stratified Random Sampling


Cluster Sampling
 youtube.com


Creating a graph from a table-Help ... desktop.arcgis.com


JpGraph - Most powerful PHP-drive... jpgraph.net


Charts, Graphs and Table slideshare. net

| Kind of flower | Number of flowers |  | Total |
| :---: | :---: | :---: | :---: |
|  | Meryl | Sheryl |  |
| Rose | 1 | 3 | 4 |
| Tulip | 5 | 0 | 5 |
| Uliy | 5 | 4 | 9 |
| Orchid | 4 | 4 | 8 |
| Forget-me-not | 9 | 15 | 24 |
| Total | 24 | 26 | 50 |
|  |  |  |  |

Table and Bar Graphs - Home Campus my.homecampus.com.sg


Data Tables and Graphs - Science: Physic physicsfun101, weebly.com


Interpreting Data from Tables and Gr... studylib. net


Graphs - INGL 4255: Professional Editing ingl4255.wordpress.com


Figures and Charts - The Writing Center writingcenter.unc.edu


| Kind of flower | Number of flowers |
| :---: | :---: |
| Rose | 1 |
| Tulip | 5 |
| Lily | 5 |
| Orchid | 4 |
| Forget-me-not | 9 |
| Total | 24 |



Vocabulary Drill - T. Charts, Tables . tutor_me.tripod.com





## Standard Deviation

The standard deviation is a measure of variation based on measuring how far each data value deviates, or is different, from the mean.
A few important characteristics:

- Standard deviation is always positive. Standard deviation will be zero if all the data values are equal, and will get larger as the data spreads out.
- Standard deviation has the same units as the original data.
- Standard deviation, like the mean, can be highly influenced by outliers.


## Standard Deviation (cont.)

standard deviation $=\sqrt{\frac{\text { sum of }\left(\text { deviations from the mean) }{ }^{2}\right.}{\text { total number of data values }-1}}$

Standard deviation can be written symbolically using the following formula

$$
s=\sqrt{\frac{\sum\left(x_{i}-\bar{x}\right)^{2}}{n-1}}
$$

$$
\begin{aligned}
& \mathrm{s}=\text { standard deviation } \\
& \mathrm{x}_{\mathrm{i}}=\text { individual data value } \\
& \overline{\mathrm{x}}=\text { mean } \\
& \mathrm{n}=\text { total number of data values } \\
& \sum=\text { summation or sum of }
\end{aligned}
$$

For the following dataset of contract offers, find the mean, median, mode, range, and standard deviation:
$\$ 50,000 \quad \$ 80,000 \quad \$ 90,000 \quad \$ 100,000 \quad \$ 10,000,000$
Mean = \$2,064,000
$(50000-2064000)^{2}=4.056196 \times 10^{12}$
$(80000-2064000)^{2}=3.936256 \times 10^{12}$
$(90000-2064000)^{2}=3.896676 \times 10^{12}$
$(100000-2064000)^{2}=3.857296 \times 10^{12}$
$(10000000-2064000)^{2}=6.2980096 \times 10^{13}$
Sum $=7.872652 \times 10^{13}$ Sum $/ 4=1.968163 \times 10^{13}$

$$
S_{x}=\sqrt{19.68163 \times 10^{12}}=4,436,398.31
$$



