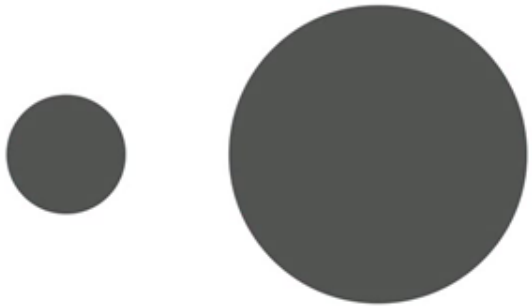
The Elementary Perceptual Tasks (Part 2)

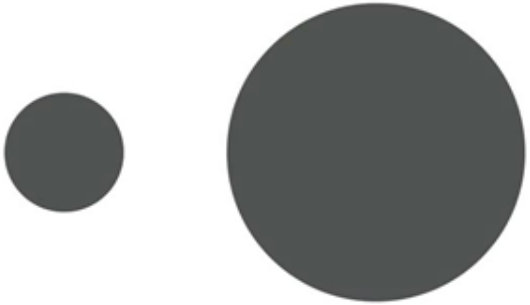
Lecture 6

Area



Area

Task example:
if the area of the small circle is 1,
what is the value represented in the other circle?



Area = 1

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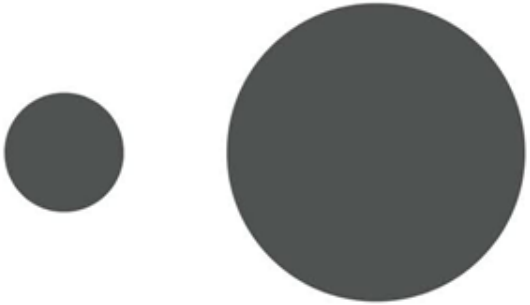

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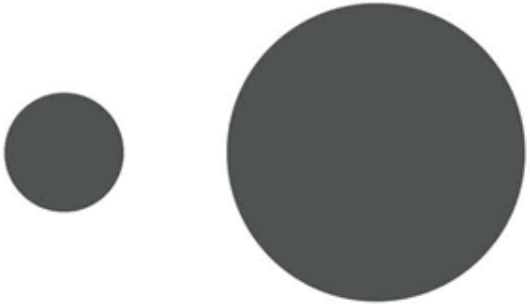


Area = 1

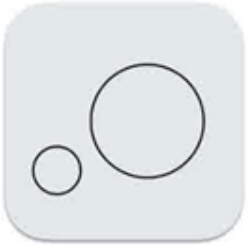
Area = 6.25

Area

Task example:
if the area of the small circle is 1,
what is the value represented in the other circle?

The relation between radius and area is quadratic.

Area



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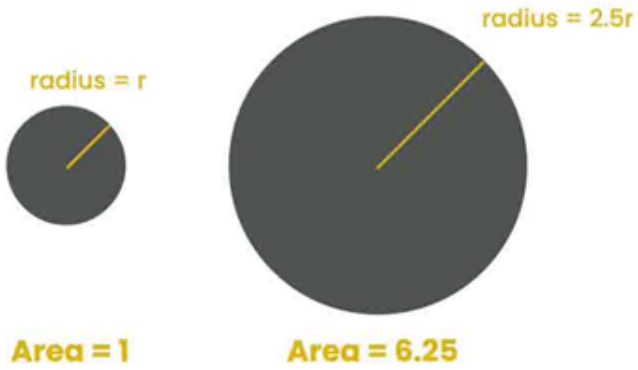

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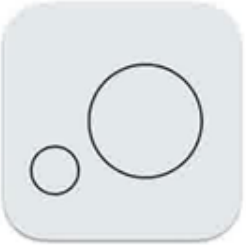
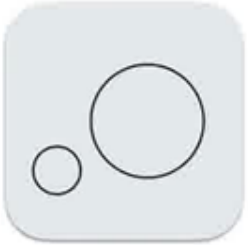


A type of graph in which we have to decode
area

SOURCES: DATA-TO-VIZ, ORACLE, GOOGLE IMAGES & DATAVIZCATALOGUE

Area



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Pie chart

SOURCES: DATA-TO-VIZ, ORACLE, GOOGLE IMAGES & DATAVIZCATALOGUE

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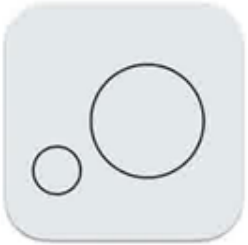

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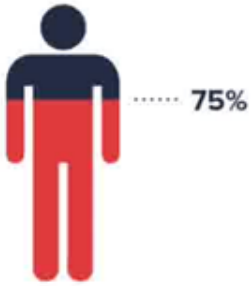
Pie chart

"Human infographics"



SOURCES: DATA-TO-VIZ, ORACLE, GOOGLE IMAGES & DATAVIZCATALOGUE

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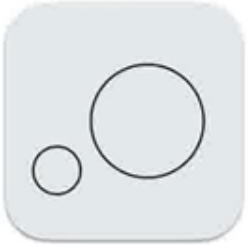

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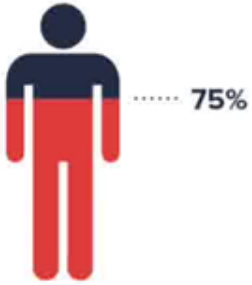
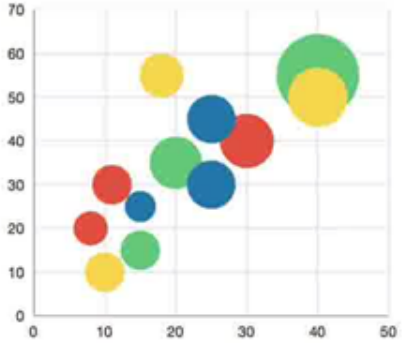
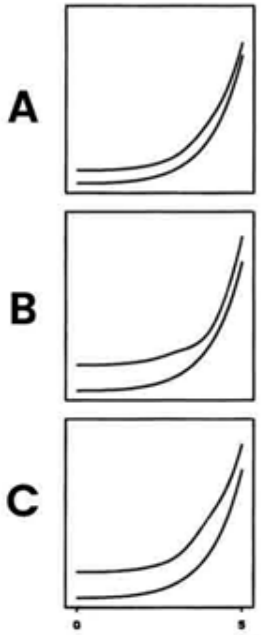


Bubble plot



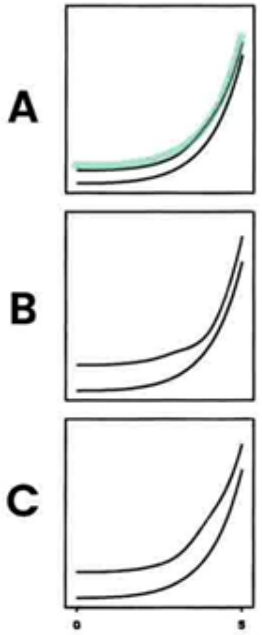
SOURCES: DATA-TO-VIZ, ORACLE, GOOGLE IMAGES & DATAVIZCATALOGUE

Curvature



CLEVELAND & MCGILL (1984). FIGURES 26 & 27

Curvature



CLEVELAND & MCGILL (1984). FIGURES 26 & 27

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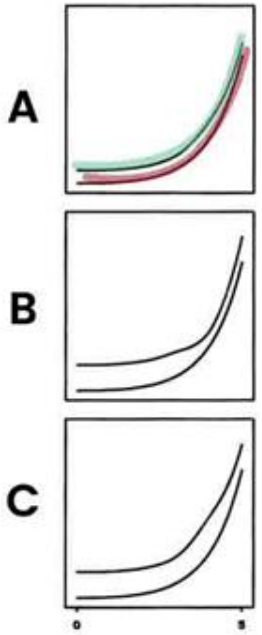
Task example:
if the top (green) line represents your income,
and the bottom (red) one represents your expenses,
what is the evolution of your net gain
in the three scenarios A, B, C?



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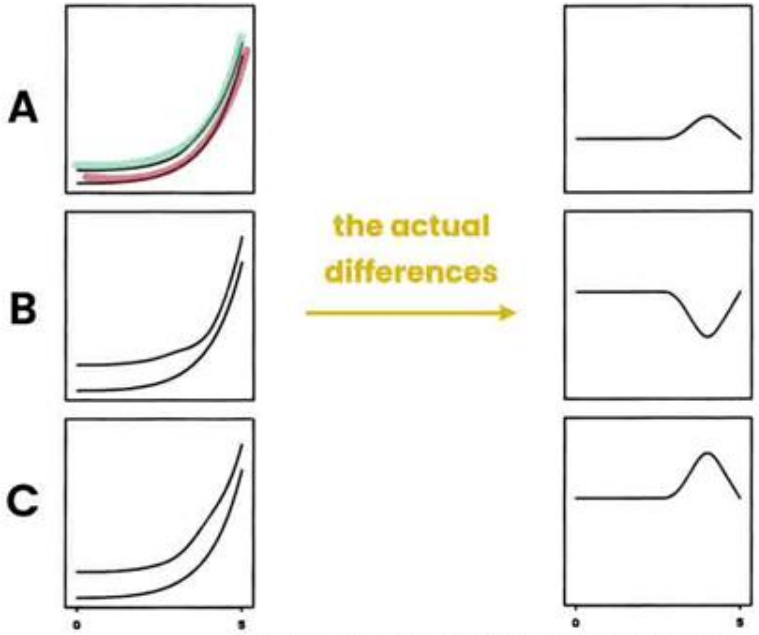

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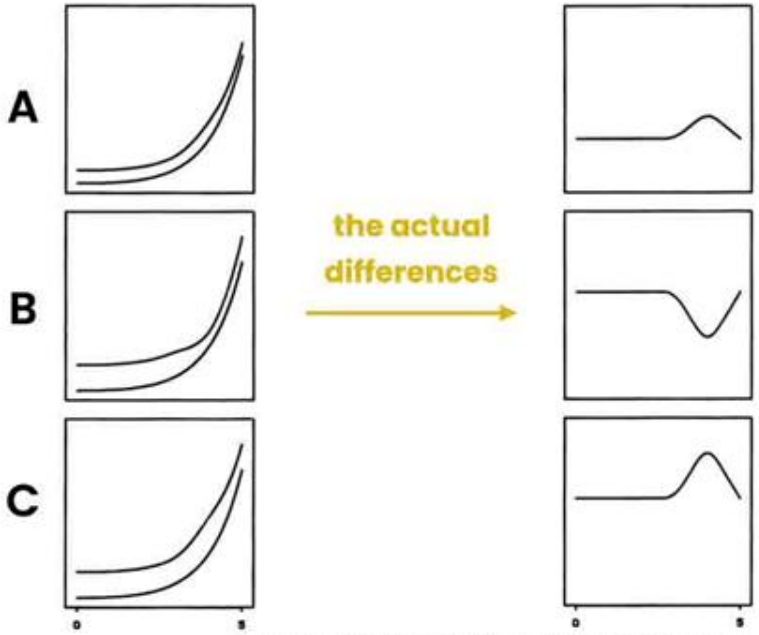
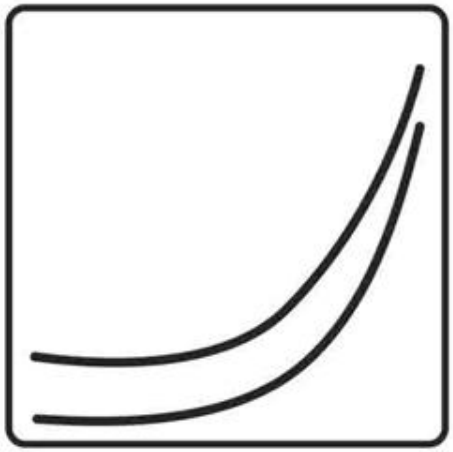


CLEVELAND & MCGILL (1984). FIGURES 26 & 27



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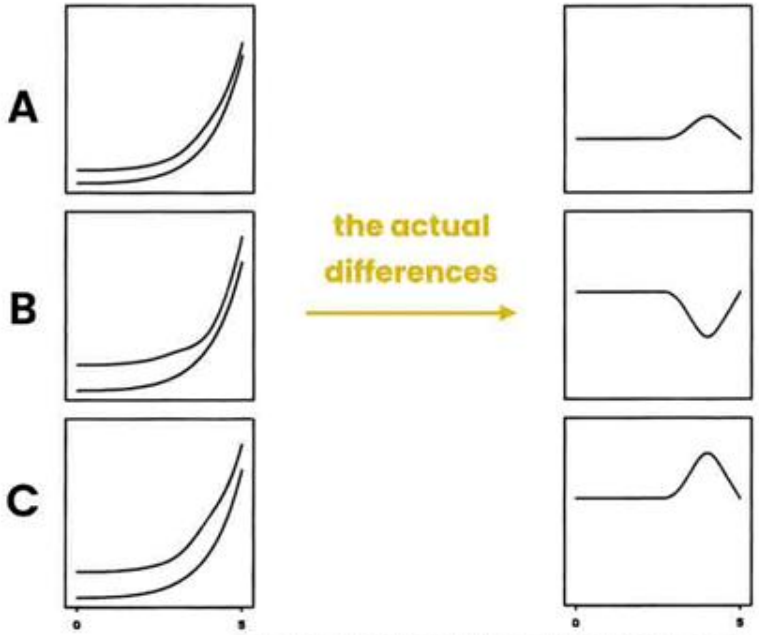

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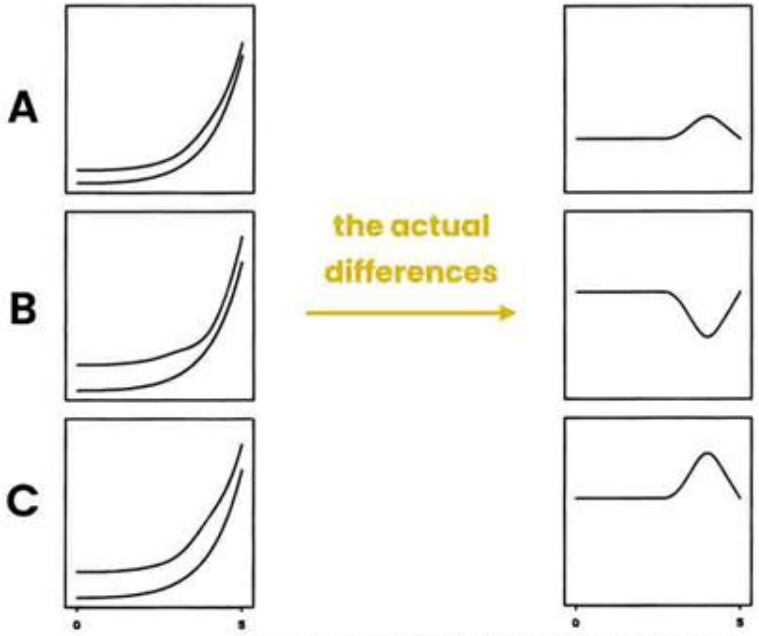
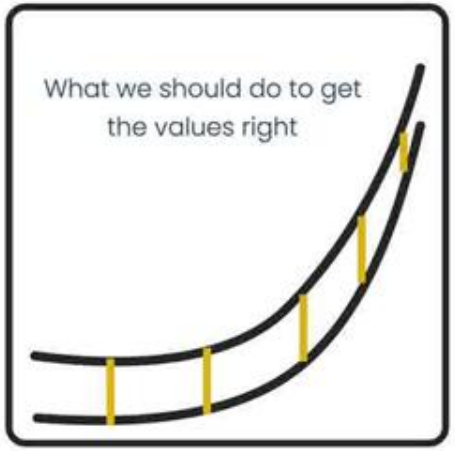


CLEVELAND & MCGILL (1984). FIGURES 26 & 27



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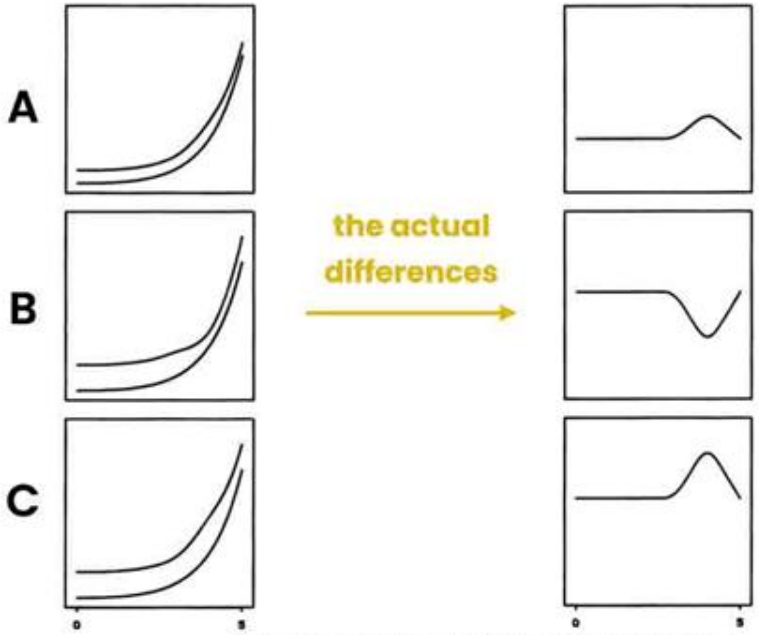

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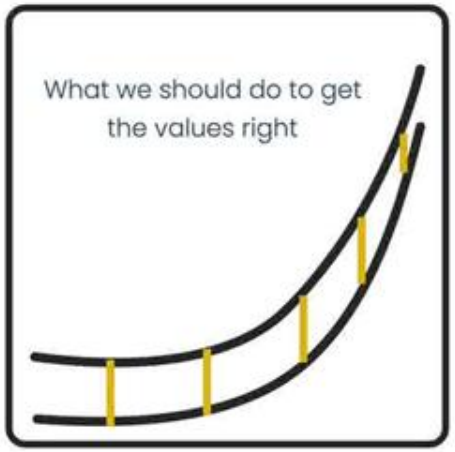

Curvature

A type of graph in which we have to decode
curvature

Curvature

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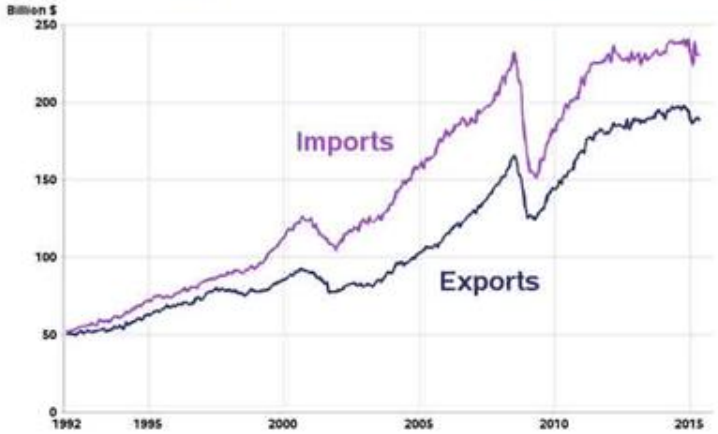
Line plots where the user has to calculate differences
(e.g. income/outcome plots)



SOURCE: BLOGS.SAS.COM

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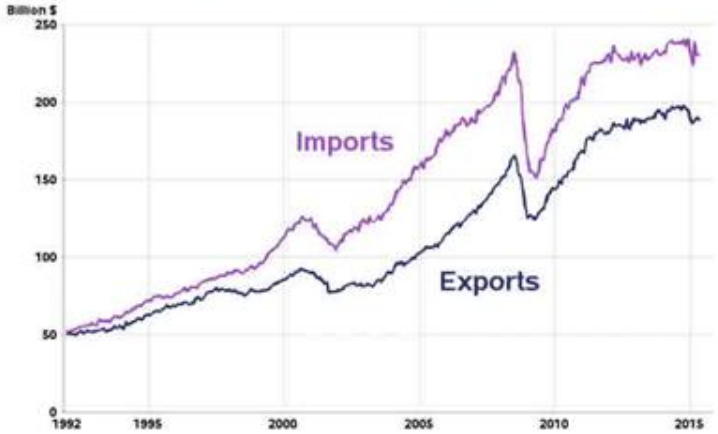
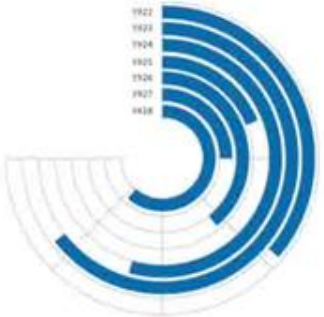


SOURCE: BLOGS.SAS.COM

These plots have curvature but actually there's no
magnitude encoded in the curvature.
But curvature makes other tasks more difficult.

Chord diagram

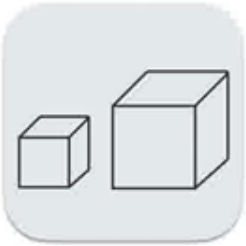
SOURCE: DATA-TO-VIZ



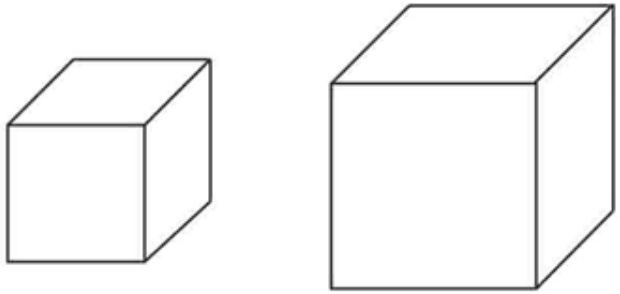
Radial bar chart

SOURCE: DATAVIZCATALOGUE

Volume

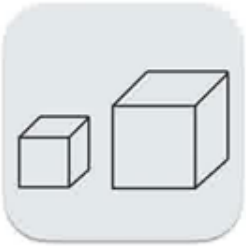


Task example:
if the volume of the small cube is 1,
what is the volume of the bigger cube?



Volume = 1

Volume



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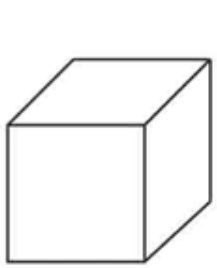
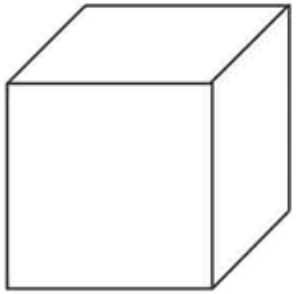
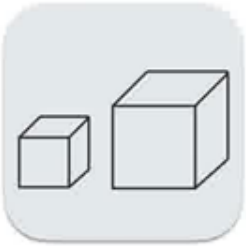


Volume = 1



Volume = 3.375

Volume



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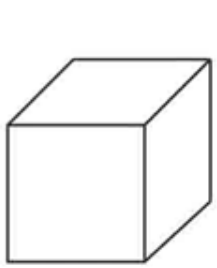
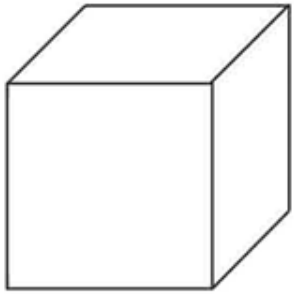


Volume = 1



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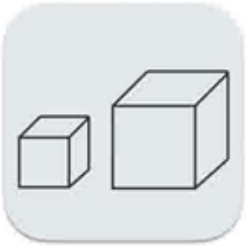
Volume



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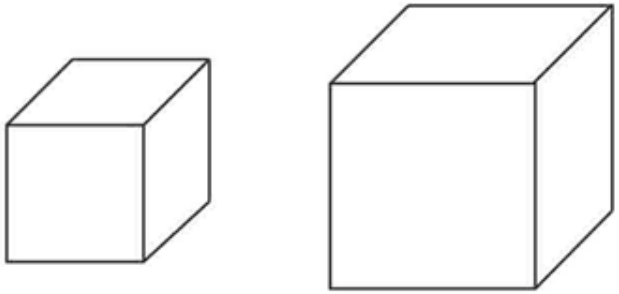
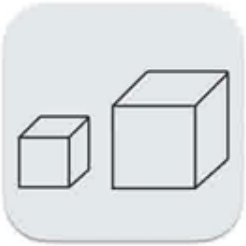


Volume = 1 **Volume = 3.375**

The relation between the side and its volume is cubic

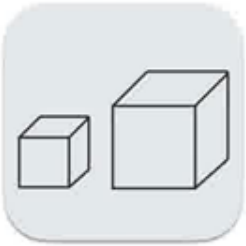
If side is **x**, volume is x^3

Volume



A type of graph in which we have to decode
volume

Volume

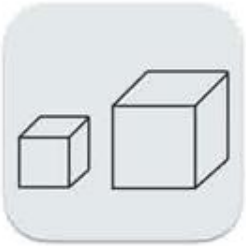


A type of graph in which we have to decode volume

Thankfully, there is no "typical" plot meant to decode volume

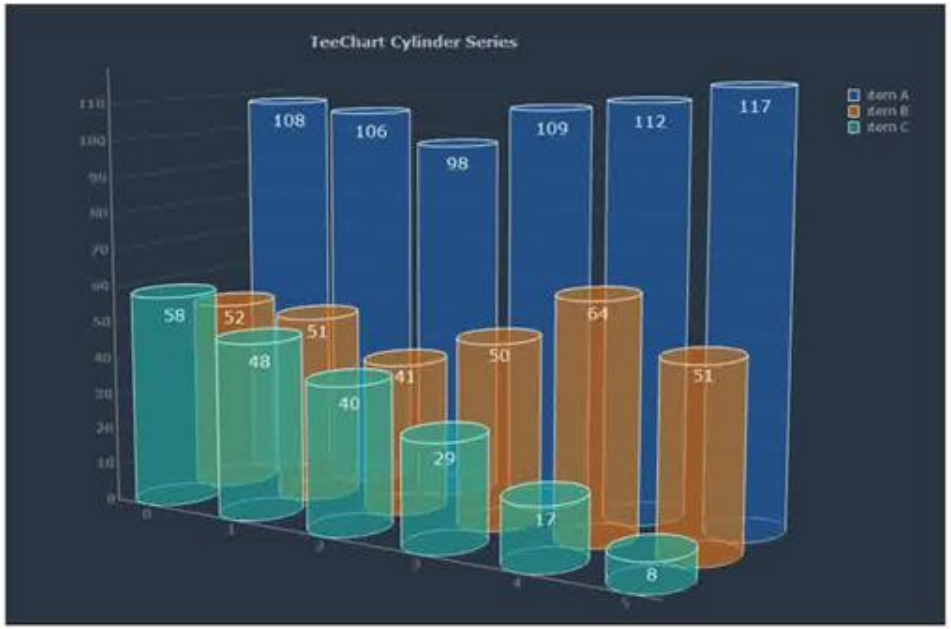
Volume

A type of graph in which we have to decode
volume



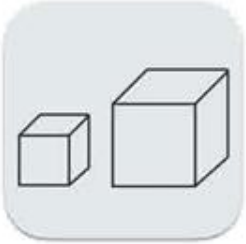
Still, some plots use objects that have volume and trick us into thinking that what we need to decode is volume

Thankfully, there is no "typical" plot meant to decode volume



SOURCE: WWW.STEEMA.COM

Volume



A type of graph in which we have to decode
volume

Thankfully, there is no "typical" plot
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Decoding volume would look like this:

SOURCE: CONSUMER REPORTS

Shading

Task example:
can you order these shades of gray
from lighter to darker?

Shading

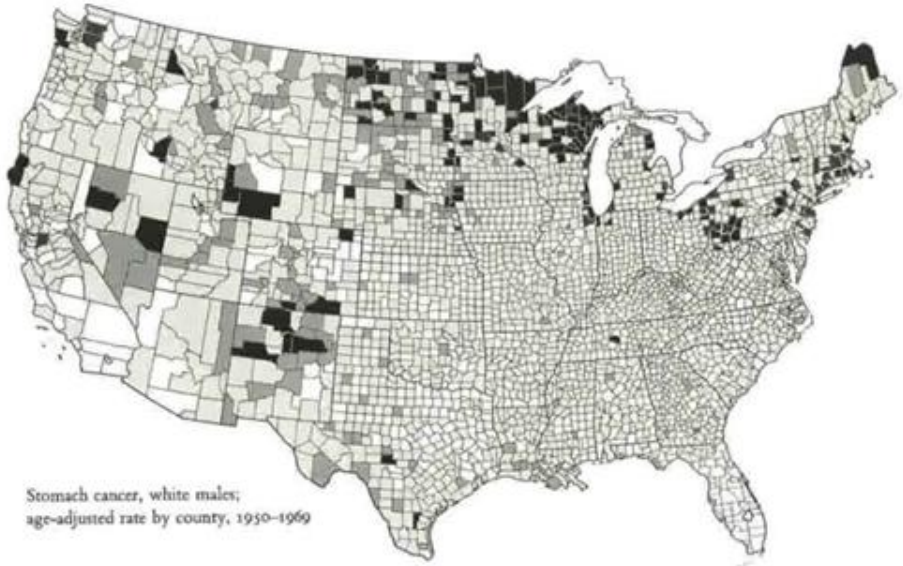
Task example:
can you order these shades of gray
from lighter to darker?

They're all the same shade of gray :-)

Shading

A type of graph in which we have to decode
shading

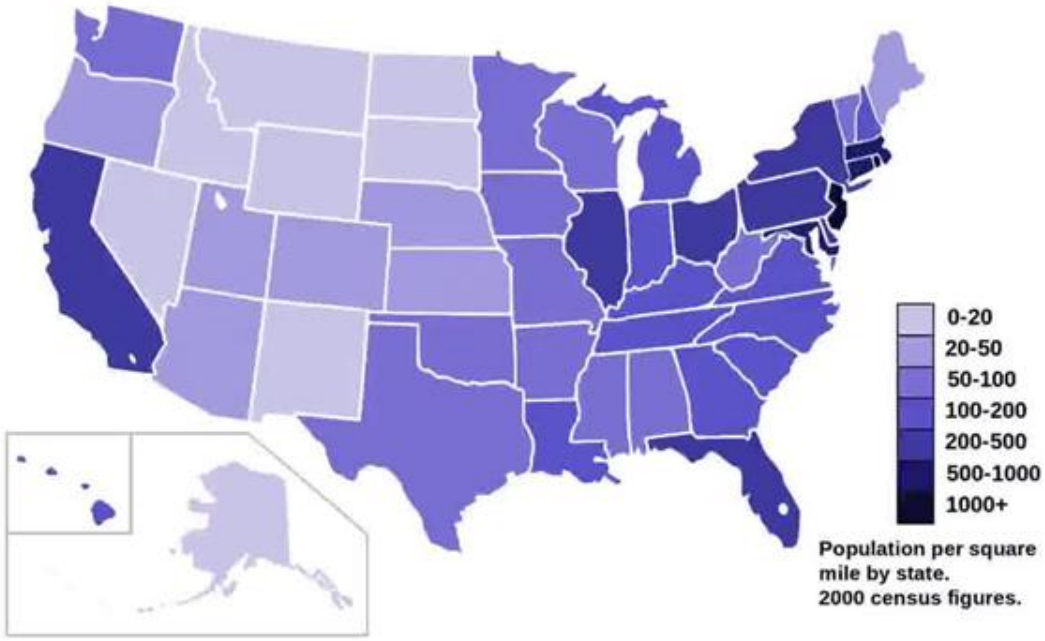
Grayscale Choropleth Map



Stomach cancer, white males;
age-adjusted rate by county, 1950–1969

SOURCE: "THE VISUAL DISPLAY OF QUANTITATIVE INFORMATION", E. TUFTE.

Color saturation



Color saturation

Color saturation

Answer: No. Colorado (left) is 20-50. West Virginia is 50-100

Color saturation

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It is confusing because the perception of the saturation of a color strongly depends on the colors of the surrounding elements

Color saturation

A type of graph in which we have to decode
color saturation (or color)

Choropleth map

SOURCES: PYTHON GRAPH GALLERY & LUCIDCHART

Color saturation

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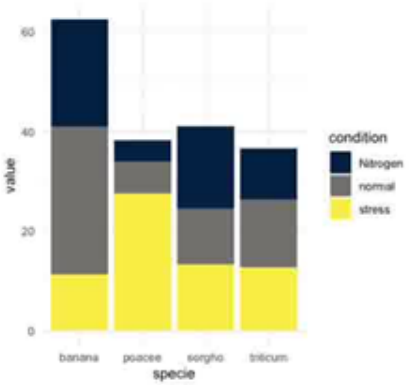
Choropleth map

Stacked Bar plots



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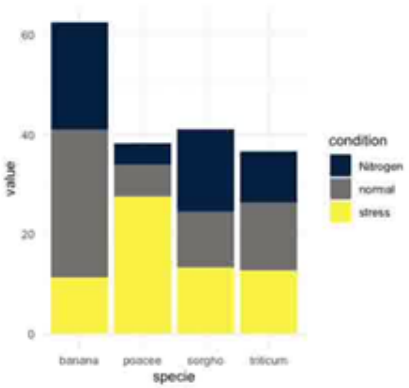
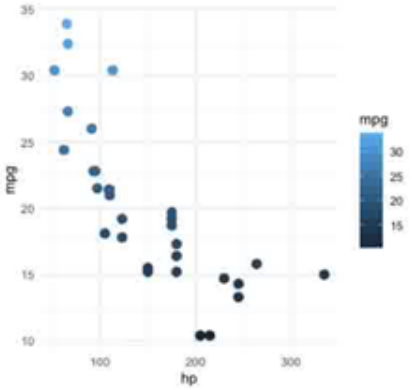


Scatterplots



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Not that easy...

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