2.1a Measuring position

Percentile: % of data less than the specific one

ex: a baby is in the 15th percentile for weight. This means that 15% of babies born weigh less than it.

Finding a percentile: $\frac{\#\text{ of data below}}{\text{total }\#\text{ of data}} \times 100$

ex: Jenny's test score

6 ~~7~~
7 ~~2334~~
7 ~~57778999~~
8 ~~00123334~~
8 ~~169~~
9 03

$\frac{21}{25} \times 100 = 84\%$

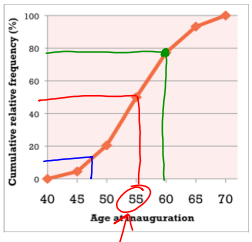
Cumulative Relative Frequency Graphs (Ogives)

adds everything below it ↑ ↑ %

* graph that shows percentiles

ex: Age at Inauguration

See p. 88 in your book



① Pres. Obama became pres. at age 47. Was this unusual?

② What is the median age of inauguration

median

z-scores (standardized values)

tells how many standard deviations above or below the mean that a specific value is

positive z : above average
negative z : below average
z = 0 : exactly average

$$z = \frac{\text{specific value} - \text{mean}}{\text{st. dev.}} = \frac{X - \bar{X}}{S}$$

ex: Jenny earned a score of 86 on her test. The class mean is 80 and the standard deviation is 6.07. What is her standardized score?

$$z = \frac{86 - 80}{6.07} = .99$$

Jenny's score is about one standard deviation above the mean

ex: compare the heights of two kids.
Who is taller compared to their age group?

4yr. old
$z = 1.5$
↓
taller than average

8yr. old
$z = -0.5$
↓
shorter than average

Transforming Data

z-scores transform data from original units to a standard scale

	center	shape	spread
add/subtract a	add/subtract by a	no change	no change
mult/divide a	mult./divide by a	no change	mult/divide by $\lvert a \rvert$