

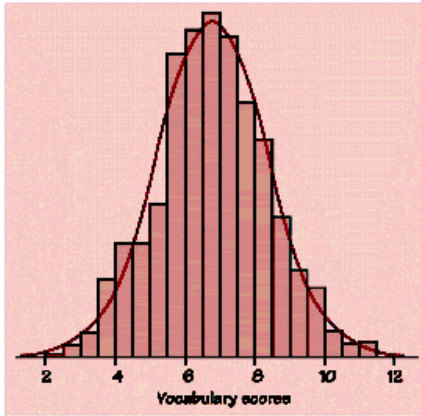
So far:

1. Plot/graph data
2. SOCS
3. Numerical Analysis: (5 number summary, IQR, mean, s).

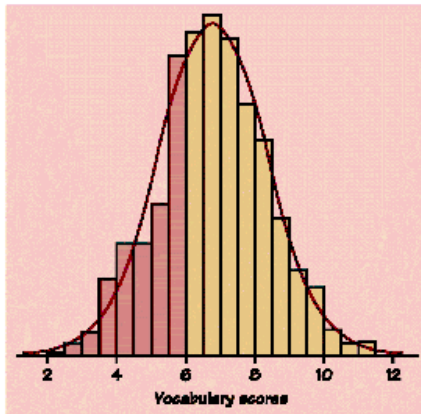
Next: model some distributions with a smooth curve:

<http://www.shodor.org/interactivate/activities/normaldistr/>





- smooth curve
- mathematical model
- idealized description
- general picture
- ignores minor irregularities
- ignores outliers

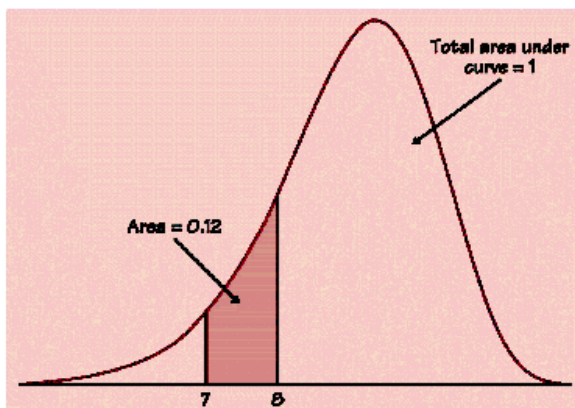


- above the x axis
- re-scale so area = 1
- call this a DENSITY CURVE.

Shaded portion corresponds to % of students who had a vocabulary score from 0 to 6. Actual proportion ($287/947 = 0.303$) \approx shaded "area under the curve" (0.293).

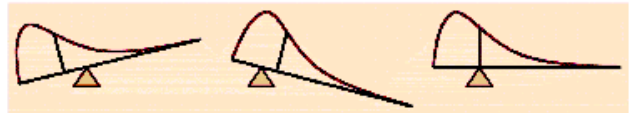
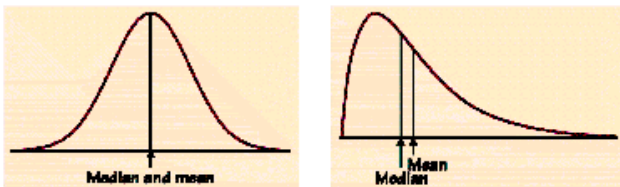
Density Curve:

1. Always on or above the horizontal axis
2. Area under it = 1



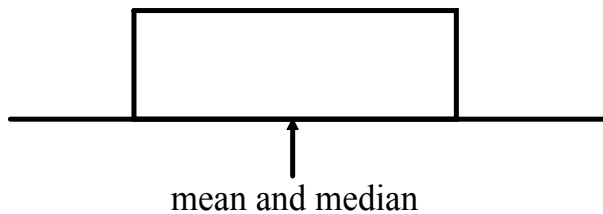
- describes the overall pattern of a distribution
- area under curve and above a range of values = proportion of all observations in that range.

Density curves (like distributions) may be symmetric, skewed, or other shapes.



median: equal-areas point

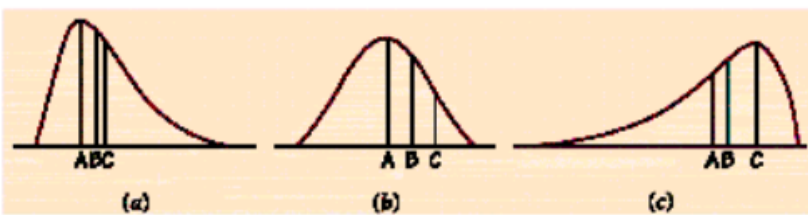
mean: balance point



symmetric: median \approx mean

skewed: mean pulled toward the long tail.
 “It’s mean to pull the dog’s tail.”

See if you can identify where the mean, median, and mode are located for each of these density curves.

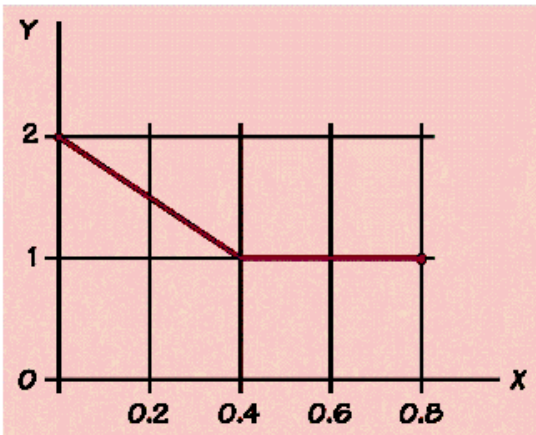


Answer	Answer	Answer
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Is this square a density curve? Why or why not?

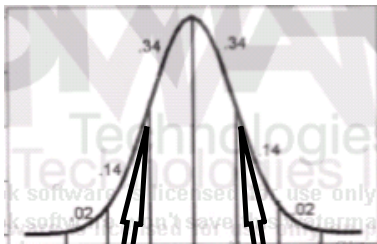
Answer



Is this a density curve? Why or why not?

extension

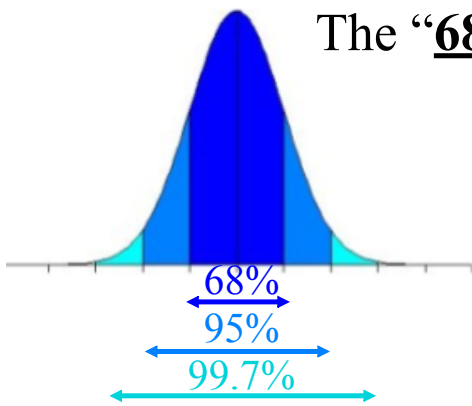
Yay! Now you can do
p. 83-85 1, 3, 5



special density curve: the normal curve

- symmetric
- single-peaked
- bell-shaped

inflection points

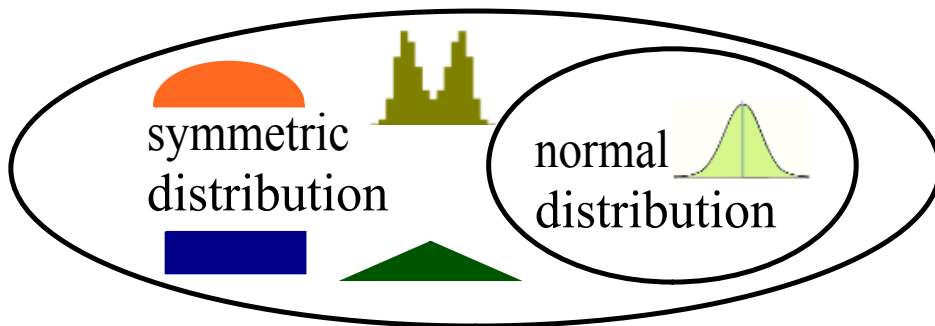


The “**68-95-99.7 rule**” or “**empirical rule**”

In the normal distribution

- 68% of observations are within 1 standard deviation of the mean.
- 95% of observations are within 2 standard deviations of the mean.
- 99.7% of observations are within 3 standard deviations of the mean.

Where are the quartiles?



normal is automatically symmetric
symmetric is not necessarily normal

WAIS (IQ) scores are approx. normal
(avg.) $\mu = 110$ (std. dev.) $\sigma = 25$

Draw and label a normal curve.

What proportion of scores are...

between 85 and 135?

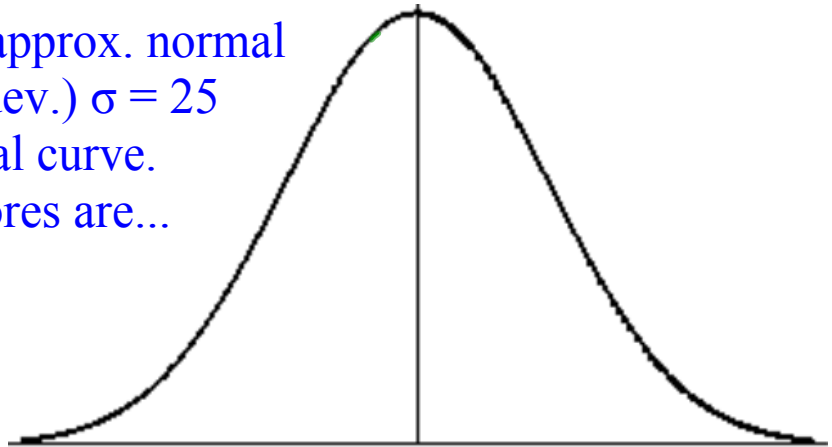
between 60 and 160?

between 110 and 135?

between 60 and 85?

between 60 and 135?

over 135?



Yay! Now you can do
p. 89 exercises 7 & 9