Stat 1 Practice Quiz: Normal Computations with Body Temperature

Suppose that the body temperatures of healthy adults vary from person to person according to a Normal distribution with mean $\mu = 36.8$ degrees Celsius and standard deviation $\sigma = 0.4$ degrees Celsius. For brevity we can write

$$X \sim N(36.8, 0.4),$$

where X represents the temperature we would measure for a person chosen randomly from the population of all healthy adults.

a) Sketch the distribution of Celsius body temperatures and mark the values that are 0, 1 and 2 standard deviations from the mean.

c) Between about what two values do the middle 95% of Celsius body temperatures fall?

d) About what percent of body temperatures are above 37.6 degrees Celsius?

e) About what percent are between 36.4 and 37.6 degrees Celsius?

f) Above about what value are the highest 16% of body temperatures? That is, find the 84th percentile.

Give an approximation or a lower and upper bound based on the 68/95/99.7 rule for each of the following answers. Later we'll use Tables B (p. 552) and C to answer them more precisely.

g) About what percent of body temperatures are below 37.0 degrees C (98.6 F)?

h) About what percent fall between 35.8 and 37.0 degrees Celsius?

i) Find the 95th percentile of the distribution of Celsius body temperatures. That is, find the value for which only 5% of people have temperatures this high or higher.