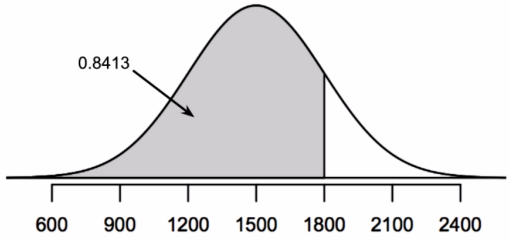
Proportions and Quantiles

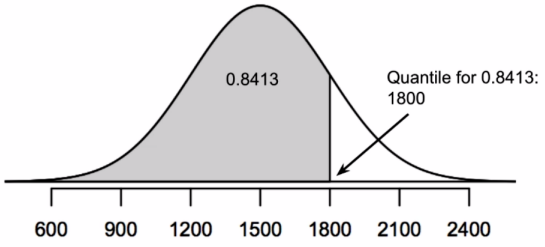
Proportion of observations that fall below a given observation

= area left of observation and below the curve



Proportions and Quantiles

Quantile: cutoff value for a certain proportion



Calculating

In R:

mean (μ) sd (σ)

`pnorm(x, mu, sigma)`

for the *proportion* of values less than x

`qnorm(p, mu, sigma)`

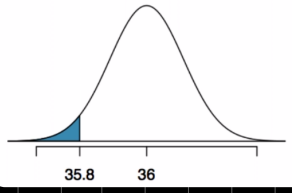
for the *quantile* of the proportion p

Remember: **p**norm calculates proportions
qnorm calculates quantiles

Quality control

Each bottle of Heinz ketchup ~ N(36 oz, 0.11 oz)

What percent of bottles have < 35.8 oz?

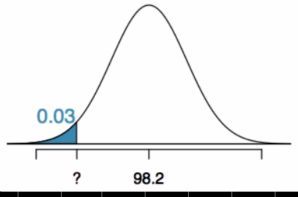



```
> pnorm(35.8, 36, .11)
[1] 0.03451817
```

3.5% fail

Body temperature

Body temperatures of healthy humans are distributed nearly normally with mean 98.2°F and standard deviation 0.73°F. What is the cutoff for the lowest 3% of human body temperatures?




```
> qnorm(.03, 98.2, 0.73)
[1] 96.82702
```