Professor Notes About the "Normal Distributions" Homework

- I suppressed the printing of plots just to save space. It is a good idea when you are first learning normal distribution calculations to both draw the plots by hand and with R so as to catch mistakes.
- No sentence should start with a number. In other words, don't do this – "30% of spur lengths ..." Notice the wordings of my answers below.
- For the last question, to find the two values that contain the most common 80%, you must find the two values that have 10% (i.e., $\frac{100-80}{2}$) in the lower- and upper-tails.
- Generally, percentages should be rounded to one decimal, proportions to three decimals, and values from reverse calculations to decimals that the variable was recorded in.

iPhone Battery Lifespan

1. Number of charge-cycles is a discrete quantitative variable.
2. The proportion of betteries that would be rated as "exceptional" is 0.006.
3. The percentage of batteries that would be rated as better than "acceptably poor" but not "exceptional" is 88.8%.
4. The new definition of "exceptional" (i.e., the top 10% of batteries) would be 426 charge-cycles.
5. The new definition of "unacceptably poor" (i.e., the bottom 25% of batteries) would be 387 charge-cycles.

Turkey Spur Length

1. The spur length such that 30% of the turkeys have a longer spur length is 23 mm.
2. The proportion of turkeys with spur lengths between 15 and 25 mm is 0.811.
3. The proportion of turkeys with spur lengths greater than 30 mm is 0.007.
4. The spur length such that 10% of turkeys have a smaller spur length is 16 mm.
5. The proportion of urkeys with a spur length less than 18 mm is 0.217.
6. The most common 80% of spur lengths are between 16 and 26 mm.

R Appendix.

```r
# iPhone Battery Lifespan
distrib(450,mean=400,sd=20)
ab <- distrib(450,mean=400,sd=20)
a <- distrib(375,mean=400,sd=20)
ab-a
distrib(0.10,mean=400,sd=20,type="q",lower.tail=FALSE)
distrib(0.25,mean=400,sd=20,type="q")

# Turkey Spur Length
distrib(0.3,mean=20.9,sd=3.7,type="q",lower.tail=FALSE)
ab <- distrib(25,mean=20.9,sd=3.7)
a <- distrib(15,mean=20.9,sd=3.7)
ab-a
distrib(30,mean=20.9,sd=3.7,lower.tail=FALSE)
distrib(0.1,mean=20.9,sd=3.7,type="q")
distrib(18,mean=20.9,sd=3.7)
```

```r
distrib(0.1,mean=20.9,sd=3.7,type="q")
distrib(0.1,mean=20.9,sd=3.7,type="q",lower.tail=FALSE)
```