Stats Starter 1/28

6.2 #39, 40, 45

6.2b Rules for Means & Variances

Means:

1. $\mu_{a+bx} = a + b\mu_x$
2. $\mu_{x+y} = \mu_x + \mu_y$
   $\mu_{x-y} = \mu_x - \mu_y$

Variances:

1. $\sigma^2_{a+bx} = b^2\sigma_x^2$
2. $\sigma^2_{x+y} = \sigma_x^2 + \sigma_y^2$
   $\sigma^2_{x-y} = \sigma_x^2 + \sigma_y^2$

ONLY if X and Y are independent

ex: SAT scores

Math = X $\mu_x = 519$ $\sigma_x = 115$

Verbal = Y $\mu_y = 507$ $\sigma_y = 111$

$\mu_{x+y} = 519 + 507 = 1026$

σ^2_{x+y} (assume X & Y are indep.)

$\sigma^2_{x+y} = \sigma_x^2 + \sigma_y^2$

$= 13225 + 12321$

$\sqrt{\sigma^2_{x+y}} = \sqrt{25546}$

$\sigma_{x+y} = 159.8$