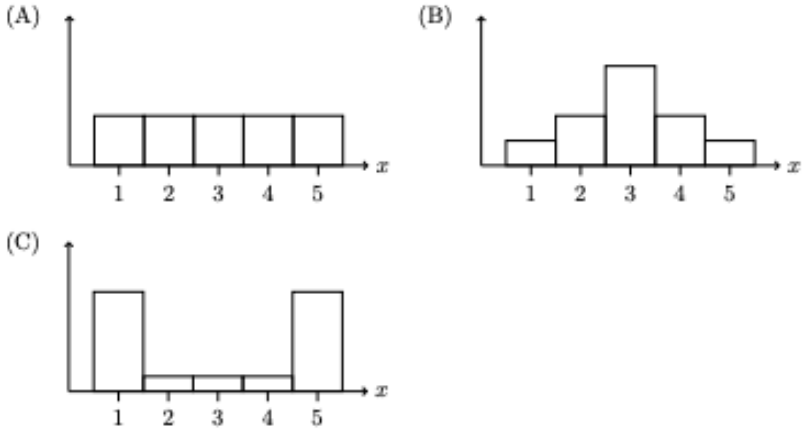
Quiz #4

1. The graphs below give the probability mass function for 3 random variables.



   (a) Order them by mean from smallest to biggest.

   They are all the same.

   (b) Order them by size of variance from smallest to biggest.

   BAC

   (c) Order them by size of standard deviation from smallest to biggest.

   BAC

2. True or False: If Var(X) = 0 then X is constant.

   True

3. Brrrr. The mean temperature in Pittsburgh for January was 27.8 °F and the variance was 18 °F^2. The conversion formula between C and F is

$$C = \frac{5}{9}(F - 32)$$

   (a) What was the standard deviation for temperature (in F) for Pittsburgh in January?

$$\sigma_F = \sqrt{\mathrm{Var}(F)} = \sqrt{18} \approx 4.24°\mathrm{F}$$

(b) What was the mean temperature in C?

$$\mu_C = \frac{5}{9}(27.8 - 32) = \frac{5}{9}(-4.2) \approx -2.33°\mathrm{C}$$

(c) What was the variance of the temperature in $°\mathrm{C}^2$?

Since $C = \frac{5}{9}F - \frac{160}{9}$,

$$\mathrm{Var}(C) = \left(\frac{5}{9}\right)^2 \mathrm{Var}(F)$$

$$\mathrm{Var}(C) = \left(\frac{5}{9}\right)^2 (18) = \frac{25}{81} \cdot 18 \approx 5.56°\mathrm{C}^2$$