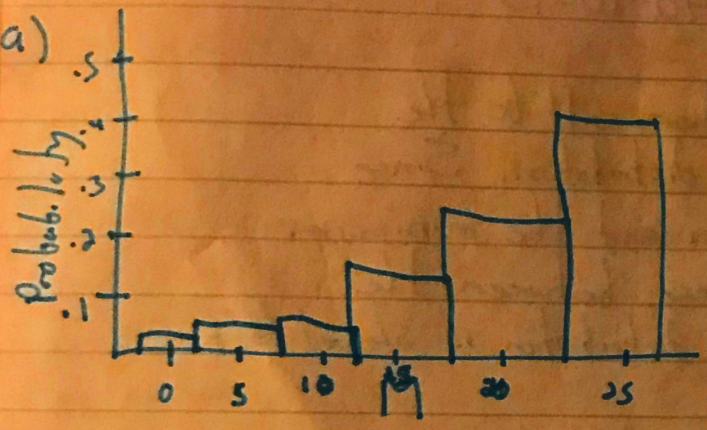
HW 6.2 Part A pages 378-379 87, 39-41, 43, 45

(37) M: Money Collected = 5X The shape will stay the same

$\mu_x = 3.87$
$\sigma_x = 1.29$

Money Collected	0	$5	$10	$15	$20	$25
Prob	0.02	0.05	0.08	0.16	0.27	0.42

a)



The graph is skewed left. Most of the time the ferry makes $20 or $25.

b) $\mu_M = 5\mu_x = 5 \cdot 3.87 = \$19.35$

Over the long run, on average, the ferry makes $19.35 per trip

c) $\sigma_M = 5\sigma_x = 5 \cdot 1.29 = \$6.45$

The amounts made on each ferry trip differ from the mean an average of $6.45.

(39) X = # of questions correct

G = grade G = 10X

a) $\mu_G = 10\mu_x = 10(7.6) = 76$

b) $\sigma_G = 10\sigma_x = 10(1.32) = 13.2$

c) Variance of X is $(\sigma_x)^2$ so variance of g is $(\sigma_G)^2 = (10\sigma_x)^2$

$= 100\sigma_x^2$

(40) a) Median of $G = 10 \cdot \text{Med } X$
$= 10(8.5)$
$= 85$

b) $IQR\ G = Q_3 G - Q_1 G$
$= 10(9) - 10(8) = 90 - 80 = 10$

c) The shape of G's distribution will be the same as the shape of X's distribution. Since the distance between the median and the minimum is much larger than the distance between the median and the max, this distribution is skewed left.

(41) $Y = M - 20$ Y = amt of profit (money earned − expense of \$20)
$Y = -20 + 5X$ M = money collected on a randomly selected trip

a) The mean of Y (μ_Y) will be \$20 less than the mean of M (μ_M)
$\mu_M = 19.35$ so $\mu_Y = 19.35 - 20 = \$-.65$

Over the long run, the ferry loses an average of \$.65 each trip.

b) The σ of Y (σ_Y) will be the same as the σ_M since subtracting a constant will not change σ.

So $\sigma_Y = \$6.45$ The individual profits made on each trip will vary/differ from the mean of -\$.65 an average of \$6.45.

HW 6.2 Part A pages 378-379 problems 37, 39-41, 43, 45

(43) $Y = -20 + 6X$ $\mu_x = 3.87$, $\sigma_x = 1.29$ } from problem #37

$\mu_y = -20 + 6(\mu_x)$
$= -20 + 6(3.87) = \$3.22$

$\sigma_y = 6(\sigma_x) = 6(1.29) = \$7.74$

(45) Y = temp on randomly selected night in F°
$F = 9/5\,C + 32$

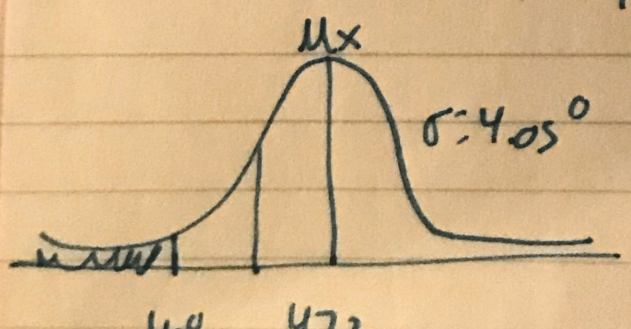
a) T = on randomly selected night in C° $N(8.5°C, 2.25°C)$

$\mu_Y = 9/5(\mu_T) + 32 = 9/5(8.5) + 32 = 47.3°F$

$\sigma_Y = 9/5(\sigma_T) = 9/5(2.25) = 4.05°F$

b) $P(Y < 40°)$ $N(47.3°_F, 4.05°_F)$

normalcdf $(-10{,}000, 40, 47.3°, 4.05°) = .036$



About 3.6% chance randomly selected night is below 40° F.