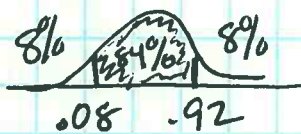


681: 16-19, 21-22, 31

7/

16. mid 84%



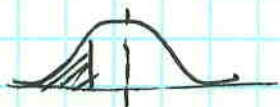
$$\text{invnorm}(0.08) = -1.4$$

$$\text{invnorm}(0.92) = 1.4$$

$$-1.4 < z < 1.4$$

17. Battery normal $\mu = 8 \text{ hr}$ $\sigma = 1.5 \text{ hr}$

a. $P(X < 6)$ $z = \frac{6-8}{1.5} = -1.33$



normcdf = 0.091 = 9.1% less than 6

b. $P(X > 12)$ $z = \frac{12-8}{1.5} = 2.66$

normcdf(2.66, 4) = 0.0038 = 0.38% more than 12

c. $P(8 < X < 9)$ normalcdf(8, 9, 8, 1.5)

24.75% chance between 8 & 9

18. Cholesterol $\mu = 203 \text{ mg/dL}$ $\sigma = 38.8 \text{ mg/dL}$

a) $P(X < 160)$ $z = \frac{160-203}{38.8}$

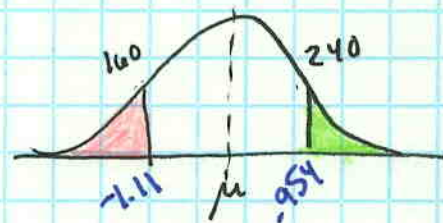
$$z = -1.11$$

normcdf(-4, -1.11) = 0.1335

13.35% of low cholesterol

b) $P(X > 240)$ $z = \frac{240-203}{38.8} = 0.954$

normcdf(0.954, 4) = 0.1700 = 17% chance high



c) $P(180 < X < 200)$ normalcdf(180, 200, 203, 38.8) = 0.1925

19.25% chance between 180 & 200.

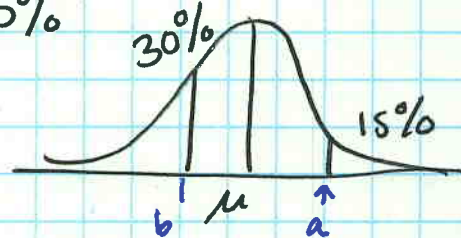
19. Snow $\rightarrow \mu = 260$ $\sigma = 27$ between 45°N to 55°N

a. min snowfall to be in top 15%

$$\text{invnorm}(.85) = 1.03 \quad (z)$$

$$1.03 = \frac{X - 260}{27} \quad X = 287.98$$

min. snow for top 15% is 287.98 cm.



b. max snow for bottom 30%

$$\text{invnorm}(.3) = -.524 \quad -.524 = \frac{X - 260}{27} = 245.84$$

245.84 cm is the max amount in the lowest 15%.

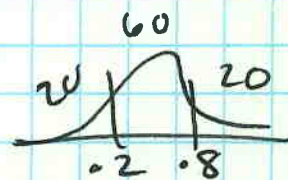
c. what range is the middle 60%?

$$\text{invnorm}(.2) = -.842$$

$$\text{invnorm}(.8) = +.842$$

$$-.842 = \frac{X - 260}{27} \quad X = 237.27 \text{ cm}$$

$$.842 = \frac{X - 260}{27} \quad X = 282.72 \text{ cm}$$



mid. 60%
is between

237.27 cm &
282.72 cm

21. ACT z value $z = \frac{27 - 21}{4.7} = 1.28$

SAT z value $z = \frac{620 - 508}{112} = 1.009$

She did better on the ACT

22. ^{Physics} 76 on the test. $\mu = 72$ $\sigma = 10$
81 on Soci test. $\mu = 78$ $\sigma = 9$

$$z_p = \frac{76 - 72}{10} = .4 \quad z_s = \frac{81 - 78}{9} = .33$$

she did better on the physics test.

31. outside 35%



$$\text{invnorm}(17.5) = -.93$$

$$\text{invnorm}(82.5) = .93$$

$z < -.93$ $z > .93$ neither is correct.

Onad has the wrong z score.

Lucy has the wrong inequality.