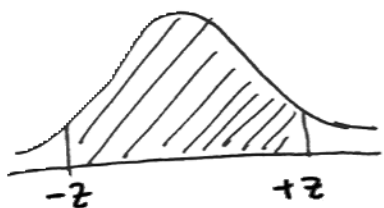


WORKING W/ THE STANDARD NORMAL TABLE

1) Table A 105 gives

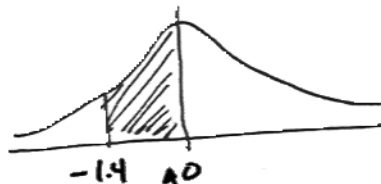


1) If I ask you for the area between -2 and $+2$
read it straight off the table 57.63% or 58%
(note I rounded the area up)

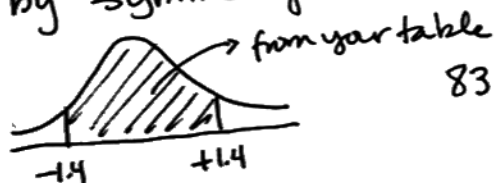
So. What is the area between -1.25 and $+1.25$?

2) What is the area between -1.4 and 0 ?

a) draw a picture!



b) by symmetry



$83.85 \rightarrow$ divide this by $2 = 41.925$ or 42%

So. What is the area between 0 and 0.5 ?

3) TAILS!



find the area to the left of $z = -1.0$ and to the right of $z = 1.0$

a) well, the middle is 68.27 so

b) $100\% - 68.27\% = 31.73\%$ total tails or 32%

c) each tail is $\frac{31.73}{2} = 15.865$ or 16%

or $\frac{1}{2}(100 - \text{Area}(z))$

THOSE ARE THE BUILDING BLOCKS!

4) Now What's the area to the left of $z = .70$?

a) draw a picture!



b) well, you know that



c) area between $\pm .70$ is 51.61

d) the area to the left of $z = .70$ is

$$50\% + \frac{51.61}{2} = 75.805 \approx 76\%$$

OR

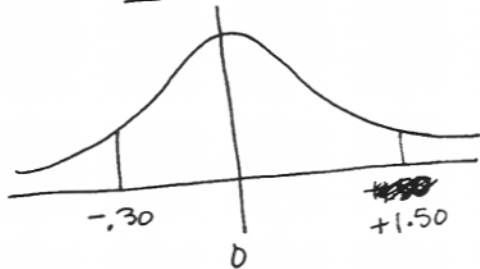
e) 51.61% + one "tail"

$$\rightarrow \frac{1}{2}(100 - 51.61) = \frac{48.39}{2} = 24.195\%$$

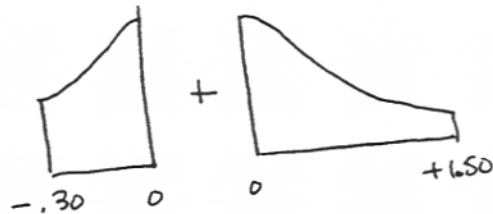
$$51.61\% + 24.195\% = 75.805\% \approx 76\%$$

[note - I carry 2 or more digits until the end!]

5) A WEIRD AREA! How?



$\Rightarrow$



(go back to step 2)

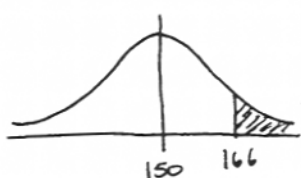
$$\frac{23.58}{2} + \frac{86.64}{2} = 55.11\% \approx 55\%$$

$$\text{or } \left(\frac{23.58 + 86.64}{2} \right) = 55.11\% \approx 55\%$$

Normal Approximation - Using the normal curve to help standard you make statements or learn more about a distribution of data

1) Law School Admissions Test
 $\bar{X} = 150$ approximately normal
 $SD = 10$

draw!

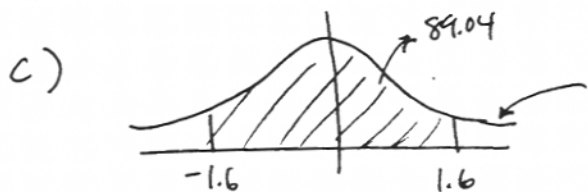


a) WHAT % score above 166

b) To answer - you must convert the raw score to a z score and then look up the area associated w/ z.

$$\frac{166 - 150}{10} = \frac{16}{10} = 1.6 = z$$

$$\left(\frac{\text{observation of interest} - \text{mean of the distribution}}{\text{Standard dev. of distribut.}} \right) = z$$



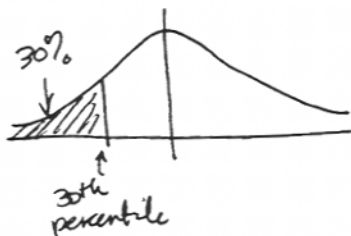
$$\frac{100 - 89.04}{2} = 5.48 \approx 5.5\%$$

2) Exercise Set E p. 92 # 3

$\bar{X} = 3.0$
 $SD = 0.5$

that's a tail

approx. = -1.50



a tail of 30% implies a "middle" of ~40%

note: Freedman ROUNDS DOWN HERE

40% is approximately

$z = \pm .50$ it's ~~interact~~

~~not exactly 40%~~
 closest to a middle of 40%

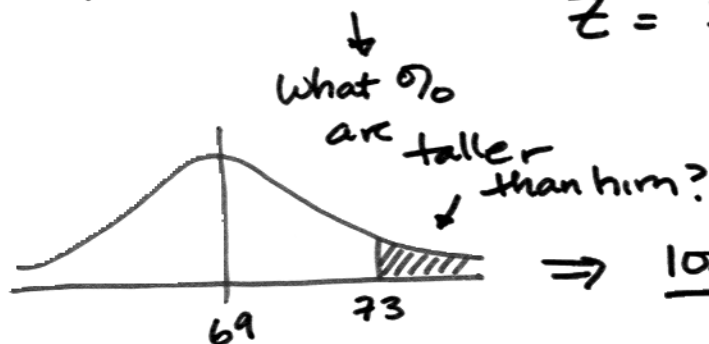
3) Rounding Up + Down

Men's heights $\bar{X} = 69''$ $SD = 2.7''$

A 73" tall man

$$Z = \frac{73 - 69}{2.7} = 1.4815$$

(round up)



$$\Rightarrow \frac{100 - 86.64}{2} = 6.68\%$$

are taller

A 72" tall man

→ what % are shorter than him? $Z = \frac{72 - 69}{2.7} =$

round DOWN
to 1.10



$$72.87\% + \left(\frac{100 - 72.87}{2} \right) = 86.43\%$$

13.572

Suppose you wanted the top 25% - what is the appropriate Z to use?



Well, a top 25% implies a middle of 50%



closest one is a $Z = .70$

then,

$$Z = .70 = \frac{X - 69}{2.7}$$

solve for X

$$= 70.89$$