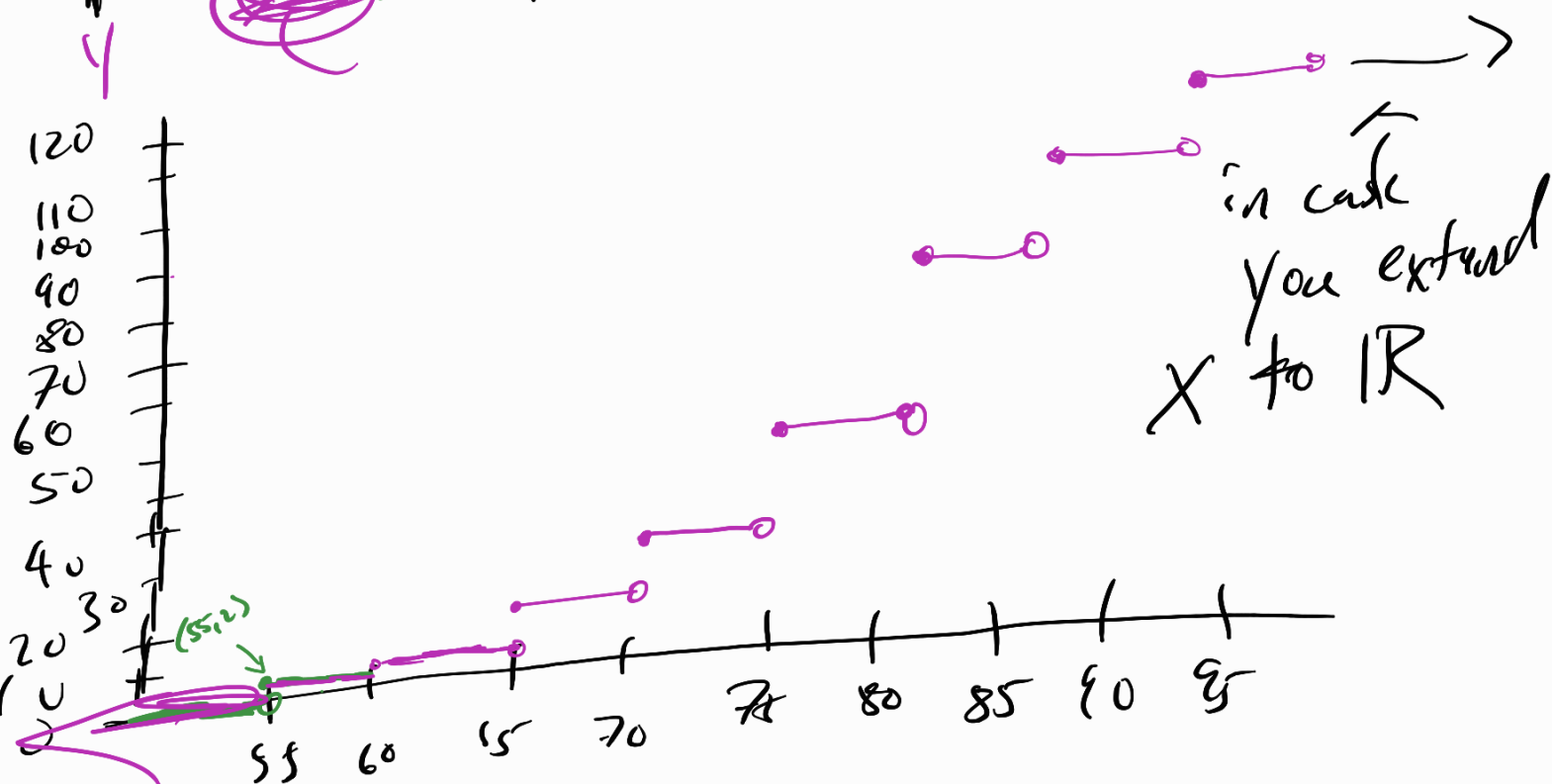


# pop's weights

Weight (kg)	Frequency	Cumulative Frequency
$55 \leq w < 60$	2	2
$60 \leq w < 65$	3	5
$65 \leq w < 70$	12	17
$70 \leq w < 75$	14	31
$75 \leq w < 80$	19	50
$80 \leq w < 85$	37	87
$85 \leq w < 90$	22	109
$90 \leq w < 95$	11	120

$Q_1$ : How many ppl  $\approx 120$

$Q_2$ : Draw a cumulative dist. graph



Z-score: Given a data set  $X$

$$Z_x = \frac{x - \mu}{\sigma}$$

$\uparrow$   
 Z-score of  $x$

$\mu$  = mean

$\sigma$  = how many std dev.  $x$  is away from  $\mu$ .

the point  $x$   $\sigma = \text{std dev.}$

you can always compute z-score  
if you  $\mu$  &  $\sigma$

Normal distribution:

① bell-shaped

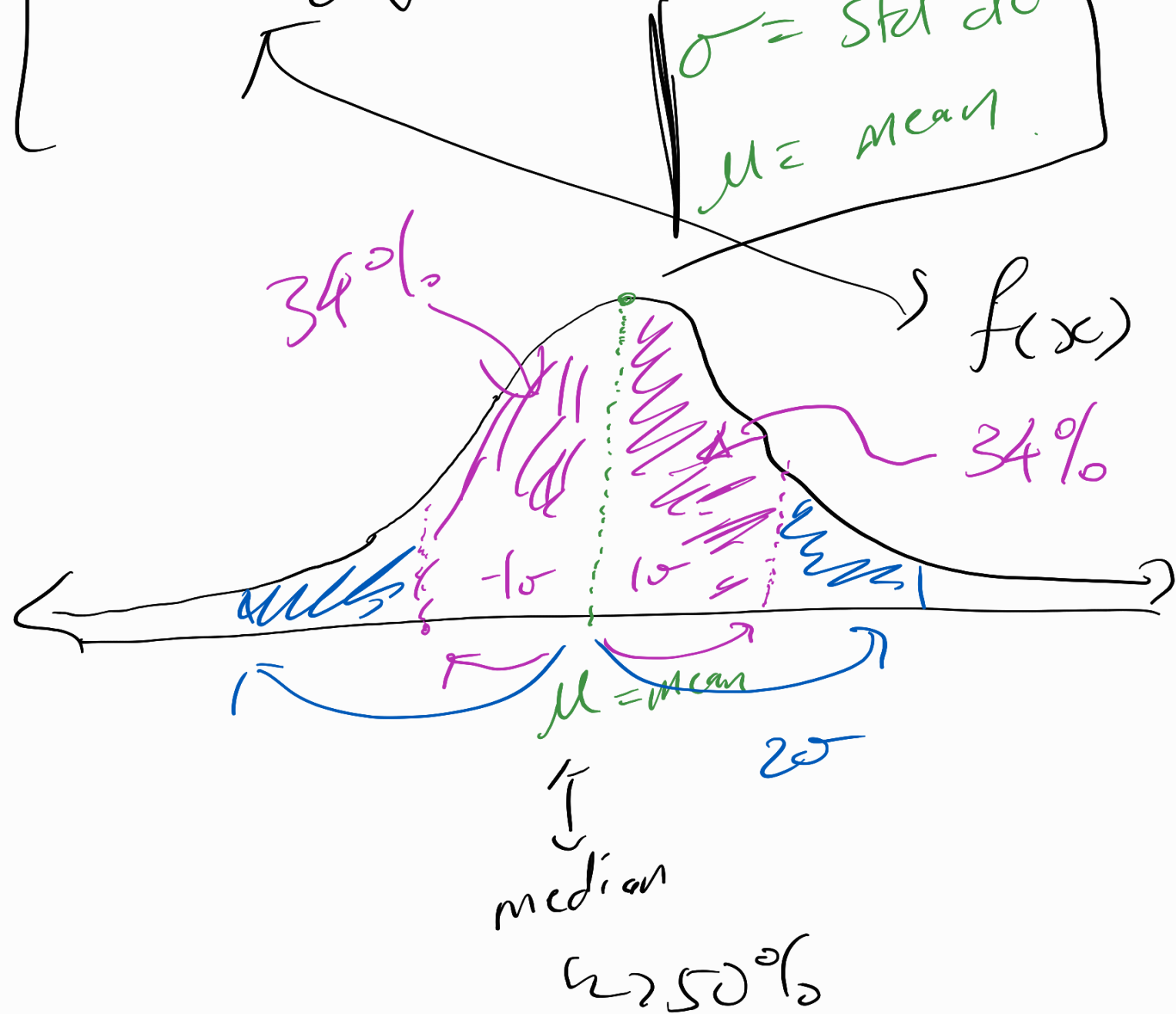
- symmetric
- unimodal

② 68-95-99.7 rule!

$X$  - is normally distributed

$\rightarrow$  PDF is

$$f(x) = \frac{1}{\sigma \sqrt{2\pi}} e^{-\frac{1}{2} \left( \frac{x - \mu}{\sigma} \right)^2}$$



Under Normal distributions

Z-scores  $\longleftrightarrow$  percentiles

normally dist.

- Avg male wght is 197 lbs
  - std dev: 25 lbs
- 

What percentile is 150 lbs?

---

① compute z-score:

$$z = \frac{150 - 197}{25} \leadsto \boxed{z = -1.88}$$

② Find percentile in z-score table

2 3.01%

• A battery has a normal dist.  
for life span.

• Avg lifespan: 33.2 weeks  
Std dev: 2.8 weeks.

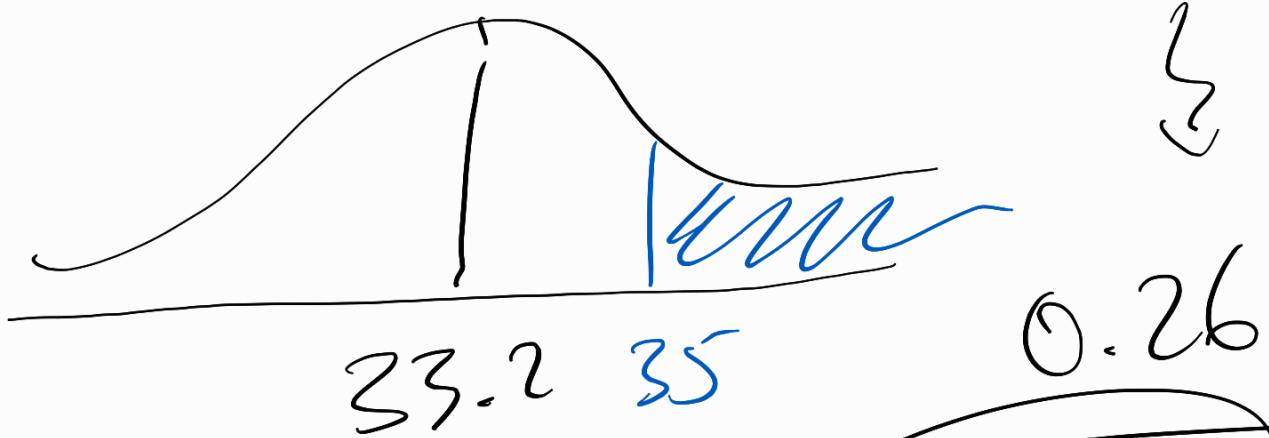
Q1 find probability of a battery  
lasting at least 35 wks

$$z_{35wks} = \frac{35 - 33.2}{2.8}$$

$$= 0.64$$

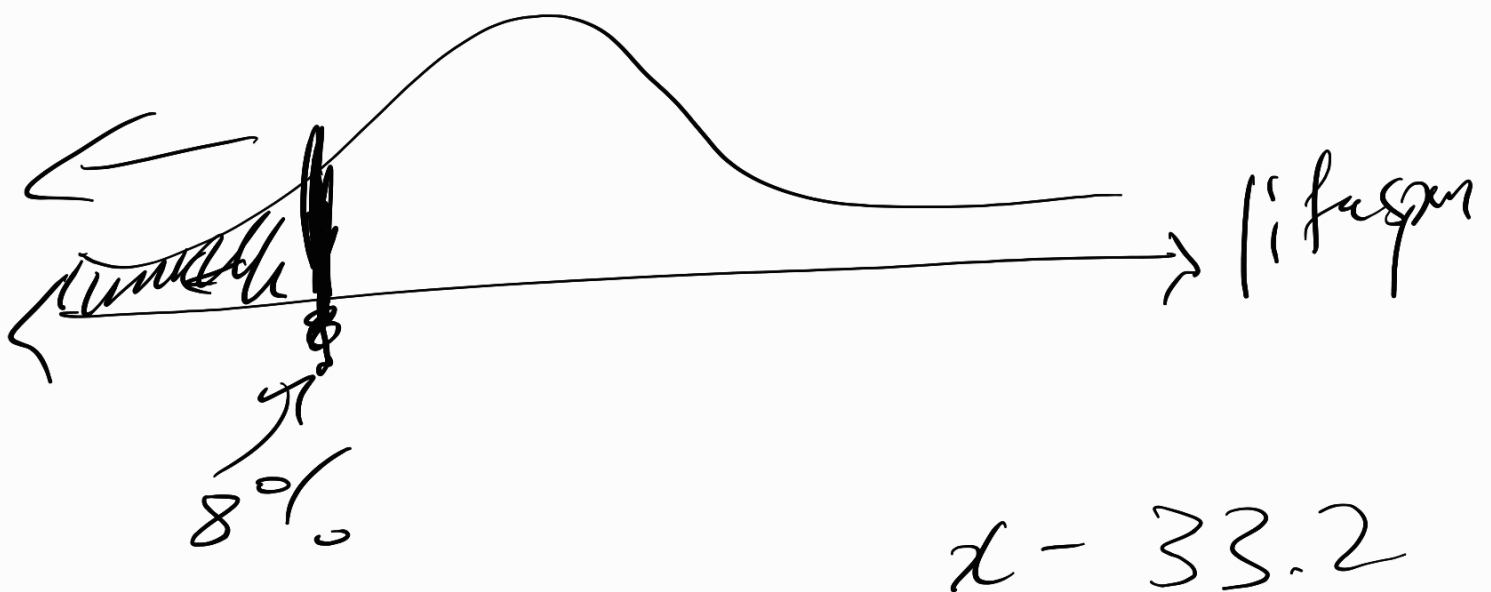
→ places 73.89%

↳ 1 - 73.89

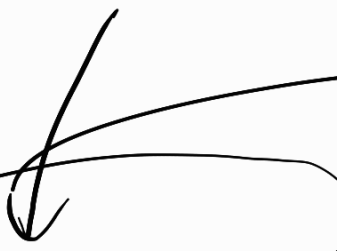


26%

Q2 find the max # of wks  
a manufacturer can expect that  
no more than 8% of bats  
will fail.



$$z = -1.41 = -2.8$$


$$x = 29.25$$

Problem Set #3  
due Wed

College Board due 11:59 PM  
M.

