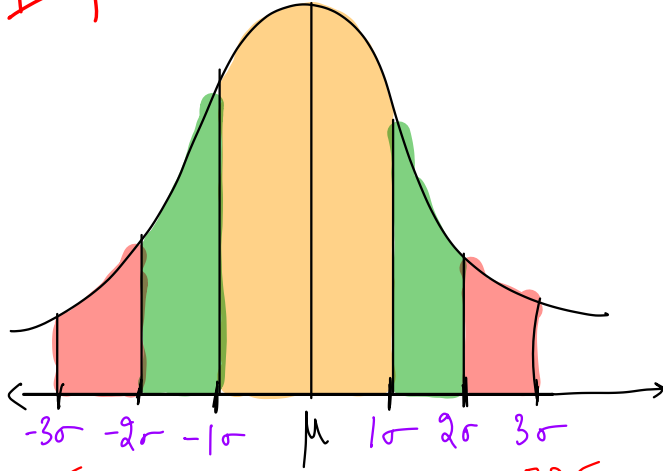
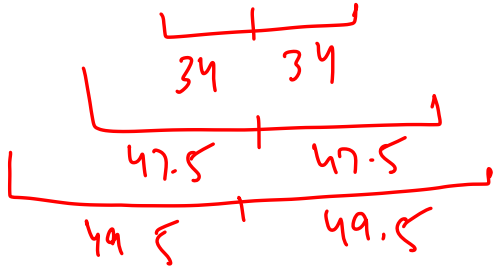


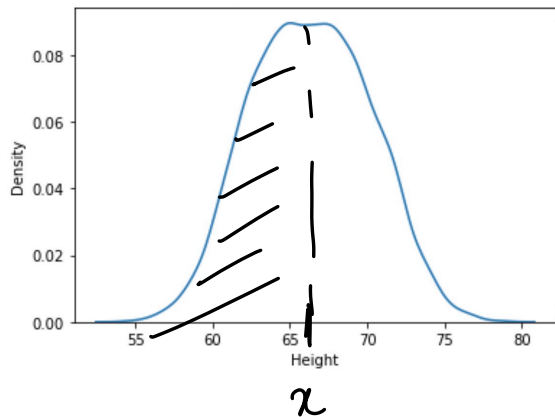
# Gaussian Distribution - 2

pdf

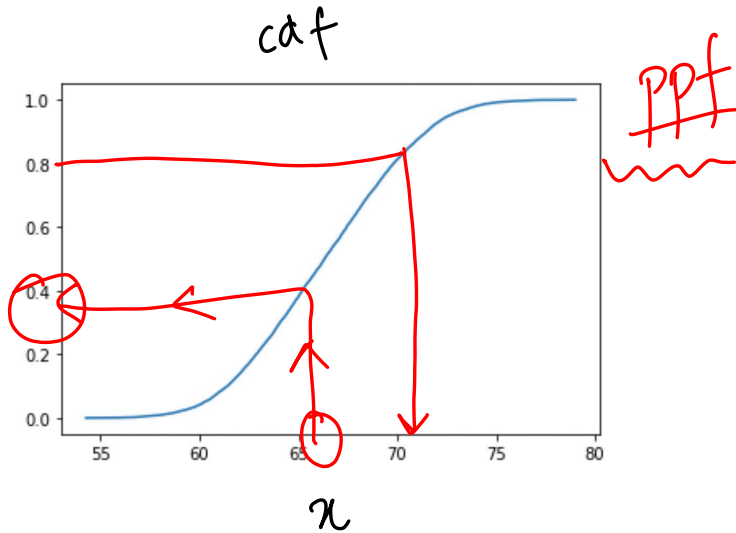


51.5 60 62.5 65 67.5 70 72.5





$$P[X < \underline{66.36}] =$$



norm.pdf -  
 norm.cdf.  
 norm.ppf  
 percent point function.

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

$$= \frac{66.3675 - 66.3675}{3.847}$$

$$Z = 0$$

$$\mu = 66.3675$$

$$x = 66.3675$$

$$\sigma = 3.847$$

z score

cdf

fraction/prob

$x$   
loc  
scale

fraction  
probab/

ppf

z score

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

$$P[62 < X < 77.5] =$$

$$\mu = 66.36$$

$$\text{std} = 3.84$$

$$\text{norm.cdf}(-) - \text{norm.cdf}(-)$$

What is the 95<sup>th</sup> percentile?

Balls produced by a manufacturer have a mean = 50mm and standard deviation = 2 mm.  
Assume Gaussian.

(a)  $p[46 < X < 54]$

(b) Fraction of balls with diameter less than 53mm?

(c) What is the 69th percentile?

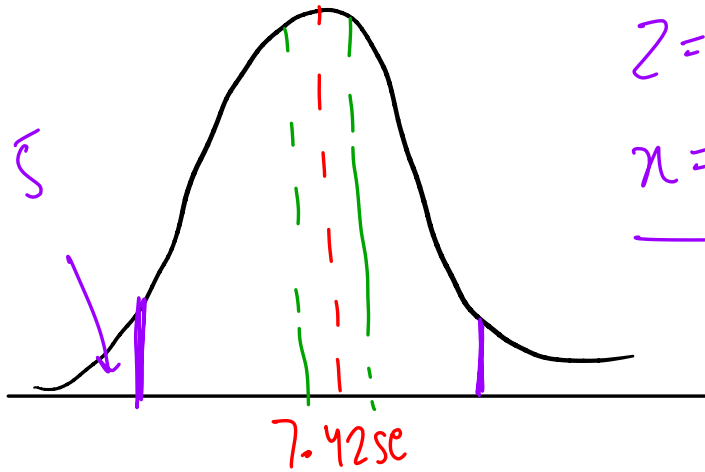
$$\mu = 50 \text{ mm}$$

$$\sigma = 2 \text{ mm}$$

$$(a) \quad p[46 < x < 54]$$

Skaters take an average of 7.42 seconds and Standard Deviation of 0.34 secs for 500m.

If I want to be faster than 95% of the people, what should be my speed?



$$Z = -1.64$$

$$t = 6.86 \text{ sec}$$

$$s = \frac{D}{t} = \frac{500}{6.86} = 72.87 \text{ m/s}$$

A	6.86 m/s	8%
B	62.6 m/s	38%
C	72.8 m/s	38%
D	83.7 m/s	15%

$$\mu(T) = 7.42 \text{ sec}$$

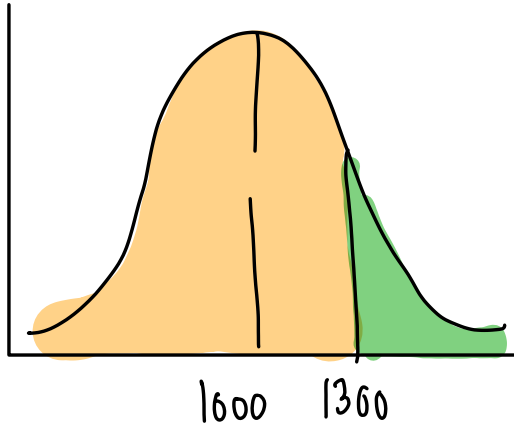
$$\text{std}(T) = 0.34 \text{ sec}$$



A retail outlet sells around 1000 toothpaste per week. The Std. of sales is 200.

If the on-hand inventory is around 1300. What is need of replenishment?

$$\mu = 1000 \quad \sigma = 200$$



$d > \text{inventory}$

$$P[X > 1300]$$

$1 - \text{Orange} = \text{Green}$

$$P[X < 1300] = 0.933$$

$$P[X > 1300] = 1 - 0.933 = 0.067$$

20 users have participated

A	0.067	36%
B	0.097	32%
C	0.120	20%
D	0.150	12%