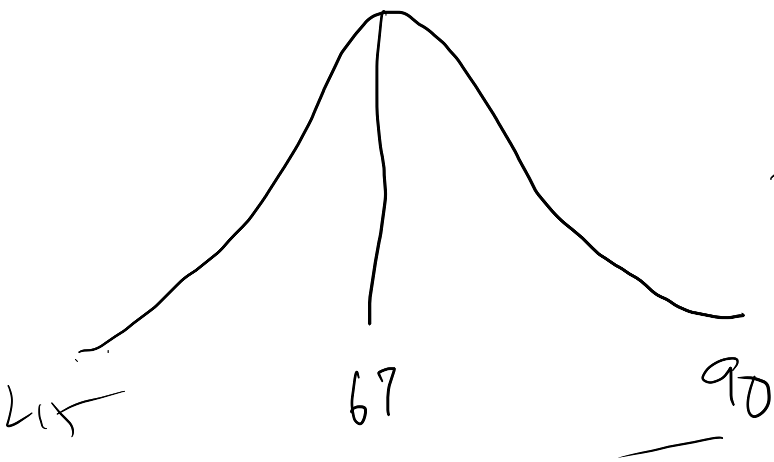


$$z = \frac{x - \mu}{\sigma}$$

Standard normal distribution

$\mu = 0$

$\sigma = 1$

(1)

$\sigma = 3.456$

(i) find $p(x < 43) \Rightarrow$

(ii) $\boxed{p(44 < x < 49)} = ?$

$x = 43$
$\mu = 45$
$\sigma = 3.45$

$z = \frac{43 - 45}{3.45} = 0.578$

Z table

$P = 0.2[illegible]5$

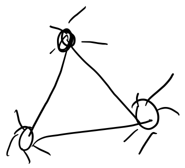
$z_1 = \frac{44 - 45}{3.456}$

$z_2 = \frac{49 - 45}{3.456}$

$\boxed{P(z_1 < x < z_2) = p(z_2) - p(z_1)}$

$= 0.2646$

(2)



Same direction ...?

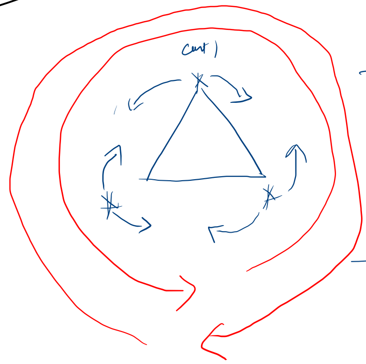
(3) A coin is tossed 10 time. what is the probability of getting exactly 6 head?

(4) The number of car arriving for petrol with mean of 5/hours

(i) what is the probability that in next 1 hour only single car will arrive?

Visualization of problem

100 %



clockwise

$P(\text{ant}_1 \text{ moving}) = 1/2$

Similar for other ants

anticlockwise

$p(\text{ant}_1) = 1/2$. Similar for ant.

$= (1/2 \times 1/2 \times 1/2) + (1/2 \times 1/2 \times 1/2)$

clockw   anti clockwise

$= 2/8 = \boxed{0.25}$

$n = 3$

$x = 3$

$P(X=x) = {}^nC_x \, q^{n-x} \, p^x$

$\boxed{x=1}$

$P(X=x) = 3C_1 \, q^2 \, p^1$

$= \frac{3!}{1(3-1)!}$

$= \frac{3!}{2!} = 3$

$q \; (0.5)^2 \; (0.5)$

$= 3 \times (0.5)^3$

$= 0.375$

$P(x=3) = 1 \; (0.5)^2$.

3) A coin is tossed 10 time (unbiased). what is the probability of getting exactly 6 head)

1) coin < H, T } 2 outcome

2) Independent

3) $p(H) = p(T) = 1/2$

$$\boxed{P(X=r) = {}^{n}C_{r}\, q^{n-r}\, p^{r}}$$

HHHHHH TTTT

$n=10$

$$P(X=6) = {}^{10}C_{6} \left(\tfrac{1}{2}\right)^{10-6} \left(\tfrac{1}{2}\right)^{6}$$

$$= \frac{10!}{6!\,(10-6)!} \left(\tfrac{1}{2}\right)^{4} \left(\tfrac{1}{2}\right)^{6}$$

$$= \frac{10!}{6!\,4!} \left(\tfrac{1}{2}\right)^{4} \left(\tfrac{1}{2}\right)^{6}$$

4) The number of car arriving for petrol with mean 5/hours

(i) what is the probability that in next 1 hour only single car will arrive?

$\lambda = 5$

$\boxed{x = 1}$

$$\boxed{P(X = x) = \frac{e^{-\lambda} \lambda^{x}}{x!}}$$

$$= \frac{e^{-5} 5^{1}}{1!} = \frac{5e^{-5}}{1!}$$

S

P

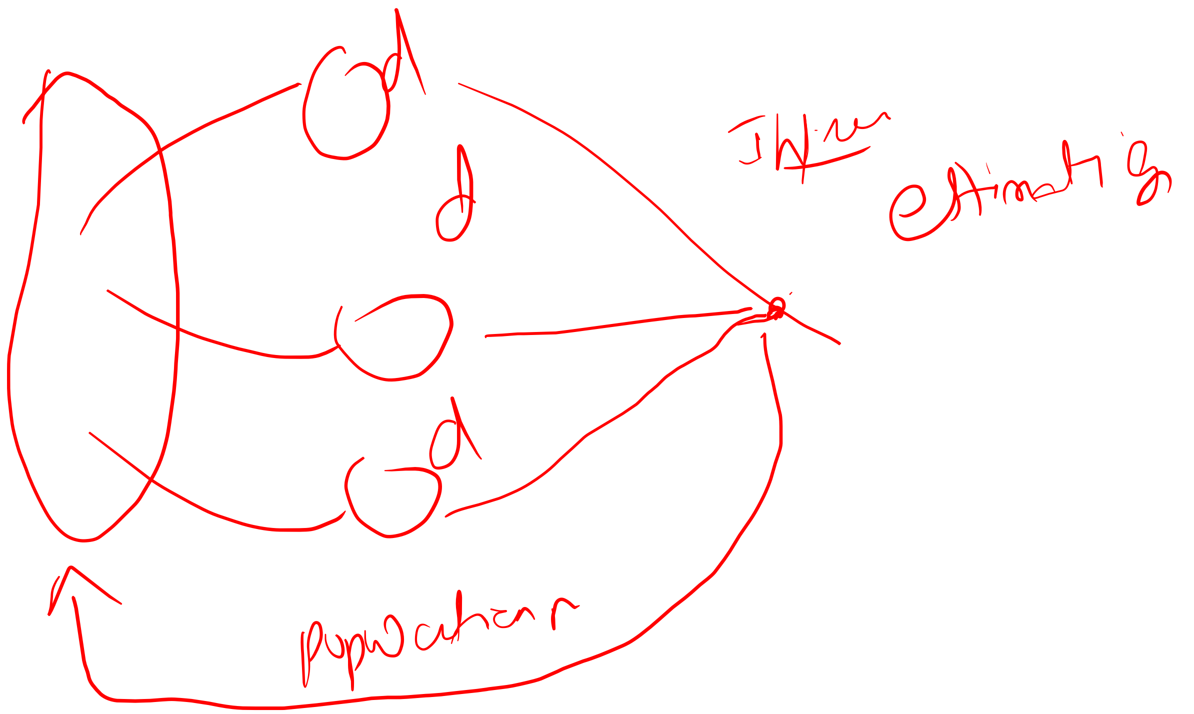
I

estimation

hypothesis

conclusion

what is sample?

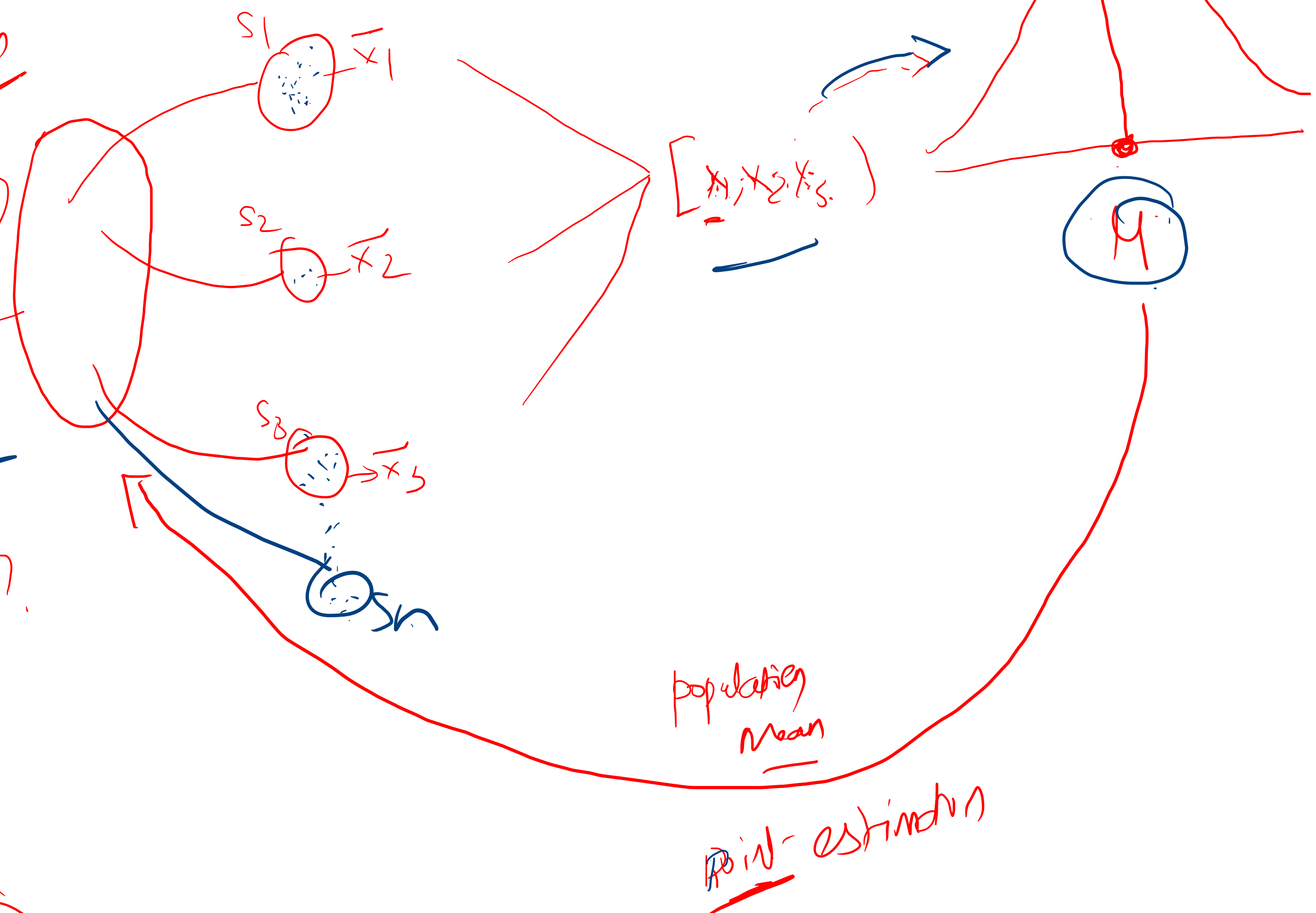


estimation

μ → ?

Binomial

mean of population ⇒ ?



Sample distribution

Sample will be normal when taken large sample

Z - Normal distribution

CLT

Central limit Theorem

(x_1 x_2 x_3)

μ - point est.