```
Alm: Random variable
```

13 Find the mean & variance for the fou:

x -1 0 1 2 P(x) 0.1 0.2 0.3 0.4

501:

X	P(x)	X-6 (x)	ELX)2	[E(X)]	
-1	0.1	-0-1	0.1	0.01	
0	0.2	0	0	0	
1	0.3	0.3	0.3	0:09	
2	0.4	0.8	0.16	0.64	
			=+	2	

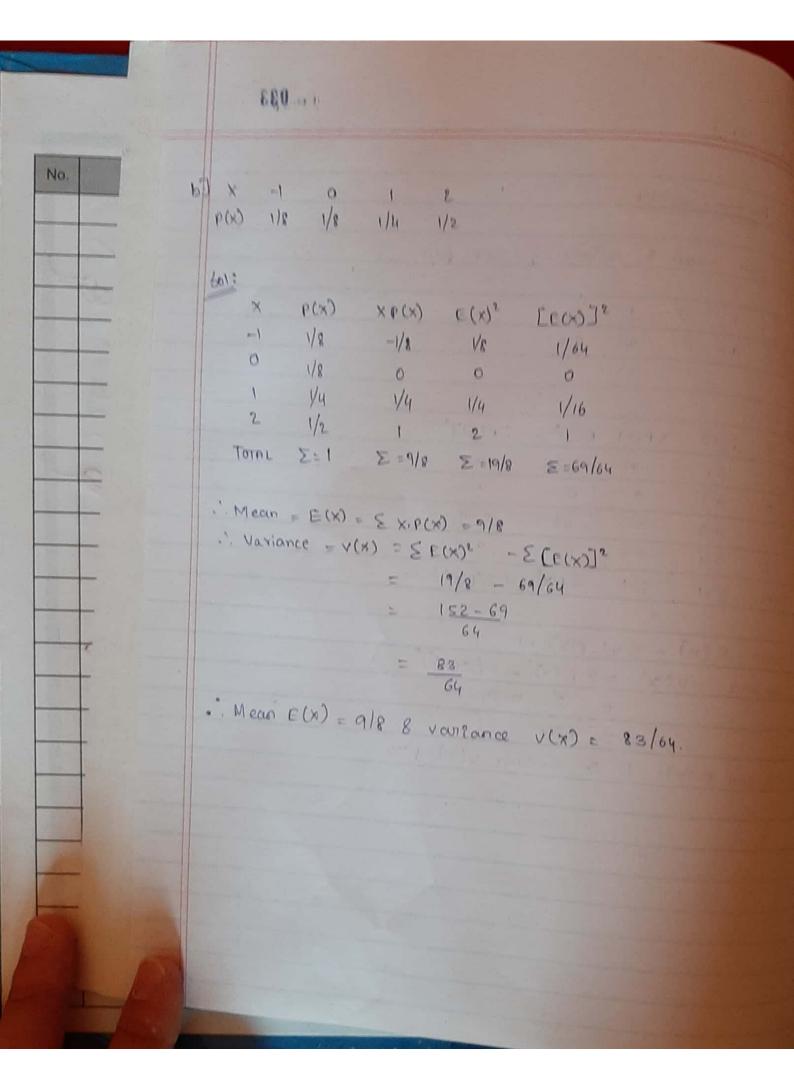
.. Mean = E(x) = E(x) = I

.: Variance = V(x) = { E(x) 2 - { E(E(x)] 2

= 2 -0.74

- 1.24

.. Mean E (x)= 1 & Variance V(x)=1.24



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```
21 01 P= 1 159
   25.0 56.0 10.0 (2)
 601-8
         b(x) \times b(x) = (x)_5 \quad [E(x)]_5
    - 3
                 3.5. 3.5 1.49
          0.4
         0.35
    10
          0.25
               3.75 56.25 14.0625
    15
   TOTAL
                $=6.05 E=94.85 S=27.7525
         X=1
  20.0 = (x) = E (x) = E K.P(x) = 6.05
  · Variance = V(X) = EE(X)2 - E[E(X)]2
                   = 94.85 - 27.7525
                   € 67.0975
   : Mean F(x) + 6.05 & Variance V(x) = 67-0 975
et it e(x) is port of a readon variable x. If P(x) represents
  port for random variable X. Find value of K. Then
  evaluate mean & variance
 bol: As p(xi) in a part it should eatisted the properties
  of port which are
  at pexi) so for all sample space
  1= (PX)93 [d
```

```
037
No.
              93) The pury of trandom variable X is given by
                X -3 -1 0 1 2 3 5 8
                PND 0:1 0:2 0:15 0:2 0:1 0:15 0:05
               Obtain caf Find @ P (45x62)
               @ P(1525) @ P(x52) @ P(x >0)
              5010
               x -3 -1 0 1 2 3 5 8
               P(x) 01 0.2 0.15 0.2 0.1 0.15 0.05
               F(x) 0.1 0.3 0.42 0.62 0.75 0.90 0.95 10
             @ P(+cx 52) = P(xc2) - P(x =1) + P(x=-)
                          = F(X6) - F(Xa) + P(a)
                          = F(2) -F(-1) + P(-1)
                           = 0.75 -0.3 + 0.2
                          = 0.25
            @ P(ICT(S) - F(Xb) - F(Xa) + P(a)
                      = F(s) - F(1) + P(1)
                         = 0.95 -0.65 +0.2
                        = 0.15
           @P(x <2) = P(x=-3) + P(x=-1) + P(x=0) + P(x=1) + P(x=2)
                   = 0.1+0.2+0.15+ 0.2+0.1
                   - 0.75
           @ P(x >0) = 1-F(0) + P(0)
                   = 1-0.45 +0.15
```

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Am : Benenical Distribution

is do unbiased con in torsed 4 times calculate the purbability of obtaining no head, at least one head & more than one tail

NO HEAD!

> dbinom (0,4,0.5)

22 30.0 [1]

ATLEAST ONE HEAD!

> 1 - dbinom (0,4,0.5)

27 0.9375

MORE THOSE DIRE TAIL :

> Phinom (1,4,015, lower, tail: f)

11) n.9345

2) The purpositive that student in accepted to a prestigeout wollege is 03 If 5 students supply, what the purpositify of almost 2 are accepted > polnoro (2,5,0.3) 113 083692

	100
No.	at any toss =0.3. het & be no of heads that comes up calculate $p(x=2)$, $p(x=3)$, $p(1<\infty cs)$
	>dbinom (2,6,013) 213 0.824135
	> d binom (3,6,0.3) [1] 0.18 522
	>dbinom (2,6,0,3) + dbinom (3,6,0.3) + dbinom (4,603).
•	47 for n=10, P=0.6 evaluate binomial puopablities & plot to graphs of port & cat
	> 2 = seq (0,10)
	>4 = dbinom (x, 10, 6.6)
	> 9
	[1] 0.000 1048576 0.00157 28640 0.01061 6832
	0.0424673280 0.1114767360 0.200658124
	6.2508226560 0.2449908480 0.120932352
	0.0463107840 0.0060466176
	> plot Cx, y, relab = "Sequence", ylab = "probablities", "o", pd=
F	

>x = sey(0,10) >y = p benomial (x,10,0.6) >plot (x,y, relab="sequence" year = "probabilites", "o", per =16)

(i) 2.375

7 von (Homon)

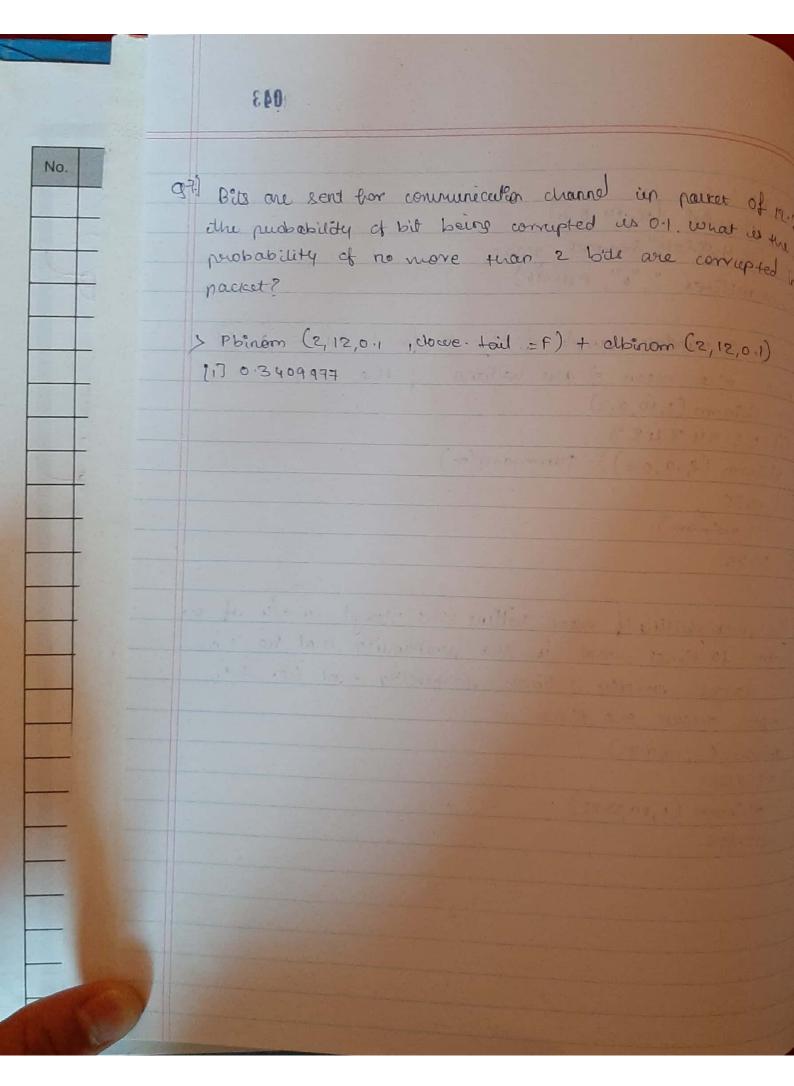
(ii) 3.125

5) The purbability of mean wittens the target as 1/4 if he shoot to times would is the perbability that he has the target exactly 3 times, purbability that he has target alleast one times

> distrom (3, 10,0.25)

1) 0.2502823

> 1- distrom (1,10,0.25)



Topic : Normal Distribution.

A normal distribution of 100 students with mean = 40 50 = 15.

Pland no of students where maxies are

(DP(402x240) @P(252x235)

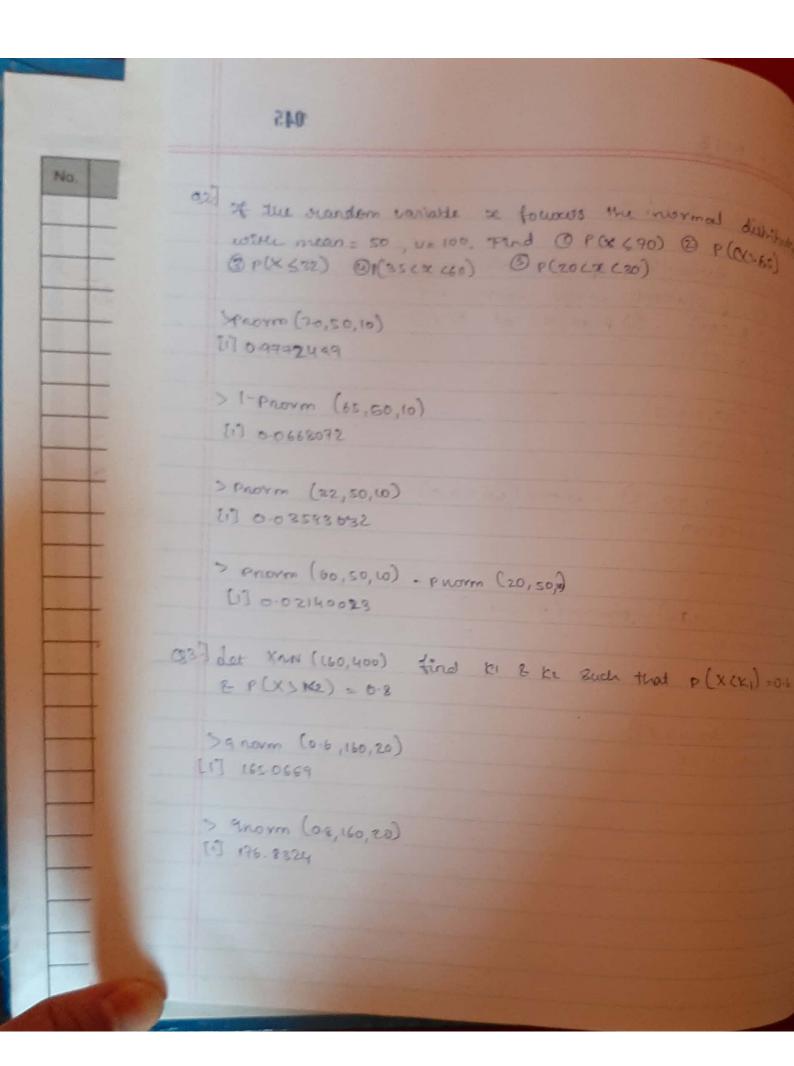
@ P(x >60)

> Provm (30, 40,15)

(21,04,04) mrong - (21,04,05) mrong <

1 Prorm (35, 40, 15) - prorm (25, 40, 15)

>1-Pnorm (60,40,25)



A gardina harrable & former remail distribution with the 10, 6 = 2. Generals we observable of regulate the moon, widing to your ance.

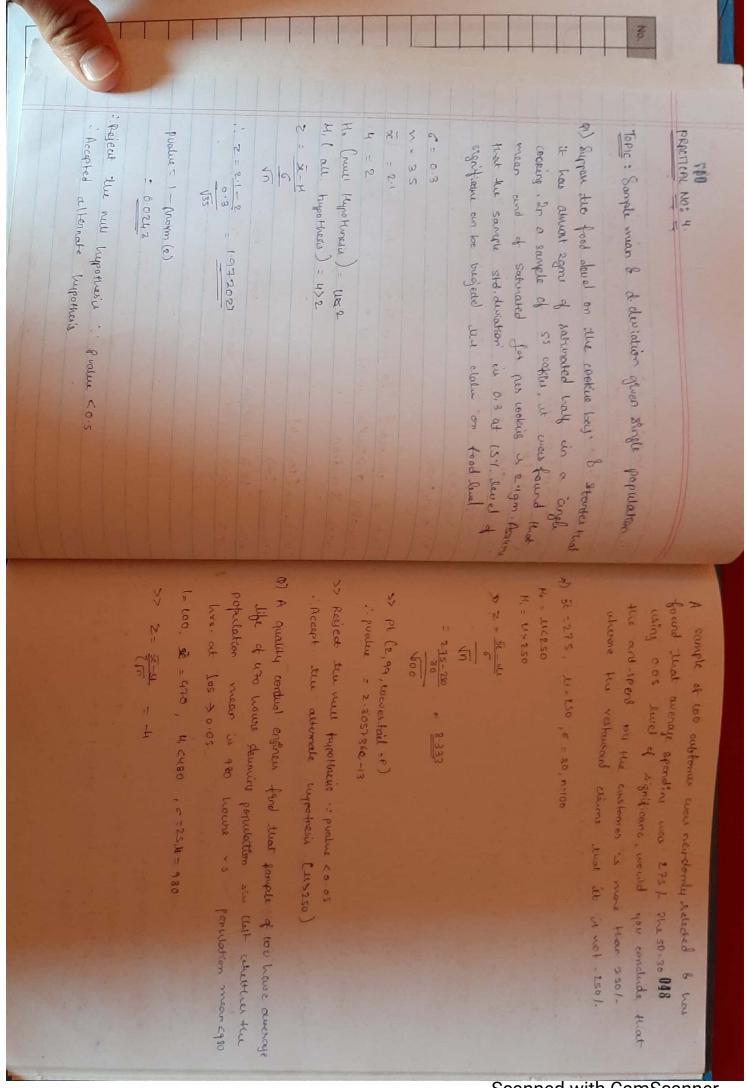
Same sall (x)

213 Min 1910 Madlan Suan 2000 muse 5.343 muse 9.723 9914 11.325 14.239 > vanca)

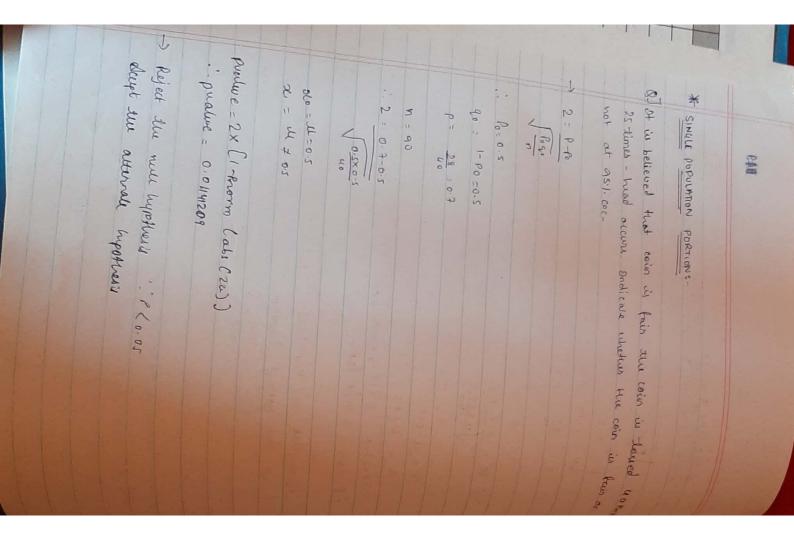
William command to generate to searcher numbers you sample something distribution when u. 50, 0=4 First the sample mean & milian

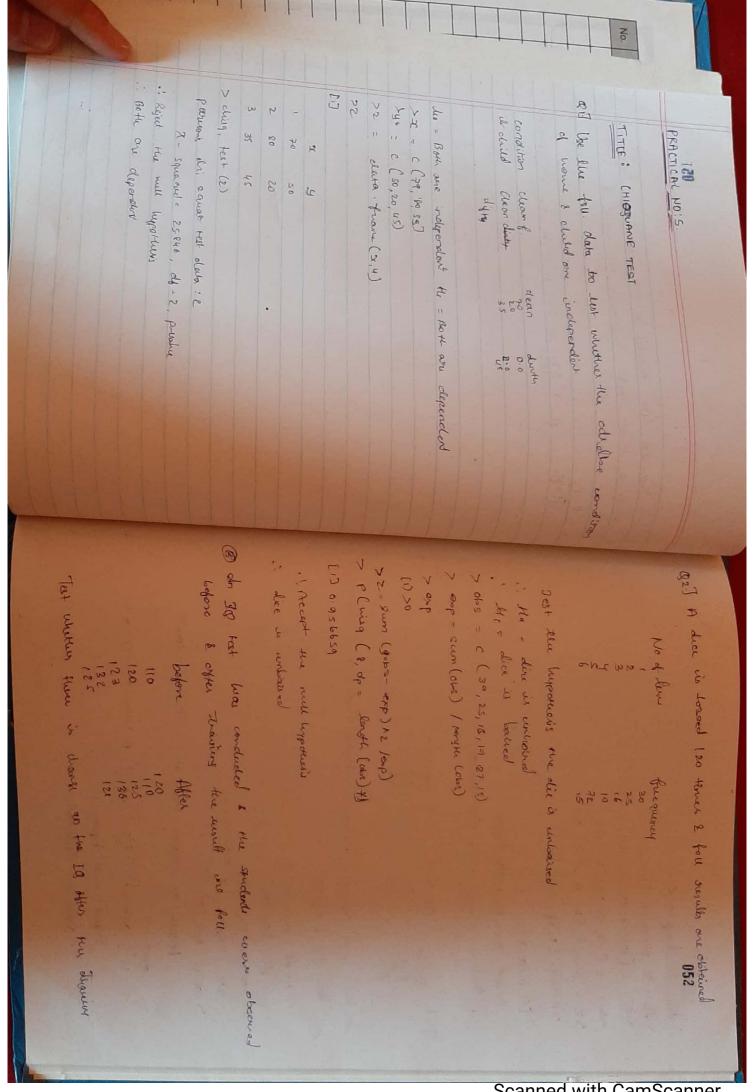
700 + Sermon (10,50,4)

1190 190 median wan 3000, moss

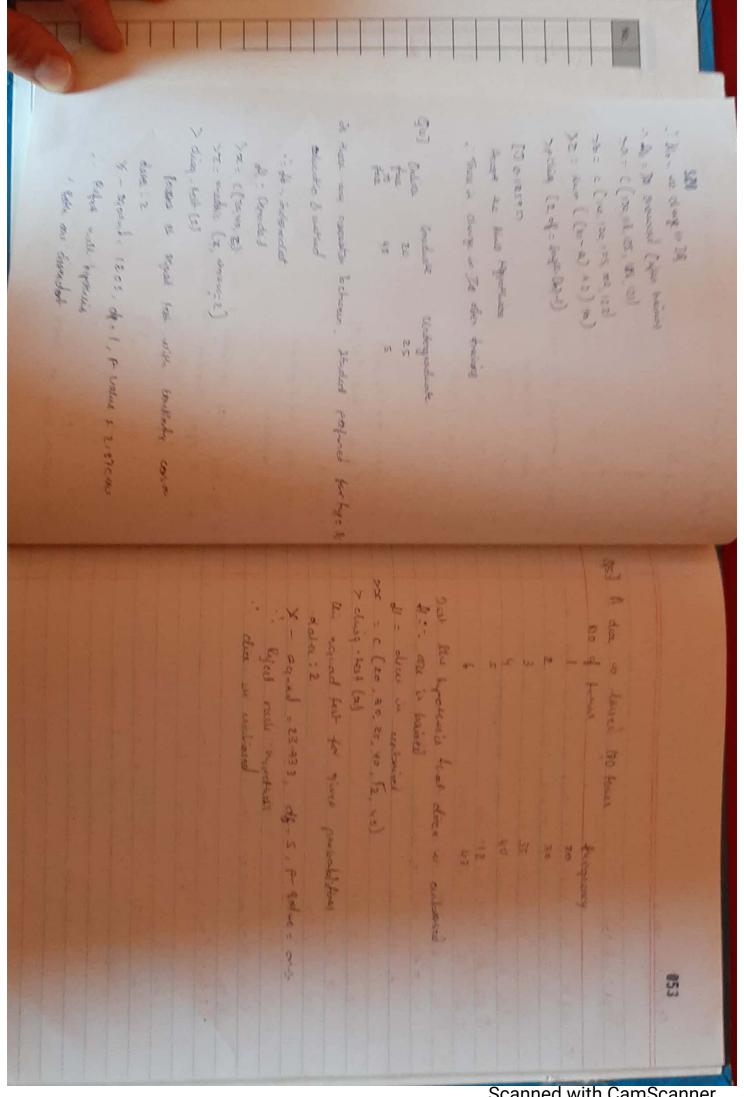


		2) It is bullioned that with 8 fews. The coin is fully to hat at 95-1, top.	
		* & INQUE POPULATION PORTION:	
	Accept The actioned bypothesis : P 20.05	Hi= 11=100 > Preduce = 2x(1-Provm (abs(22))) = 1.1771348.05 > Reject the nuthpotentials Reduce <0.05	
	Produce = 0.01/4 (200 (abs (2))	NIETHOD 2: 2TAIL TESS The = 41= 1000	
	\$.0 +v7 = 1/4 \$-00-TT = 4+	-> Reject the null hyprothesis = olaions of puincipal [u=100]	
	5.0×5.0 ()	90-849288.9 = mmp. d. 418E. h = 2	
	و	15 15	
	Po : 0.5 P = 28 - 0.4	1 5 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
	7 Po 16	16 = 10 = 100 m = 90	
	>> 2 = p-Po - Frebourty & population	-) The Li-100	
CamS		. So was found the better the SD of population when	No.
		BAR A principal at school obtains shoul the I'd is	

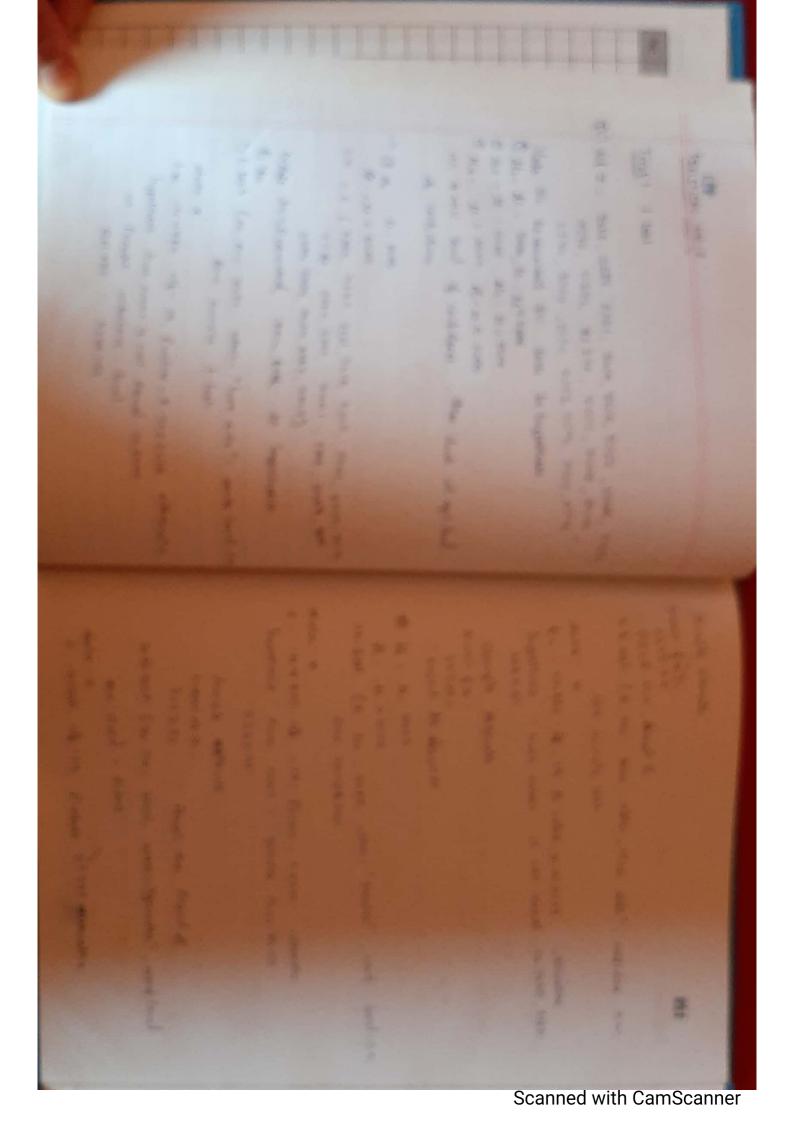




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	Sample estimate
" Accept the , Ruject the	a) Percent hed of contrainer
ween of the off	
Sample estimate	t= -4,4815, 0b= = P R.
: Dy 0.863333	clarence of
secret the solutions and	One Sample Lest
afternative importusion Homes cliffe un means.	cond fuel =0-94)
t=-1,4832, off=10, Priature: 0.08(41)	St. feet (2 nu = 3400 alter vi
elata a = or and b	- Riged Ho · Accont A)
Pau 1:test	1 6 Edge 35 b ways
	a control
t test (a,b, Pained = T, aucr = "two sided" every level	Sample of the Court of the Cour
>01= (44, 34, 22, 10, 42, 31, 20, 30, 36, 36, 18, 41)	2787
> a = c (25, 82, 30, 43, 24, 14, 32, 24, 31, 31, 18, 21)	as percent had of actualing in less than 3400
H. = 01-610	alternative hupstronis his min
H, = 0 - 5 - 2	t4:4865 rolf=19, Prolice = 0.0001264.
	Cloda: Q
Diet B: 44, S4, 22, 10, 47, 31, 40, 30, 32, 05, 18, 21	one sided that
O set A: 25, 32, 30, 43, 20, 14, 32, 24, 31, 35, 25.	>t. test (20, 194 = 3000 a Hunz "leus", cond level-a
0	
all Below one the data of given in weight one cliff all	
	D 1. 2100
. Reject Alo, Alongot H.	direct H.
32.73-95	S 45 L 25
News of or	Toon and the second sec
	Since Patrick.
055	hulpotusis num and
	the mean is greater than 2400

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