Malh 61 HUH3	
1. 81,2,3,43	4. Symmetry and transitivity
1) Rellectue, symmetric	A Lander
R= {(1,1),(2,2),(3,	and the same of th
(2.1),(2,1),()	
in) Not Idlenuc, not s	
n: {(1,2),(2,3),(	
iii) Symnettic and	A STATE OF THE STA
R= {(1,1),(2,2)}	
	5. 81,2,3,4,53
2. i) Rtunsities R.	( tomail ve i) Yes: 21,33, 823, 843, 253
n= {(x, y), (y, z)	
P. 5) (x, 5) 3 = 19	And the second s
tine	
ii) Rrefletic > R	reflexive 6. i) Yes everyone is the same
R= E(x,x), (3,7)	), (8,8) 3 height as thenselves (reflected)
R-1= 86, xx, (y, y	), (e, 2)3-R if A is the same height as B,
true	A is the same holyhe as A
iii) Rsymmelie >R	Symmetric (symmetry), and if A is
by admition (>	(y) (R=) (yn) ER the same as B, B is the
にっていかい	some as C, then A is the
Time)	Some as ( (transituity)
iv) Rank symmetric ->	Randisymptelle (1) No, people con't be taller
	m) ER imples x=y than themselves, Crelicionity
Piso(yix) Ell and	(croter implicity: x not satisfied)
tine	iii) Yes
3. i) leterrat 3x3	7. X= {1,2,3,43
2'-1= ( reation)	1) 51,23, 83, 43
ii) 2 closent. Fry	
2'-1= 15 reht.	
(ii) 3 elements 8x	(1) 813, 92,43, 833
2°-1= 255 re	(ations) (8.3) (4.4)
	(2,4),(4,2)3
W 1 1 1 1 1	

R=212,3,4,8} Y=23,43,6=913			
R=386/CAJORA RIANSONS IN DAY COLYS  Lordelectuty: AUY = BUY?  Lordelectuty: AUY = BUY?  Lordelectuty: Satisfied  Lordelectuty: Satisfied  Lordelectuty: Satisfied  Lordelectuty: AUY = BUY = AUT?  Lordelectuty: AUY = AUT?  Lordelectuty: AUT?  Lordelectuty: AUY = AUT?  Lordelectuty: AUT?	(10	8. X= \$1,2,3,45} Y= \$2,43, (= \$1.3)	
The writer of A early is equal to the Rich Rich Rich Rich Religion to the Rich Rich Rich Rich Rich Rich Rich Rich	-	R= SAX) (A, S) ER ! AUY= OUY ?	If (KIS)ER, (KIS)ER, NR2
b Referrity setisted  - x 1s in the R.O. Re  b Symmetry: NUY = BUY = BUY = AUT?  After union of R and Y is the same  so the union of R and Y is the same  of B and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same  various of R and Y is the same of the  various of R and Y is the same of the  various of R and Y is the same of the		breaking : AUY = AUY?	1- Reflexe :xRx?
b Referency selected x is in the R.O. Re  b Symmetry: NOY = OUY = BUY = AUT? xRx -> reflective  If the union of B and Y is the same by Symmetric = xRy => yRx?  as the union of B and Y is the same as the xRxy => yRx -> xRxy => xRx -> xRxy => x		Theunion of Acad Tisegulb	L> xR,x exists
b Symmetry: AUY = BUY = BUY?  If the union of A and The tree by Symmetric: xRy => yRx?  as the union of B and The union xRy => yRx  of B and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the XRy => yRx  union of A and Y is the same as the xRy => yRx  union of A and Y is the same as the xry  union of A and Y is the same as the xry  union of A and >> yRx = xNx  union of A and >> yRx = xNx  union of A and >> yRx = xNx  union of A and >> yRx => xRx  union of A and Y is the same and and and in each of a did to each of and -> yRx = xNx  union of A and in each of and -> yRx = xNx  union of A and in each of and -> yRx = xNx  union of A and in each of and -> yRx = xNx  union of A and in each of and -> yRx = xNx  union of A and in each of and -> yRx = xNx  union of A and in each of and -> yRx = xNx  union of A and in each of and in each of and in each of and in each of a did in each of a di		itself	xRz× exists
Athermonal Prod Tisteries Sympthics xPy => yPa?  asthermon of Bend Tisteries XPy > yPax  of Bend Y is the same as the XPy > yPax  Union of AndY if x is related by thin it  by Sympthy satisfied child by thin it  by Sympthy satisfied child by thin it  by Sympthy satisfied child by thin it  Some logic as sympty year.  by Transitive xPy, yPa => xPa?  that ANT = CNY i xhitelian xPy, yPa => xPa?  that ANT = CNY i xhitelian xPy, yPa => xPa?  by Transitive sotisfied xPy and xPaz exist.  by The end xPaz exist.  7. I C NY = \$1.343 by Transitive xPy, yPa => xPaz  by Transitive sotisfied xPy and xPaz exist.  7. I C NY = \$1.343 by Transitive xPy, yPa = x11cm xPax  by Transitive sotisfied xPaz exist.  7. I C NY = \$1.343 by Transitive xPy, yPa = x11cm xPax exist.  13. f.xxxy pa = x11cm xPax exist.  14. x = x1, x3, x3, x3, x3, x3, x3, x3, x3, x3, x3		La Reflexivity satisfied	x is in the R, O Rz
as the union of Bondy, the union  Of Bond Y is the same as the  When my Park  Union of Andy  If x is related by then it  Do Symmetry stilled  End y stilled  End y stilled  End y stilled  End the stilled  End the AUY = CUY  End the AUY = CUY  End the stilled  End of x equal content of the stilled  End of x equal content of the stilled  End the stilled  End of x equal content of the stilled  End of x equal		6 Symnetry: AUY = BUY = BUY = AUT?	xRx -> reflexive
of Bend Y is the sene as the  Minor of Aendy  Minor of Aendy  White Symmetry satisfied  Defensitive. Ally EDUT, DIT-CUT, ALLY EDUT?  Defensitive. Ally EDUT, DIT-CUT, ALLY EDUT?  Defensitive. Sent legge as symmetry give.  Defensitive satisfied  MRID an equilation of relation of the manuface exists.  MRID an equilation of the leggen of the sent of the se		If the union of A and Y is the same	1> Synnetlic = xRy => yRx?
Hain of A and Y  If x is related by, then it  Disprectly satisfied  Exists in R, n R2 y  Distance in My = DUY, BY = CUY, A LY = CUY?  Los symmetric  Some logic as symmetry glus.  Distance in logic	-	as the union of BendT, the union	×P,y => yR,x
Los Symmetry satisted  Los Transitive - Alysoury Parison, Alysour?  Los Symmetries  Some logic as symmetry glas.  Los Alysours - Alexander - Alysours - Alexander - Alysours - Alexander - Alex		of Band Y is the same as the	xR2J => y R2X
botanitie. ANY = BUY, BUT = BUY, AUX = BUY		union of A and Y	if x12 related by then it
Seculogic as symmetry gives  that AUT = CUY	-	to Symmetry satisfied	exists in Rin Rz
that AVE CVY    KISTRE > KR.2   bottomitive solicities   KR.38 and KR.28 exist >   KR 15 en equivalera relation   KR.2 and KR.28 exist >   KR 15 en equivalera relation   KR.2 and KR.28 exist >   KR 25 exists     The contains 1, course contain 2 or 5   bottomitive     bottomitive   the container   the container     Color = \frac{21,3,43}{21,3,43,21,3,41} \]   13. \frac{1}{2} \times \frac{1}{		to Transitive - ALY = OUT, DIT= CUT, ALY=CUT?	La symmetric
b Transitive satisfied    Krype=> xriz   br   Kr   1		Same logic as symmetry gives	Lo Transitive: xRy, yRz => xRz?
bornitive  contains 1, count exter 2 - c 5 bornitive  bornitive  bornitive  bornitive  bornitive  contains 1, count exter 2 - c 5 bornitive  bornitive  bornitive  contains 1, count exter 2 - c 5 bornitive  bornitive  bornitive  contains 1, count exter 2 - c 5 bornitive  bornitive  contains 1, count exter 2 - c 5 bornitive  bornitive  contains 1, count exter 2 - c 5 bornitive  bornitive  contains 1, count exter 2 - c 5 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 bornitive  contains 1, count exter 2 - c 6 borniti		that AUY = CUY 1"	XR,JR,Z=>XR,Z
The production   The	10	la Transitive satisfied	xRzyRz=> xRzz
Decembers 1, count content 2 or 5 by [R, RR & u on equivalence relation)  [C] = {21,3,43} {1,43,6,3,43}  13. f.x->7 p= {11 cms or if (10) = (10)}  10 [The relation riest only has letered] bretles u ((0)=(0)?  a function response to to could by  11 x= {1,2,3,4,5,6,7,8,9,10} by fixed on the fixed by  12 x= {1,2,3,4,5,6,7,8,9,10} by symmetric f(0)=(0) = x(1))=f(0)?  Bretleviority: a+0: 0+0?  a function can map a x and a funct	7	bR is an equivalence relation	xriz and xrzz exist ->
brantons 1, count conter 2 or 5 brantons to an equivalence relation  [C] = {e1.53, 83, 81.43, 81.51.43}  13. f.x->7 p={11c.yxxx if (ii)=(iy)}  10 [The relation must entry have believed] brellence (iii)=(ix)?  a function map ench to concluding  R: {xxxx   ((x, 5), (x, 7), 89, 10}?  brellence (ix) -> religione  R: {xxxx   ((x, 5), (x, 8)) etk if aid=hc} brancolline (ix) = f(x) = f(x) = f(x)?  brellence (ix) = f(x)		1 1 1 4 1	xRz exists
[C]= {81,33, 83, 81,43, 21,3,43}  13. f.x-7 p= 911 (m. 30 R if (ii) = 1(1))  10 [The relation must and have leterant] bredler ( (R)=(R)?  a function maps each x to each by  11 X= \$1,2,3,4,5,6,7,89,103 bredler (R)=(R) - relative  R: 8 x x x   ((a, b, (a, b)) \ (k		7. (COY= \$1,3,43	Lo transitive
13. f.x-> p= \(\frac{1}{2}\) (\(\frac{1}{2}\) (\(\frac{1}{2}\)) (\(\frac{1}{2}\) (\(\frac{1}{2}\)) (\(\frac{1}\)) (\(\frac{1}\)) (\(\frac{1}\)) (\(\frac{1}\			Lo TRIARZ Lan equivalence relation)
The relation must enty have leterent bretler is ((K)=(K)?  a function maps encl x to could by  [1] X=&1,2,3,4,5,6,7,8,9,10} broken broken by  [2] X=&1,2,3,4,5,6,7,8,9,10} broken broken broken broken con maps encl x to could be yellowing: a to 2 decided broken con maps encl x and a gent and a gent broken con maps encl x and a gent		[c] = { 81.33, 813, 81,43, 81,5,4} }	
a function maps each x to need by  If x= \frac{21}{2}\frac{2}{3}\frac{2}{5}\frac{1}{5}\frac{2}\frac{2}{5}\frac{2}{5}\frac{2}{5}\frac{2}{5}\frac{2}{5}\frac		A CONTRACTOR	13. f.x->7, D= 841 (-12×4 11 (12)= (12)}
a fund on maps each x to made by  [[ X=21,2,3,4,5,6,7,8,9,103		10 The relation must only have leterent	and the second s
R: 8xxx   ((a,b), (c,b)) ek if a 18=b c? by symmetric: \( \( \) = \( \) (1) =		The Residence	a function maps each a to could by
R: & x x x   l(n, b), l(x)) ek if at d= bc? by symmetric: f(n) = f(y) = f(y) = f(y)?  b Reflectivity: a + d: d+c? a finction con map on x onther  a + d is equal b dea > reflection.  by the same number  by Symmetric: if a + d = b+c, c+b = d+a bif they are the same (in the  a + d: b+c > c+b: b+c > c+b: a+d > relation); then I symmetry  d+a = a+d > c+b = d+a I - symmetric by tannitive: f(x): f(y) f(y) f(x) f(x) f(x) f(x)  by Transitive: if a + d: b+c > c+b = b+e b+e b+f(x): f(y) f(y) f(x) f(x) f(x)  c+(=d+c > c+d = b+c > d+b+c > c+b = a+f = b+e  c-(=a+b = x a+f = b+c > d+ansitive  R is an equivalence pelation		11 X= 51,2,3,4,5,6,7,89,103	rs f(x) = ((x) / -> reflexive
breflerivity: a+d: 0+a?  at disequel b dta-stellerie  brown number  brown the same number  brown the same (in the  a+d: b+c > c+b: b+c > c+b: a+d > relation); then I symmetry  d+a=a+d > c+b: d+a I - symmetric  brownitive: (6): ((y) f(y) f(x) f(x));  to Transitive: if a+d:b+c c+f: d+e = a+f:b+e b b f(x): ((y) = f(x))  c+(=d+c > c+d:b+c > c+d:b+c > c+d:a-b b b f(x): ((y) = f(x))  e-(:a-b-z) a+f:b+c > I fanishe R is an equivalence polation		R= & xxx (((a, b), (c, b)) elk if a 10= b10}	b symmetric: f(n)=f(y)=f(y)=f(x)?
b Sympetric: if and=blc, c+b= der bit they are the same (in the and=blc) then bit they are the same (in the and=blc) then bit they are the same (in the and=blc) then bit then between the symmetry  dea=and > cab= dea d-symmetric between the first (b)= f(b)= f			a finction can map and and a
b Sympetric: if add=bdc, cdb=ddar bif they are the same (in the add=bdc) the bdc > cdb=bdc > cdb=ad > relation); then I symmetry  dda=add > cdb=dda I->>>metric botaniitive: (6)= ((g) f(g) f(e))(e)=f(e)!  by Transitive: if add=blc cd=die=> cd=bde by f(e)=((g)=f(e))  cd(=ddc>cd=e-(, add=blc>cd=ab=bde) by transitive  e-(:a-b-> adf=bdc>Jamsithe Ris an equivalence polation)	O - U	ato is exact to dia-side.e	y to the same number
e-(:a-b-> a+f=b+c-> d+a-> relation); then I symmetry  d+a=a+d -> c+b=d+a V->>=metric to templitive: ((x)=((y)) f(y)) f(x) f(x))!  L> Transitive: if a+d=b+c c+f=d+e=> a+f=b+e l> f(x)=((y)=-((e)))  (+(=d+c->c-d=e-f, a+d=b+c->c-d=a-b-> b>transitive)  e-(:a-b->> a+f=b+c->V+ransitive R is an equivalence probability)			is if they are the same (in the
dealed > cable dealer content to transitive: (a) = ((g) +(g) +(e))!  17 Transitive: if aid=bic cal=die, = ranf=ble to f(e)=((g)=-r(e))!  (1(=dic>cd=e-1, aid=bic>cd=a-b> to transitive)  e-(:a-b-> aif=bic>d+ransitive Ris an equivalence polation)	STATE OF STREET		relation), then I symmetry
C+(=dic=ocd=e-(, a+d=b+c->c-d=a-b-> b+cms)tive  e-(:a-b-> a+f=b+c->d+cms)tive  Ris an equivalence prolation	•		10 tantitue: (6)= ((g) /(g) /(e) /(e)?
e-(:a-b-> a+f=b+c-> d+consitue Ris an equivalence pelation)		A CONTRACTOR OF THE CONTRACTOR	f=b+e 1>f(+):((0)=-(12))
e-(:a-6-5 a+f=151c-5) + consitue Ris an equivalence prolation		Carter and the last and the las	
	Reference and the		
	NO	Li River equivalence relation	

11) R= 3(219) 1x cy3 14.(x).[x] X:1,2,3,4 [b]=(4) = (6) = (4) II 1234 When x and y are in the sure 20011 equivalence class 30001 15. f: X-> Y 12 1-to-landonlo 0000 Whele is if ((K)=y, y: (K) bequeity is reflexive 18. R, = {(1,x), (1,y), (2,x), (3,x)? Lo Syrance C. f(a)=b, f(b)=a Rz= {x, b), (y, b), (y, a), (y, c)} begulty is reflexive X:12,7, Y: x,y Z: a, b, c Lo Trans 1. e. f(a)=b, f(b)=c, f(a)=c begue by istransilie Was equalence relation 16 R= 9(1,6),(2,0),(2,8),(3,8)3 DX:1,2,2, Y:a, 1,8,8 2 1010 3 0110 (1) (4 b c)

2 (0 1 0) = R20R,

3 (0 1 0) = R20R,

(1) R20R = 2(1,0), (1,6), (1,6), 1, 4:3,2,1, 7.0,F, x, o 5 1 1 0 0 2 1 0 1 0 (2,6), (3,6)} 17 17 1: 8(1,2),(2,3),(3,4),(4,2) x. 1,2,3,4,5 1 2 3 4 6 1 0 0 0 0 2 0 0 1 0 0 3 0 0 0 0 0 5 0 0 0 0 0

19. R. = E(x. 5) |x duldery 3 20. Each row in the motile R= \$(y.2) 14723 must contain exactly I one. X: 5,4,3,2 7: 5,4,3,2 2:4,3,2,1 40100 210101 4321 = A2 iii) 4321 V) R3 0 P = {(5,4),(5,2),(5,1),(5,1), (4,3),(4,2),(4,1),(3,2), (3,1),(2,3),(2,1),(2,1)}