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	Name - Shantany Deshpande 10 = 0 = 2 and on no.	
	Class - Sycs E	
_	Rollno-7 gard guidadummes dan is t	
_	Batch - 51 : Har, 31 = 3 + 3 = 8 + 5	
	Sub Dmint Ol = A+ B = 5 * E	
136,0,d,0,1	o vol tent object model Assignment - 6 no set (* A) tot	(0)
	, D = D * D	
Cal.	For each of the Following, determine whether is a bir	nary
	operation (1 ha) = (3 hd) to take work	O
	a on z, where at b = ab	£ 103
	b. on R, where a & b = a x 161. D = D x D SONICE	
- soin:	(0 * d) * (0 * 0) = (0 * d) * p	
	a. On Z, where at b = ab.) .	
	=) No, since 2 x (-1) = 2-1 = 1 = 2.	
ナマエール	The following table, of a binary approxim to give	ور در ا
	b. on R, where at b = ax16) Party turnor	
	=) Yes, since * is a function, with axIbl ER	
	2 2 2 *	
<u>Ce2.</u>	For each of the following determine whether the	oinary
	operation * is commutative or associative.	0
	a. On N, where at b = min(a,b)	
	b. onn, where and = ab+2b. It and and	19105
2010+		
	a. on N, where at be min (a,b)	
	=) + D 6 no d= d * 2	
	* is commutative as well as associative	4
	t symbols armones too 21 * something	
- Contraction		1
unnammanno?	тариананания принципинания на принципинания на принципинания на принципинания на принципинания на принципинания на п	



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	b. 00 N, W	here	a* 6	= ab	+26	120 sandande - sand			
	=)					22242 - 46/5			
	* is not commutative since $2^*3 = 6 + 6 = 12$, while $3^*2 = 6 + 4 = 16$								
œ3.	Let (A, x)	bear	alge	brate	syst.	em such that for all a,	6, cden		
	a*a								
1071	(a 1 b)	*	(c 4 8)=(a* c)	* (P*9)	-		
						(a+b) * (a*c)			
2012-				0	1 n - 1 x				
	Since axa=a/1/								
	a = (b * c) = (a * a) * (b * c) = (a * b) * (a * c)								
		- fra				S 9 9012 CM 1- 8			
ce 4.	The following					g operation & is given. I	- 4		
						2 sperberon a no	3		
	SI SILVED .		40.4	1 - 0		4 77 77 77 77 77 77 77 77 77 77 77 77 77			
		*	a	6	1	1 2000 108	_		
	I add a cottact	a	6	c	a				
<i>U</i>	A to	Ь	e	6	a	# Face 2 and			
		C	a	6	100	a costonado s			
Solni	from the	from the table we observe the following:							
	a + b = c, $b + a = c$								
							2		
	a * C = a , par C * A a = a								
		(:Hence * is not commutative]							
	(.,,								
	L-He	nce	7 (s not	Com	mutative]			
			17771						

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Cos.	Define - amond lovestal to
	a. Monoid
0 6311	be Group war entretumner p ad a 49d
	c- Semigroupres on and 1:21 amond largethi
	d. field
	e. Integral Domain
	F. Ring
Sol 2:	to time of the said to be a ring with .
/	do an mandid d hatsash tasmals an attime enough
	=) A monoid is a semigroup (A, +) that has an
	identity element.
	b. Group
	=) A group ((1, +) is a monoid, with identity c
	such that every element a En there exists an
	element a-1 & G, called as the inverse of a such that
	a * a -1 = a -1 * a = e.
	c. Semigroup
	=) Let (A, *) be an algebraic system, with a binary
	operation & on A. Then (A, *) is called a semigraup
	if * is associative
	d. Field
	=) If every non-zero element has a multiplicative
	inverse then & is called a field. A field is an integral

domain, since if a, b & R.





7-Shantanu Deshpande

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	C) Integral Domain	
	=)	77 8 200
	Let R be a commutative ring. Then R	0.0 6011.00 25
	integral domain if it has no zero divisors	rs carrea ar
		6
	F) Ring	9
		7
	Aring Rissaid to be aring with un	it dement is
	there enists an element, denoted by the sur	nbal
~ ·	such that a:1=1.a=a, for all acr	Res.
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