

Math 105 Collected Homework #5

Modular Arithmetic Tables

Due ~~Friday, March 10~~ Monday, March 13

In class, we developed addition and multiplication for “mod 5” arithmetic and for “mod 4” arithmetic. For this assignment, do the same for mod 6 and mod 7 arithmetic, by completing each of the tables on the second page of this document.

If you like, you may write your answers on the following page, rather than drawing new tables on a separate sheet of paper. I don’t necessarily need to see your work, but if you’re unsure that what you’re doing is correct, you may include your work in the space below on this page (or on a separate sheet, if you prefer). Let me know if there’s anything in your work that you’re not quite sure about, and I’ll take a closer look at it for you.

Also, determine whether each of the tables represents a “group” – that is, determine whether each set has closure, identity, and opposites under the operation being considered. Explain your reasoning– if it’s a group, clearly explain why; if it’s not a group, give a specific example that contradicts one of the three properties (opposites, closure, identity) a group must satisfy.

mod 6 addition

	0	1	2	3	4	5
0						
1						
2						
3						
4						
5						

mod 6 multiplication

	1	2	3	4	5
1					
2					
3					
4					
5					

mod 7 addition

	0	1	2	3	4	5	6
0	0	1	2	3	4	5	6
1	1	2	3	4	5	6	0
2							
3							
4							
5							
6							

mod 7 multiplication

	1	2	3	4	5	6
1	1	2	3	4	5	6
2	2	4	6	1	3	5
3						
4						
5						
6						