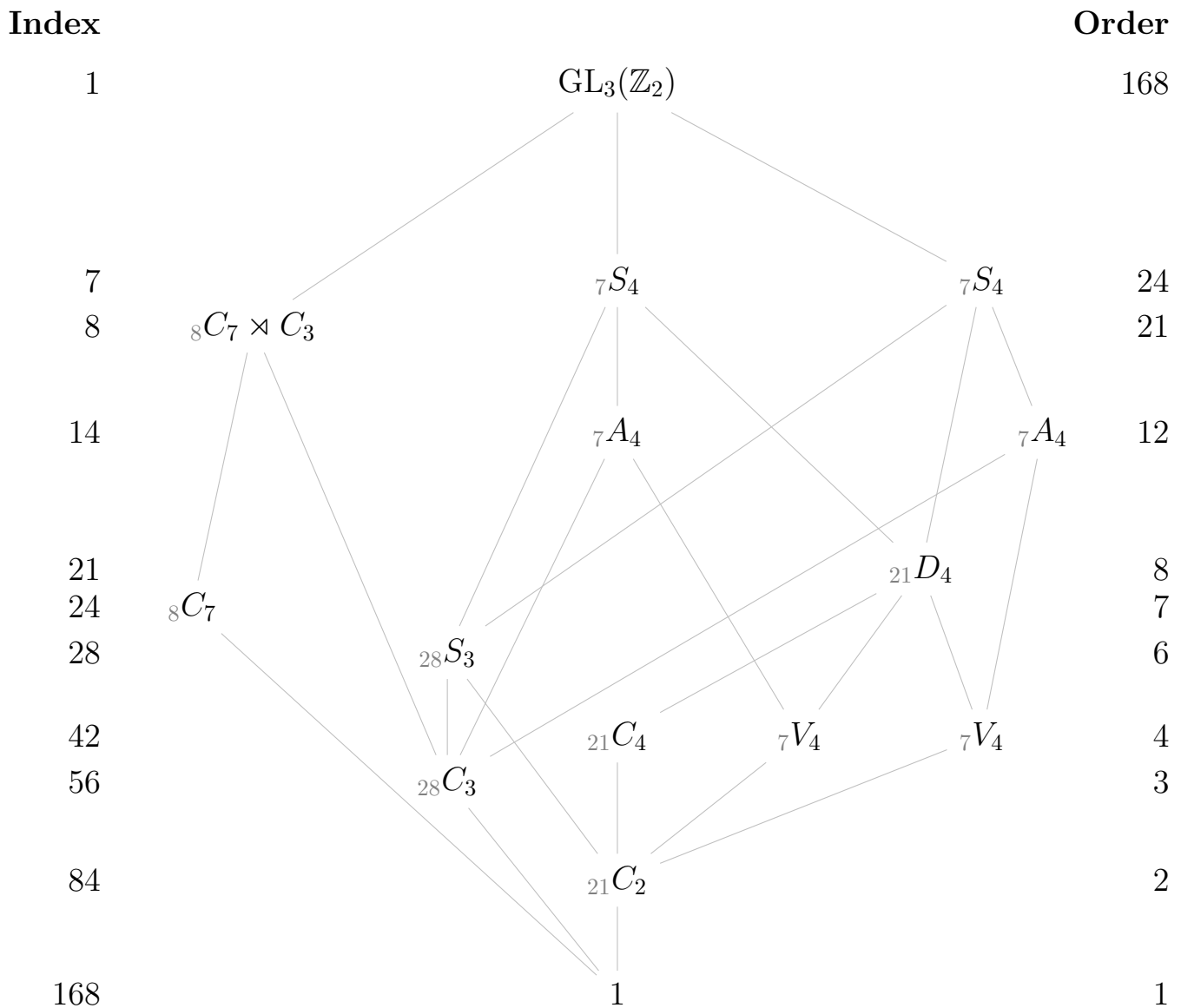


## Supplemental material for Math 8510, HW 5

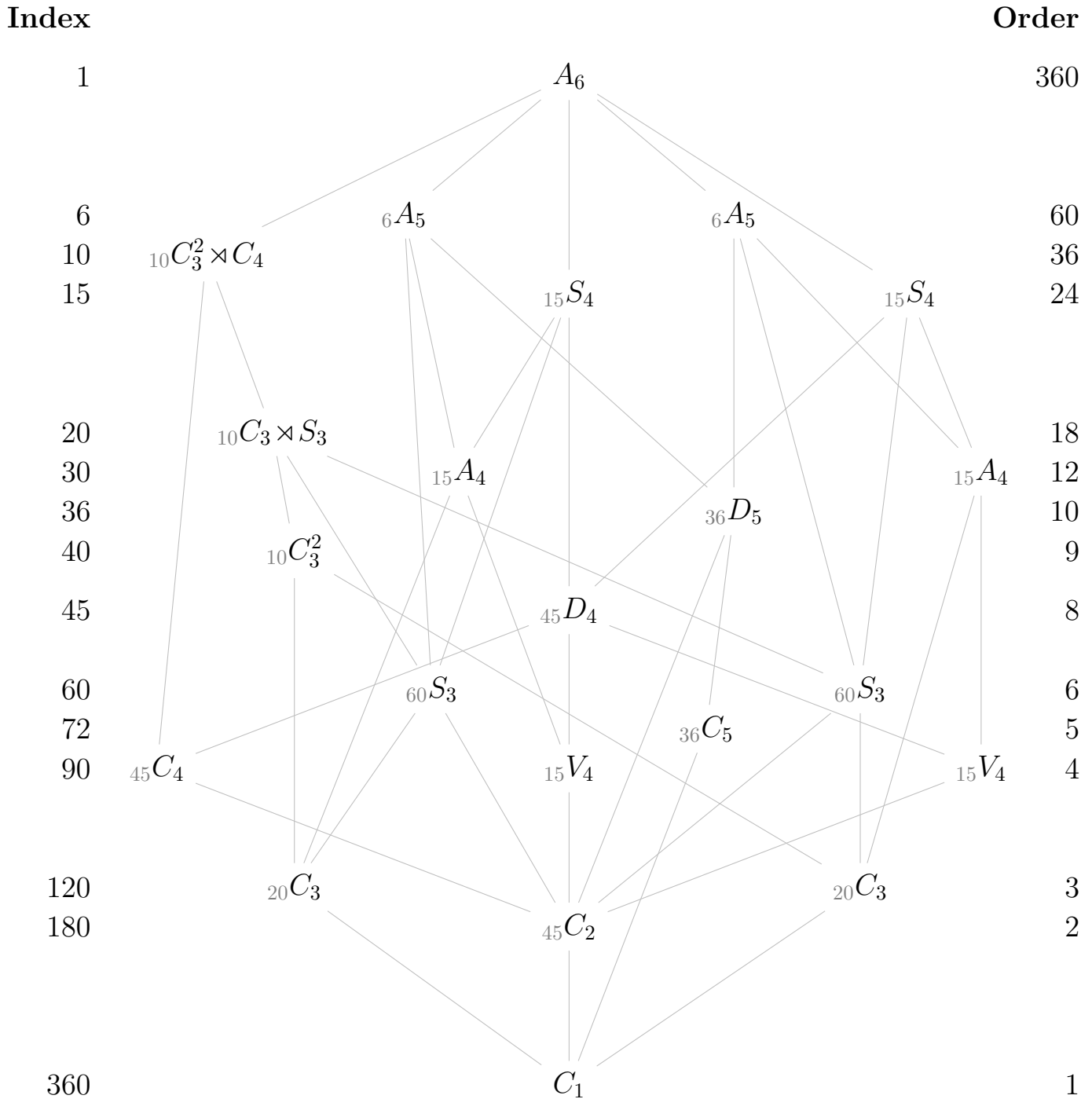
**#2(a):** The subgroup lattice of the general linear group  $GL_3(\mathbb{Z}_2)$ , with:

- (i) the  $p$ -subgroups color-coded,
- (ii) arrows from each non-singleton conjugacy class  $\text{cl}(H)$  to the class  $\text{cl}(N(H))$  of its normalizer.



#3(a,b): The subgroup lattice of the alternating group  $A_6$ , with:

- (i) the  $p$ -subgroups color-coded,
- (ii) arrows from each non-singleton conjugacy class  $\text{cl}(H)$  to the class  $\text{cl}(N(H))$  of its normalizer.



**#3(c):** The ten subgroups of order  $90 = 2 \cdot 3^2 \cdot 5$ , the number of their subgroups, Sylow  $p$ -subgroups, and the isomorphism type of their Sylow 3-subgroup(s).

	#subgroups	$n_2$	$n_3$	$P_3$	$n_5$
$C_{90}$					
$C_{30} \times C_3$					
$D_{45}$					
$C_{15} \times D_3$					
$C_{15} \rtimes D_3$					
$C_9 \rtimes D_5$					
$C_3^2 \times D_5$					
$C_5 \rtimes D_9$					
$C_3 \times D_{15}$					
$C_3 \rtimes D_{15}$					