113 mid-term: The Pentagon and Hexagon Groups March 19, 2002 Name L. Beetholdi

under addition); S_n , the group of permutations of n points; and D_n , the p symmetries of a regular n -gon. In a question "XXX is isomorphic to, the answer is of C_n , D_n , S_n . Complete: 1. The cardinality of C_n is 2. The cardinality of S_n is 3. The cardinality of D_n is 4. The largest cyclic subgroup of D_n has cardinality 5. The center of C_n has cardinality 6. The derived subgroup of C_n has cardinality 7. The center of D_5 is isomorphic to 8. The derived subgroup of D_5 is isomorphic to 9. The center of D_6 is isomorphic to 10. The derived subgroup of D_6 by its center is isomorphic to 11. The biggest n such that C_n is a subgroup of D_n is 12. The biggest n such that C_n is a quotient of D_5 is 13. The biggest n such that C_n is a quotient of D_6 is 14. Can C_6 be a subgroup of S_5 ? Explain in at most 2 lines.		Name: L. Bartholdi
 The cardinality of S_n is	inde of sy I	n a question "XXX is isomorphic to", the answer is one of
 The cardinality of D_n is The largest cyclic subgroup of D_n has cardinality The center of C_n has cardinality The derived subgroup of C_n has cardinality The center of D₅ is isomorphic to The derived subgroup of D₅ is isomorphic to The quotient D₆/Z(D₆) of D₆ by its center is isomorphic to The derived subgroup of D₆ is isomorphic to The biggest n such that C_n is a subgroup of D_n is The biggest n such that C_n is a quotient of D₅ is Can C₆ be a subgroup of S₅? Explain in at most 2 lines. Can C₄ be a quotient of S₄? Explain in at most 2 lines. Complete, and explain in at most 2 lines: Complete, and explain in at most 2 lines: 	1.	The cardinality of C_n is
 The largest cyclic subgroup of D_n has cardinality	2.	The cardinality of S_n is
 The center of C_n has cardinality The derived subgroup of C_n has cardinality The center of D₅ is isomorphic to The derived subgroup of D₅ is isomorphic to The center of D₆ is isomorphic to The quotient D₆/Z(D₆) of D₆ by its center is isomorphic to The derived subgroup of D₆ is isomorphic to The biggest n such that C_n is a subgroup of D_n is The biggest n such that C_n is a quotient of D₅ is The biggest n such that C_n is a quotient of D₆ is Can C₆ be a subgroup of S₅? Explain in at most 2 lines. Can C₄ be a quotient of S₄? Explain in at most 2 lines. Complete, and explain in at most 2 lines: Let G act on a set X. The stabilizer of a point x is equal to G if 	3.	The cardinality of D_n is
 The derived subgroup of C_n has cardinality	4.	The largest cyclic subgroup of D_n has cardinality
 7. The center of D₅ is isomorphic to	5.	The center of C_n has cardinality
 8. The derived subgroup of D₅ is isomorphic to	6.	The derived subgroup of C_n has cardinality
 The center of D₆ is isomorphic to	7.	The center of D_5 is isomorphic to
The quotient $D_6/Z(D_6)$ of D_6 by its center is isomorphic to	8.	The derived subgroup of D_5 is isomorphic to
 11. The biggest n such that C_n is a subgroup of D_n is	9.	
 12. The biggest n such that C_n is a quotient of D₅ is 13. The biggest n such that C_n is a quotient of D₆ is 14. Can C₆ be a subgroup of S₅? Explain in at most 2 lines. 15. Can C₄ be a quotient of S₄? Explain in at most 2 lines. 16. Complete, and explain in at most 2 lines: "Let G act on a set X. The stabilizer of a point x is equal to G if 	10.	The derived subgroup of D_6 is isomorphic to
 13. The biggest n such that C_n is a quotient of D₆ is 14. Can C₆ be a subgroup of S₅? Explain in at most 2 lines. 15. Can C₄ be a quotient of S₄? Explain in at most 2 lines. 16. Complete, and explain in at most 2 lines: "Let G act on a set X. The stabilizer of a point x is equal to G if 	11.	The biggest n such that C_n is a subgroup of D_n is
 14. Can C₆ be a subgroup of S₅?	12.	The biggest n such that C_n is a quotient of D_5 is
 Explain in at most 2 lines. 15. Can C₄ be a quotient of S₄?	13.	The biggest n such that C_n is a quotient of D_6 is
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	16.	"Let G act on a set X . The stabilizer of a point x is equal to G if and