

MTH 361
Quiz 6
Spring 2010

20 points possible.

1. (4 pts.) State **Lagrange's Theorem**.

2. (4 pts.) The operation table for a group G is shown. Let $H = \{e, b\}$. Find the left cosets of H in G . How many distinct left cosets of H are there?

	e	a	b	c	d	f	g	h
e	e	a	b	c	d	f	g	h
a	a	c	h	f	b	e	d	g
b	b	d	e	g	a	h	c	f
c	c	f	g	e	h	a	b	d
d	d	g	f	h	e	b	a	c
f	f	e	d	a	g	c	h	b
g	g	h	c	b	f	d	e	a
h	h	b	a	d	c	g	f	e

3. (4 pts.) Find the order of $(4, 5, 8)$ in $\mathbb{Z}_5 \times \mathbb{Z}_{15} \times \mathbb{Z}_{12}$.

4. (4 pts.) Find the maximum possible order for some element of $\mathbb{Z}_8 \times \mathbb{Z}_{14} \times \mathbb{Z}_{20}$.

5. (4 pts.) Let G be a group of order 49. Prove G is cyclic or $g^7 = e$ for all g in G .