

# Quiz 13 MTH450/550

Sunday, November 12, 2023 9:12 AM

Abelian groups of order 120:  $\cong$  means "isomorphic to"

$$(1) \mathbb{Z}_{120} \cong \mathbb{Z}_{2^3} \times \mathbb{Z}_3 \times \mathbb{Z}_5 \cong \mathbb{Z}_8 \times \mathbb{Z}_{15}$$

$$(2) \mathbb{Z}_{2^2} \times \mathbb{Z}_2 \times \mathbb{Z}_3 \times \mathbb{Z}_5 \cong \mathbb{Z}_4 \times \mathbb{Z}_{30}$$

$$(3) \mathbb{Z}_2 \times \mathbb{Z}_2 \times \mathbb{Z}_2 \times \mathbb{Z}_3 \times \mathbb{Z}_5 \cong \mathbb{Z}_2 \times \mathbb{Z}_2 \times \mathbb{Z}_{30}$$

There are no others!!

120

1 \setminus

2 60

1 \setminus

2 30

1 \setminus

2 15

1 \setminus

3 5

$$120 = 2^3 \cdot 3 \cdot 5$$