Let $G = \mathbb{Z}_4 \bigoplus U(4)$, $H = \; <(2,3)>$, and $K = \; <(2,1)>$.

1. List the elements of H, and discuss their order.

2. List the elements of K, and discuss their order.

3. Show $H \approx K$.

4. List the elements of G/H, and discuss their order.

5. List the elements of G/K, and discuss their order.

6. Show $G/H \not\approx G/K$.

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1. Let $G = \mathbb{Z}/20\mathbb{Z}$ and $H = 4\mathbb{Z}/20\mathbb{Z}$. List the elements of G/H.

2. Determine the order of $(\mathbb{Z} \oplus \mathbb{Z})/ < (4,2) >$. Is the group cyclic?

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