$a^{2i}, a^{2j} \in H$

SG1) $\Rightarrow a^{2i}a^{2j} = a^{2(i+j)} \in H$

SG2) $e = a^{12} = a^{6\times 2} \in H$ with $i = 6$.

SG3) $a^{2i} \in H$. $a^{-2i} = ea^{-2i} = a^{12}a^{-2i} = a^{2\times(6-i)} \in H$.

∴

For K

SG1) $a^{6i}, a^{6j} \in K \Rightarrow a^{6i}a^{6j} = a^{6(i+j)} \in K$

SG2) $e = a^{12} = a^{2\times 6} \in K$ with $i = 2$

SG3) $a^{-6i} = ea^{-6i} = a^{12}a^{-6i} = a^{6\times(2-i)} \in K$

∴ $a^{6i} \in K$, $a^{-6i} \in K$

(I would've said $a^6 = a^{-6}$).

∴ H, K are subgroups of G