```
<< AdditiveGroupTheorems`
```

```
MakeGroup[12, True]
```

```
Estimated time is:          -6
9.46997 10 seconds.
Computation time: 0.016 seconds.
```

```
Containment[4]
```

```
{{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11}, {0, 2, 4, 6, 8, 10}, {0, 4, 8}}
```

```
CorrespondenceMap[4]
```

```
<|{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11} → {0, 1, 2, 3},
 {0, 2, 4, 6, 8, 10} → {0, 2}, {0, 4, 8} → {0}|>
```

```
cm = UniqueCorrespondenceMapIndexed[4]
```

```
<|1 → {{1, 4}}, 2 → {{2, 3}}, 4 → {{4, 1}}|>
```

```
cmi = Flatten /@ Values[cm]
```

```
{{1, 4}, {2, 3}, {4, 1}}
```

```
{QuotientGroups[][[1, 4]], QuotientGroups[][[2, 3]], QuotientGroups[][[4, 1]]}
```

```
{{0, 1, 2, 3}, {0, 2}, {0}}
```

```
(*en av två metoder för direktberäkning av korrespondens*)
CorrespondenceMethodGenerators[4]
```

```
<|1 → {0, 1, 2, 3}, 2 → {0, 2}, 4 → {0}|>
```

```
ExtensionIsomorphy[][[3]]
(*vänster och högerled i andra isomorfisatsen för tredje undergruppen*)
```

```
{{0}, {0, 1}, {0}, {0, 1, 2, 3}, {0, 1}, {0, 1, 2, 3}}
```

```
ExtensionRelabeling[][[3]]
(*hur elementen ska döpas om för att andra isomorfisatsen ska synliggöras*)
```

```
{<| |>, <|0 → 0, 3 → 1|>, <| |>, <|0 → 0, 3 → 1, 6 → 2, 9 → 3|>, <| |>, <| |>}
```

```
ProductsToIntersections[SubgroupProducts[]] // Short
```

```
{{{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11},
  {0, 2, 4, 6, 8, 10}, {0, 3, 6, 9}, {0, 4, 8}, {0, 6}, {0}},
 {{0, 2, 4, 6, 8, 10}, {0, 2, 4, 6, 8, 10}, {0, 6}, {0, 4, 8}, {0, 6}, {0}}, {<<1>>},
 {<<1>>}, {{0, 6}, {0, 6}, {0, 6}, {0}, {0, 6}, {0}}, {{0}, {0}, {0}, {0}, {0}, {0}}}
```

```
SubgroupIntersections[] // Short (*produkt och snitt är utbytbara*)
```

```
{{{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11},
  {0, 2, 4, 6, 8, 10}, {0, 3, 6, 9}, {0, 4, 8}, {0, 6}, {0}},
 {{0, 2, 4, 6, 8, 10}, {0, 2, 4, 6, 8, 10}, {0, 6}, {0, 4, 8}, {0, 6}, {0}}, {<<1>>},
 {<<1>>}, {{0, 6}, {0, 6}, {0, 6}, {0}, {0, 6}, {0}}, {{0}, {0}, {0}, {0}, {0}, {0}}}
```

```
(*tre första undergrupperna i rad uppfyller inte antaganden*)
ThirdIsomorphyMappingIso[1, 2, 3]
Last[ThirdIsomorphyMappingIso[1, 2, 3]]
```

```
{{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11} → {0, 1, 2},
 {0, 2, 4, 6, 8, 10} → {0, 1, 2}, {0, 1} → {0}}
```

```
{0, 1} → {0}
```

```
(*hoppar över till fjärde så ..*)
ThirdIsomorphyMappingIso[1, 2, 4]
Last[ThirdIsomorphyMappingIso[1, 2, 4]]
```

```
{{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11} → {0, 1, 2, 3},
 {0, 2, 4, 6, 8, 10} → {0, 1}, {0, 1} → {0, 1}}
```

```
{0, 1} → {0, 1}
```

```
Names["AdditiveGroupTheorems`*"]
```

```
{AdditiveGroupTheoremsPackage, AllContainmentCorrespondenceOrders,
 AllContainmentCorrespondencies, AllContainmentsCorrespondenceOrders,
 AllQuotientCorrespondenceOrders, AllQuotientCorrespondencies, Collisions,
 ContainmentCorrespondenceGroups, ContainmentCorrespondenceOrder,
 CorrespondenceMap, CorrespondenceMapIndexed, CorrespondenceMaxReductions,
 CorrespondenceMethodDictionary, CorrespondenceMethodGenerators,
 CorrespondenceReduction, CorrespondenceSizeFactors,
 ExtensionIsomorphy, ExtensionRelabeling, ExtensionRelabelingIndexed,
 ExtensionTransformativeTerms, FirstFalseKMindexed, FirstKMindexed, FirstKMs,
 FirstTrueKMindexed, IntersectionsToProducts, IsomorphicCyclicGroup,
 IsomorphicGroup, LargestThirdIsomorphyPair, ProductsToIntersections,
 QuotientCorrespondenceGroups, QuotientCorrespondenceOrder,
 QuotientSimilars, RelabelElements, SecondIsomorphyDeterminingSubgroups,
 ThirdIsomorphies, ThirdIsomorphyCheck, ThirdIsomorphyFromGenerators,
 ThirdIsomorphyMappingIndexToIso, ThirdIsomorphyMappingIso,
 ThirdIsomorphyTrippels, ThirdIsomorphyTrippelsClasses, ThirdIsomorphyTrippelsIso,
 ThirdNonIsomorphicK, ThirdNonIsomorphicKIndex, ThirdNonIsomorphicM,
 ThirdNonIsomorphicMIndex, ThirdNonIsomorphies, ThirdNonIsomorphiesFull,
 ThirdNonIsomorphiesN, UniqueCorrespondenceMap, UniqueCorrespondenceMapIndexed}
```