



Number of Elements Query

- Find the number of elements in each reaction
- The result should consist of a set of pairs:
 - The reaction object
 - The number of elements that the reaction produces or consumes
- Atoms are preserved by reactions so one can use either produces or consumes for this query

Solution Step 1

First compute the pairs of reaction and element objects:

```
select r, e
  from Reaction r, Element e
 where exists(...)
```

Next aggregate them:

```
select r, count(e)
  from Reaction r, Element e
 where exists(...)
 group by r
```

Solution Step 2

Now navigate from Reaction to Element

```
select r, count(e)
  from Reaction r, Element e
 where exists(
       select *
       from r produces Molecule m
           contains Atom a
       where a.type = e
     )
group by r
```