```
> inspect(groceryrules[1:3])
  lhs                rhs                    support confidence     lift
1 {potted plants} => {whole milk}       0.006914082  0.4000000 1.565460
2 {pasta}         => {whole milk}       0.006100661  0.4054054 1.586614
3 {herbs}         => {root vegetables} 0.007015760  0.4312500 3.956477

> length(groceries)
[1] 9835

> subset(groceries, items %in% "potted plants")
transactions in sparse format with
 170 transactions (rows) and
 169 items (columns)

> subset(groceries, items %in% "whole milk")
transactions in sparse format with
 2513 transactions (rows) and
 169 items (columns)

> subset(groceries, items %ain% c("potted plants", "whole milk"))
transactions in sparse format with
 68 transactions (rows) and
 169 items (columns)
```

Support: Support is an indication of how frequently the itemset appears in the dataset.

$$\text{support (whole milk)} = \frac{\text{\# of transactions with whole milk}}{\text{total \# of transactions}}$$

$$= 2513 / 9835 = 0.255516$$

$$\text{support (plotted plants)} = \frac{\text{\# of transactions with plotted plants}}{\text{total \# of transactions}}$$

$$= 170 / 9835 = 0.01728521$$

$$\text{support (plotted plants, whole milk)} = \frac{\text{\# of transactions with plotted plants and whole milk}}{\text{total \# of transactions}}$$

$$= 68 / 9835 = 0.006914082$$

Confidence: Confidence is an indication of how often the rule has been found to be true.

$$\text{confidence (potted plants} \rightarrow \text{whole milk)} = \frac{\text{support (potted plants, whole milk)}}{\text{support (potted plants)}}$$

$$= 0.006914082 / 0.01728521 = 0.4000000$$

{Or
(# of transactions with potted plants and whole milk) / = 68/170 = 0.4000000 }
(# of transactions where potted plants)

Lift: Lift is the ratio of the observed support to that expected if X and Y were independent.

$$\text{lift(potted plants} \rightarrow \text{whole milk)} = \frac{\text{confidence (potted plants} \rightarrow \text{whole milk)}}{\text{support (whole milk)}}$$

$$= 0.4000000 / 0.255516 = 1.565460$$