

Assignment7Output

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Importing the libraries

```
library("arules")

## Loading required package: Matrix
##
## Attaching package: 'arules'
## The following objects are masked from 'package:base':
##
##      abbreviate, write
library('arulesViz')

## Loading required package: grid
library('tidyverse')

## -- Attaching packages ----- tidyverse 1.3.0 --
## v ggplot2 3.3.2      v purrr   0.3.4
## v tibble  3.0.4      v dplyr  1.0.2
## v tidyr   1.1.2      v stringr 1.4.0
## v readr   1.4.0      v forcats 0.5.0

## -- Conflicts ----- tidyverse_conflicts() --
## x tidyr::expand() masks Matrix::expand()
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## x tidyr::pack()    masks Matrix::pack()
## x dplyr::recode()  masks arules::recode()
## x tidyr::unpack() masks Matrix::unpack()
library('knitr')
library('lubridate')

##
## Attaching package: 'lubridate'
## The following objects are masked from 'package:arules':
##
##      intersect, setdiff, union
## The following objects are masked from 'package:base':
##
##      date, intersect, setdiff, union
```

```
library('plyr')

## -----
## You have loaded plyr after dplyr - this is likely to cause problems.
## If you need functions from both plyr and dplyr, please load plyr first, then dplyr:
## library(plyr); library(dplyr)
## -----
##
## Attaching package: 'plyr'
##
## The following objects are masked from 'package:dplyr':
##
##   arrange, count, desc, failwith, id, mutate, rename, summarise,
##   summarize
##
## The following object is masked from 'package:purrr':
##
##   compact
library('dplyr')
library('datasets')
```

Read the dataset and inspect

```
pd <- read.transactions("./groceries.csv", sep=',', header = F)
inspect(pd[1:10,])
```

```
##      items
## [1] {citrus fruit,
##      margarine,
##      ready soups,
##      semi-finished bread}
## [2] {coffee,
##      tropical fruit,
##      yogurt}
## [3] {whole milk}
## [4] {cream cheese,
##      meat spreads,
##      pip fruit,
##      yogurt}
## [5] {condensed milk,
##      long life bakery product,
##      other vegetables,
##      whole milk}
## [6] {abrasive cleaner,
##      butter,
##      rice,
##      whole milk,
##      yogurt}
## [7] {rolls/buns}
## [8] {bottled beer,
##      liquor (appetizer),
##      other vegetables,
```

```
##      rolls/buns,
##      UHT-milk}
## [9] {potted plants}
## [10] {cereals,
##      whole milk}
```

Summary of Dataset

```
summary(pd)
```

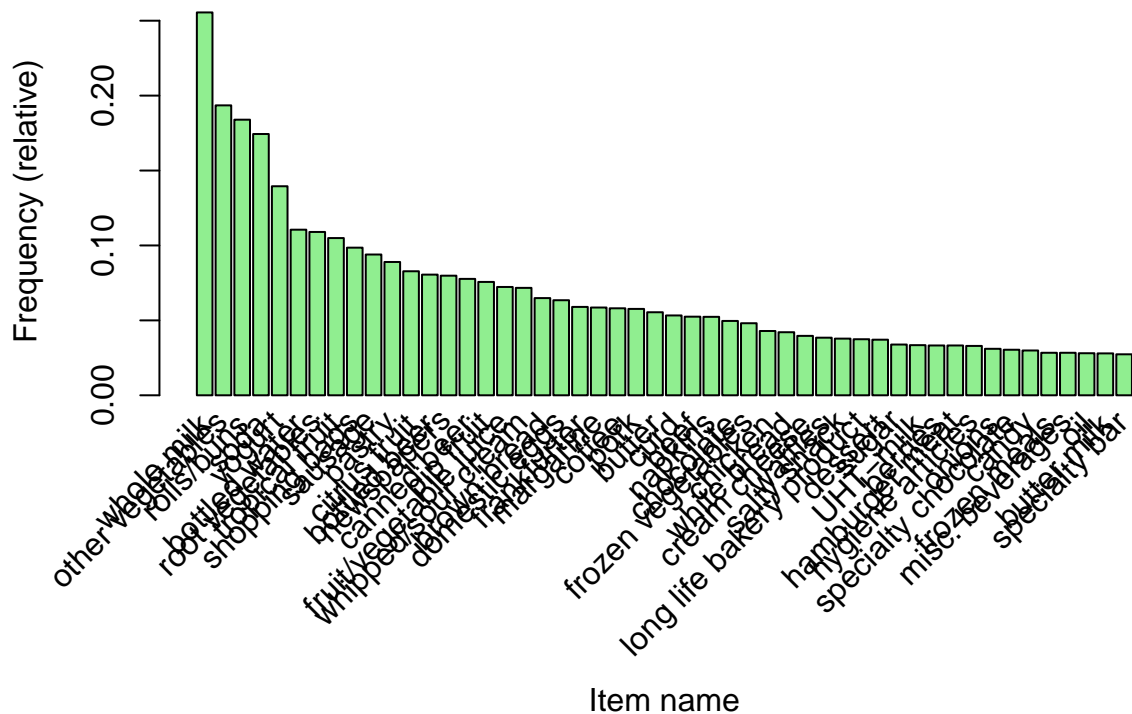
```
## transactions as itemMatrix in sparse format with
## 9835 rows (elements/itemsets/transactions) and
## 169 columns (items) and a density of 0.02609146
##
## most frequent items:
##      whole milk other vegetables      rolls/buns      soda
##      2513      1903      1809      1715
##      yogurt      (Other)
##      1372      34055
##
## element (itemset/transaction) length distribution:
## sizes
##      1      2      3      4      5      6      7      8      9     10     11     12     13     14     15     16
## 2159 1643 1299 1005  855  645  545  438  350  246  182  117  78  77  55  46
##      17     18     19     20     21     22     23     24     26     27     28     29     32
##      29     14     14      9     11      4      6      1      1      1      1      3      1
##
##      Min. 1st Qu.  Median      Mean 3rd Qu.      Max.
##      1.000  2.000   3.000   4.409   6.000  32.000
##
## includes extended item information - examples:
##      labels
## 1 abrasive cleaner
## 2 artif. sweetener
## 3  baby cosmetics
```

Plotting various graphs for the dataset

1. Relative frequency graph

```
itemFrequencyPlot(pd, support = .001, topN = 50, col="lightgreen", xlab = "Item name",
                  ylab = "Frequency (relative)", main = "Top 50 items with 0.001 support (relative)")
```

Top 50 items with 0.001 support (relative)

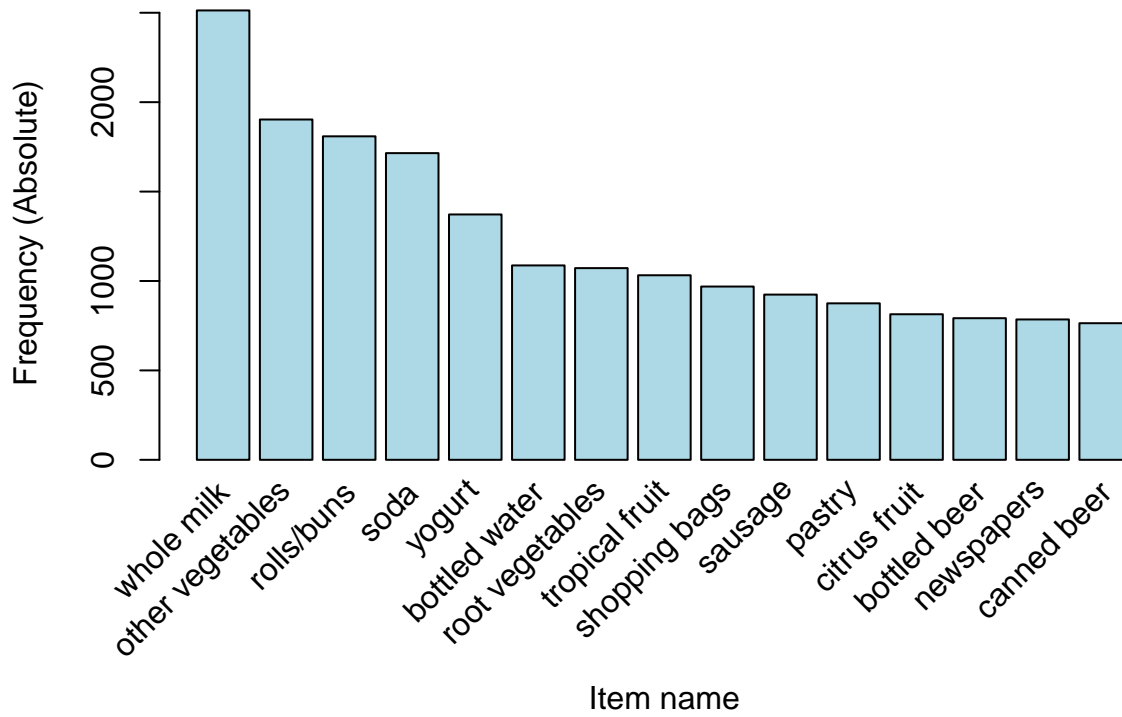


This graph shows the top 50 products which have appeared in at least 0.1% of total records ### We can see that “Whole milk” is most sold product, followed by “other vegetables”, “Buns”, “Soda” and “Yogurt”

2. Absolute frequency graph

```
itemFrequencyPlot(pd, topN = 15, col="lightblue", xlab = "Item name", type = "absolute",
                  ylab = "Frequency (Absolute)", main = "Top 15 items (absolute frequency)")
```

Top 15 items (absolute frequency)



Defining Apriori rules for support = 0.001 and Confidence = 0.8 with minimum length = 2

```
pd_rules = apriori(pd, parameter = list(support = 0.001, confidence = 0.8, minlen = 2))
```

```
## Apriori
##
## Parameter specification:
## confidence minval smax arem aval originalSupport maxtime support minlen
##          0.8    0.1    1 none FALSE                TRUE     5   0.001     2
## maxlen target  ext
##          10  rules TRUE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##       0.1 TRUE TRUE  FALSE TRUE     2    TRUE
##
## Absolute minimum support count: 9
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[169 item(s), 9835 transaction(s)] done [0.01s].
## sorting and recoding items ... [157 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 4 5 6 done [0.02s].
```

```
## writing ... [410 rule(s)] done [0.00s].
## creating S4 object ... done [0.00s].
```

```
summary(pd_rules, limit = 3)
```

```
## set of 410 rules
##
## rule length distribution (lhs + rhs):sizes
##   3   4   5   6
## 29 229 140  12
##
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   3.000  4.000   4.000   4.329   5.000   6.000
##
## summary of quality measures:
##      support      confidence      coverage      lift
## Min. :0.001017 Min. :0.8000 Min. :0.001017 Min. : 3.131
## 1st Qu.:0.001017 1st Qu.:0.8333 1st Qu.:0.001220 1st Qu.: 3.312
## Median :0.001220 Median:0.8462 Median:0.001322 Median: 3.588
## Mean :0.001247 Mean :0.8663 Mean :0.001449 Mean : 3.951
## 3rd Qu.:0.001322 3rd Qu.:0.9091 3rd Qu.:0.001627 3rd Qu.: 4.341
## Max. :0.003152 Max. :1.0000 Max. :0.003559 Max. :11.235
##      count
## Min. :10.00
## 1st Qu.:10.00
## Median :12.00
## Mean :12.27
## 3rd Qu.:13.00
## Max. :31.00
##
## mining info:
## data ntransactions support confidence
##   pd          9835   0.001         0.8
```

Checking the rules as per “lift”

```
inspect(sort(pd_rules, by="lift"))
```

```
##      lhs                                rhs      support confidence      coverage      lift
## [1] {liquor,                                => {bottled beer}    0.001931876  0.9047619 0.002135231 11.235269
##      red/blush wine}
## [2] {citrus fruit,                            => {root vegetables} 0.001016777  0.9090909 0.001118454  8.340400
##      fruit/vegetable juice,
##      other vegetables,
##      soda}
## [3] {oil,                                    => {root vegetables} 0.001016777  0.9090909 0.001118454  8.340400
##      other vegetables,
##      tropical fruit,
##      whole milk,
##      yogurt}
## [4] {citrus fruit,                            => {tropical fruit}  0.001118454  0.8461538 0.001321810  8.063879
##      fruit/vegetable juice,
##      grapes}
## [5] {other vegetables,
##      rice,
```

##	whole milk,					
##	yogurt}	=> {root vegetables}	0.001321810	0.8666667	0.001525165	7.951182
## [6]	{oil,					
##	other vegetables,					
##	tropical fruit,					
##	whole milk}	=> {root vegetables}	0.001321810	0.8666667	0.001525165	7.951182
## [7]	{ham,					
##	other vegetables,					
##	pip fruit,					
##	yogurt}	=> {tropical fruit}	0.001016777	0.8333333	0.001220132	7.941699
## [8]	{beef,					
##	citrus fruit,					
##	other vegetables,					
##	tropical fruit}	=> {root vegetables}	0.001016777	0.8333333	0.001220132	7.645367
## [9]	{butter,					
##	cream cheese,					
##	root vegetables}	=> {yogurt}	0.001016777	0.9090909	0.001118454	6.516698
## [10]	{butter,					
##	sliced cheese,					
##	tropical fruit,					
##	whole milk}	=> {yogurt}	0.001016777	0.9090909	0.001118454	6.516698
## [11]	{cream cheese,					
##	curd,					
##	other vegetables,					
##	whipped/sour cream}	=> {yogurt}	0.001016777	0.9090909	0.001118454	6.516698
## [12]	{butter,					
##	other vegetables,					
##	tropical fruit,					
##	white bread}	=> {yogurt}	0.001016777	0.9090909	0.001118454	6.516698
## [13]	{pip fruit,					
##	sausage,					
##	sliced cheese}	=> {yogurt}	0.001220132	0.8571429	0.001423488	6.144315
## [14]	{butter,					
##	curd,					
##	tropical fruit,					
##	whole milk}	=> {yogurt}	0.001220132	0.8571429	0.001423488	6.144315
## [15]	{butter,					
##	tropical fruit,					
##	white bread}	=> {yogurt}	0.001118454	0.8461538	0.001321810	6.065542
## [16]	{butter,					
##	margarine,					
##	tropical fruit}	=> {yogurt}	0.001118454	0.8461538	0.001321810	6.065542
## [17]	{cream cheese,					
##	curd,					
##	whipped/sour cream,					
##	whole milk}	=> {yogurt}	0.001118454	0.8461538	0.001321810	6.065542
## [18]	{cream cheese,					
##	margarine,					
##	whipped/sour cream}	=> {yogurt}	0.001016777	0.8333333	0.001220132	5.973639
## [19]	{beef,					
##	butter,					
##	tropical fruit}	=> {yogurt}	0.001016777	0.8333333	0.001220132	5.973639
## [20]	{fruit/vegetable juice,					
##	pork,					

##	tropical fruit}	=> {yogurt}	0.001016777	0.8333333	0.001220132	5.973639
## [21]	{butter,					
##	curd,					
##	other vegetables,					
##	tropical fruit}	=> {yogurt}	0.001016777	0.8333333	0.001220132	5.973639
## [22]	{margarine,					
##	root vegetables,					
##	tropical fruit,					
##	whole milk}	=> {yogurt}	0.001016777	0.8333333	0.001220132	5.973639
## [23]	{butter milk,					
##	other vegetables,					
##	pastry}	=> {yogurt}	0.001220132	0.8000000	0.001525165	5.734694
## [24]	{fruit/vegetable juice,					
##	pastry,					
##	whipped/sour cream}	=> {yogurt}	0.001220132	0.8000000	0.001525165	5.734694
## [25]	{citrus fruit,					
##	root vegetables,					
##	soft cheese}	=> {other vegetables}	0.001016777	1.0000000	0.001016777	5.168156
## [26]	{brown bread,					
##	pip fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001118454	1.0000000	0.001118454	5.168156
## [27]	{grapes,					
##	tropical fruit,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001016777	1.0000000	0.001016777	5.168156
## [28]	{ham,					
##	pip fruit,					
##	tropical fruit,					
##	yogurt}	=> {other vegetables}	0.001016777	1.0000000	0.001016777	5.168156
## [29]	{ham,					
##	pip fruit,					
##	tropical fruit,					
##	whole milk}	=> {other vegetables}	0.001118454	1.0000000	0.001118454	5.168156
## [30]	{butter,					
##	fruit/vegetable juice,					
##	tropical fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001016777	1.0000000	0.001016777	5.168156
## [31]	{newspapers,					
##	rolls/buns,					
##	soda,					
##	whole milk}	=> {other vegetables}	0.001016777	1.0000000	0.001016777	5.168156
## [32]	{citrus fruit,					
##	root vegetables,					
##	tropical fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001220132	1.0000000	0.001220132	5.168156
## [33]	{oil,					
##	root vegetables,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001423488	0.9333333	0.001525165	4.823612
## [34]	{citrus fruit,					
##	root vegetables,					
##	tropical fruit,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001423488	0.9333333	0.001525165	4.823612

## [35]	{butter,				
##	soda,				
##	whipped/sour cream}	=> {other vegetables}	0.001321810	0.9285714	0.001423488 4.799002
## [36]	{butter,				
##	pastry,				
##	pip fruit}	=> {other vegetables}	0.001321810	0.9285714	0.001423488 4.799002
## [37]	{rice,				
##	root vegetables,				
##	whole milk,				
##	yogurt}	=> {other vegetables}	0.001321810	0.9285714	0.001423488 4.799002
## [38]	{soft cheese,				
##	tropical fruit,				
##	whipped/sour cream}	=> {other vegetables}	0.001220132	0.9230769	0.001321810 4.770605
## [39]	{citrus fruit,				
##	cream cheese,				
##	root vegetables}	=> {other vegetables}	0.001220132	0.9230769	0.001321810 4.770605
## [40]	{citrus fruit,				
##	domestic eggs,				
##	whipped/sour cream,				
##	whole milk}	=> {other vegetables}	0.001220132	0.9230769	0.001321810 4.770605
## [41]	{grapes,				
##	onions}	=> {other vegetables}	0.001118454	0.9166667	0.001220132 4.737476
## [42]	{hard cheese,				
##	oil}	=> {other vegetables}	0.001118454	0.9166667	0.001220132 4.737476
## [43]	{dessert,				
##	tropical fruit,				
##	whipped/sour cream}	=> {other vegetables}	0.001118454	0.9166667	0.001220132 4.737476
## [44]	{citrus fruit,				
##	cream cheese,				
##	whipped/sour cream,				
##	whole milk}	=> {other vegetables}	0.001118454	0.9166667	0.001220132 4.737476
## [45]	{fruit/vegetable juice,				
##	tropical fruit,				
##	whipped/sour cream,				
##	yogurt}	=> {other vegetables}	0.001118454	0.9166667	0.001220132 4.737476
## [46]	{fruit/vegetable juice,				
##	herbs,				
##	whole milk}	=> {other vegetables}	0.001016777	0.9090909	0.001118454 4.698323
## [47]	{frankfurter,				
##	frozen meals,				
##	tropical fruit}	=> {other vegetables}	0.001016777	0.9090909	0.001118454 4.698323
## [48]	{hard cheese,				
##	tropical fruit,				
##	whipped/sour cream}	=> {other vegetables}	0.001016777	0.9090909	0.001118454 4.698323
## [49]	{butter milk,				
##	pork,				
##	whole milk}	=> {other vegetables}	0.001016777	0.9090909	0.001118454 4.698323
## [50]	{butter milk,				
##	fruit/vegetable juice,				
##	pip fruit}	=> {other vegetables}	0.001016777	0.9090909	0.001118454 4.698323
## [51]	{coffee,				
##	oil,				
##	yogurt}	=> {other vegetables}	0.001016777	0.9090909	0.001118454 4.698323
## [52]	{napkins,				

##	onions,					
##	root vegetables}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [53]	{hamburger meat,					
##	tropical fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [54]	{oil,					
##	root vegetables,					
##	tropical fruit,					
##	yogurt}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [55]	{butter,					
##	tropical fruit,					
##	white bread,					
##	yogurt}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [56]	{butter,					
##	root vegetables,					
##	white bread,					
##	whole milk}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [57]	{butter,					
##	soda,					
##	whipped/sour cream,					
##	whole milk}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [58]	{fruit/vegetable juice,					
##	tropical fruit,					
##	whipped/sour cream,					
##	whole milk}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [59]	{oil,					
##	root vegetables,					
##	tropical fruit,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [60]	{citrus fruit,					
##	root vegetables,					
##	whipped/sour cream,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001016777	0.9090909	0.001118454	4.698323
## [61]	{fruit/vegetable juice,					
##	tropical fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001931876	0.9047619	0.002135231	4.675950
## [62]	{ham,					
##	pip fruit,					
##	tropical fruit}	=> {other vegetables}	0.001626843	0.8888889	0.001830198	4.593916
## [63]	{onions,					
##	root vegetables,					
##	tropical fruit}	=> {other vegetables}	0.001626843	0.8888889	0.001830198	4.593916
## [64]	{citrus fruit,					
##	root vegetables,					
##	tropical fruit,					
##	whole milk}	=> {other vegetables}	0.003152008	0.8857143	0.003558719	4.577509
## [65]	{citrus fruit,					
##	pastry,					
##	root vegetables}	=> {other vegetables}	0.001525165	0.8823529	0.001728521	4.560137
## [66]	{frozen vegetables,					
##	whipped/sour cream,					
##	whole milk,					

##	yogurt}	=> {other vegetables}	0.001525165	0.8823529	0.001728521	4.560137
## [67]	{frozen vegetables,					
##	root vegetables,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001525165	0.8823529	0.001728521	4.560137
## [68]	{rice,					
##	root vegetables,					
##	yogurt}	=> {other vegetables}	0.001423488	0.8750000	0.001626843	4.522136
## [69]	{cream cheese,					
##	tropical fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001423488	0.8750000	0.001626843	4.522136
## [70]	{root vegetables,					
##	whipped/sour cream,					
##	white bread}	=> {other vegetables}	0.001423488	0.8750000	0.001626843	4.522136
## [71]	{beef,					
##	tropical fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001423488	0.8750000	0.001626843	4.522136
## [72]	{frozen vegetables,					
##	onions,					
##	root vegetables}	=> {other vegetables}	0.001321810	0.8666667	0.001525165	4.479068
## [73]	{oil,					
##	root vegetables,					
##	tropical fruit,					
##	whole milk}	=> {other vegetables}	0.001321810	0.8666667	0.001525165	4.479068
## [74]	{butter milk,					
##	pork}	=> {other vegetables}	0.001830198	0.8571429	0.002135231	4.429848
## [75]	{meat,					
##	root vegetables,					
##	yogurt}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [76]	{butter milk,					
##	pip fruit,					
##	root vegetables}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [77]	{fruit/vegetable juice,					
##	oil,					
##	tropical fruit}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [78]	{root vegetables,					
##	salty snack,					
##	yogurt}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [79]	{domestic eggs,					
##	pastry,					
##	whipped/sour cream}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [80]	{domestic eggs,					
##	pastry,					
##	root vegetables}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [81]	{brown bread,					
##	pip fruit,					
##	root vegetables,					
##	whole milk}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [82]	{citrus fruit,					
##	domestic eggs,					
##	root vegetables,					
##	whole milk}	=> {other vegetables}	0.001220132	0.8571429	0.001423488	4.429848
## [83]	{margarine,					
##	meat}	=> {other vegetables}	0.001728521	0.8500000	0.002033554	4.392932

## [84]	{oil,					
##	root vegetables,					
##	tropical fruit}	=> {other vegetables}	0.001728521	0.8500000	0.002033554	4.392932
## [85]	{cream cheese,					
##	curd,					
##	root vegetables}	=> {other vegetables}	0.001728521	0.8500000	0.002033554	4.392932
## [86]	{tropical fruit,					
##	whipped/sour cream,					
##	white bread}	=> {other vegetables}	0.001728521	0.8500000	0.002033554	4.392932
## [87]	{frozen fish,					
##	pip fruit,					
##	whole milk}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [88]	{herbs,					
##	root vegetables,					
##	shopping bags}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [89]	{citrus fruit,					
##	fruit/vegetable juice,					
##	oil}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [90]	{beef,					
##	root vegetables,					
##	sugar}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [91]	{long life bakery product,					
##	root vegetables,					
##	tropical fruit}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [92]	{butter,					
##	tropical fruit,					
##	white bread}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [93]	{pip fruit,					
##	pork,					
##	soda}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [94]	{pastry,					
##	root vegetables,					
##	shopping bags}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [95]	{root vegetables,					
##	whipped/sour cream,					
##	white bread,					
##	whole milk}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [96]	{beef,					
##	tropical fruit,					
##	whipped/sour cream,					
##	whole milk}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [97]	{citrus fruit,					
##	curd,					
##	root vegetables,					
##	whole milk}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [98]	{butter,					
##	domestic eggs,					
##	tropical fruit,					
##	yogurt}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [99]	{butter,					
##	root vegetables,					
##	tropical fruit,					
##	whipped/sour cream}	=> {other vegetables}	0.001118454	0.8461538	0.001321810	4.373055
## [100]	{newspapers,					

##	soda,				
##	tropical fruit,				
##	whole milk}	=> {other vegetables}	0.001118454	0.8461538	0.001321810 4.373055
## [101]	{fruit/vegetable juice,				
##	root vegetables,				
##	tropical fruit,				
##	yogurt}	=> {other vegetables}	0.001118454	0.8461538	0.001321810 4.373055
## [102]	{citrus fruit,				
##	rolls/buns,				
##	root vegetables,				
##	tropical fruit}	=> {other vegetables}	0.001118454	0.8461538	0.001321810 4.373055
## [103]	{citrus fruit,				
##	newspapers,				
##	root vegetables}	=> {other vegetables}	0.001626843	0.8421053	0.001931876 4.352131
## [104]	{rice,				
##	whole milk,				
##	yogurt}	=> {other vegetables}	0.001525165	0.8333333	0.001830198 4.306796
## [105]	{frozen fish,				
##	pip fruit,				
##	tropical fruit}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [106]	{citrus fruit,				
##	herbs,				
##	tropical fruit}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [107]	{flour,				
##	rolls/buns,				
##	root vegetables}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [108]	{domestic eggs,				
##	root vegetables,				
##	soft cheese}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [109]	{grapes,				
##	pork,				
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [110]	{meat,				
##	tropical fruit,				
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [111]	{candy,				
##	rolls/buns,				
##	root vegetables}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [112]	{frozen vegetables,				
##	ham,				
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [113]	{butter,				
##	sugar,				
##	whipped/sour cream}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [114]	{dessert,				
##	sausage,				
##	whipped/sour cream}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [115]	{chicken,				
##	pastry,				
##	root vegetables}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [116]	{butter,				
##	root vegetables,				
##	white bread}	=> {other vegetables}	0.001016777	0.8333333	0.001220132 4.306796
## [117]	{butter,				

##	curd,					
##	domestic eggs}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [118]	{brown bread,					
##	sausage,					
##	whipped/sour cream}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [119]	{hard cheese,					
##	root vegetables,					
##	whipped/sour cream,					
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [120]	{onions,					
##	root vegetables,					
##	tropical fruit,					
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [121]	{butter,					
##	white bread,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [122]	{bottled water,					
##	frozen vegetables,					
##	root vegetables,					
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [123]	{beef,					
##	citrus fruit,					
##	root vegetables,					
##	tropical fruit}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [124]	{frankfurter,					
##	pip fruit,					
##	root vegetables,					
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [125]	{citrus fruit,					
##	newspapers,					
##	root vegetables,					
##	whole milk}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [126]	{butter,					
##	domestic eggs,					
##	tropical fruit,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001016777	0.8333333	0.001220132	4.306796
## [127]	{rice,					
##	yogurt}	=> {other vegetables}	0.001931876	0.8260870	0.002338587	4.269346
## [128]	{herbs,					
##	shopping bags}	=> {other vegetables}	0.001931876	0.8260870	0.002338587	4.269346
## [129]	{grapes,					
##	tropical fruit,					
##	yogurt}	=> {other vegetables}	0.001423488	0.8235294	0.001728521	4.256128
## [130]	{citrus fruit,					
##	onions,					
##	root vegetables}	=> {other vegetables}	0.001423488	0.8235294	0.001728521	4.256128
## [131]	{citrus fruit,					
##	fruit/vegetable juice,					
##	whole milk,					
##	yogurt}	=> {other vegetables}	0.001423488	0.8235294	0.001728521	4.256128
## [132]	{butter milk,					
##	onions}	=> {other vegetables}	0.001321810	0.8125000	0.001626843	4.199126

## [133]	{citrus fruit,				
##	herbs,				
##	root vegetables}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [134]	{semi-finished bread,				
##	tropical fruit,				
##	yogurt}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [135]	{hard cheese,				
##	root vegetables,				
##	whipped/sour cream}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [136]	{salty snack,				
##	tropical fruit,				
##	yogurt}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [137]	{citrus fruit,				
##	cream cheese,				
##	whipped/sour cream}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [138]	{brown bread,				
##	pip fruit,				
##	root vegetables}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [139]	{bottled water,				
##	sausage,				
##	whipped/sour cream}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [140]	{citrus fruit,				
##	fruit/vegetable juice,				
##	tropical fruit,				
##	whole milk}	=> {other vegetables}	0.001321810	0.8125000	0.001626843 4.199126
## [141]	{citrus fruit,				
##	root vegetables,				
##	tropical fruit,				
##	yogurt}	=> {other vegetables}	0.001728521	0.8095238	0.002135231 4.183745
## [142]	{curd,				
##	turkey}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [143]	{fruit/vegetable juice,				
##	herbs}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [144]	{onions,				
##	waffles}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [145]	{root vegetables,				
##	tropical fruit,				
##	turkey}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [146]	{root vegetables,				
##	turkey,				
##	whole milk}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [147]	{grapes,				
##	root vegetables,				
##	tropical fruit}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [148]	{grapes,				
##	tropical fruit,				
##	whole milk}	=> {other vegetables}	0.002033554	0.8000000	0.002541942 4.134524
## [149]	{napkins,				
##	onions,				
##	whole milk}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [150]	{salty snack,				
##	tropical fruit,				
##	whipped/sour cream}	=> {other vegetables}	0.001220132	0.8000000	0.001525165 4.134524
## [151]	{butter,				

```

##      long life bakery product,
##      whipped/sour cream}      => {other vegetables} 0.001220132  0.8000000 0.001525165  4.134524
## [152] {cream cheese,
##      tropical fruit,
##      whole milk,
##      yogurt}                  => {other vegetables} 0.001220132  0.8000000 0.001525165  4.134524
## [153] {butter,
##      tropical fruit,
##      whipped/sour cream,
##      yogurt}                  => {other vegetables} 0.001220132  0.8000000 0.001525165  4.134524
## [154] {domestic eggs,
##      pip fruit,
##      whipped/sour cream,
##      whole milk}              => {other vegetables} 0.001220132  0.8000000 0.001525165  4.134524
## [155] {fruit/vegetable juice,
##      root vegetables,
##      whole milk,
##      yogurt}                  => {other vegetables} 0.002033554  0.8000000 0.002541942  4.134524
## [156] {pip fruit,
##      tropical fruit,
##      whipped/sour cream,
##      whole milk}              => {other vegetables} 0.001626843  0.8000000 0.002033554  4.134524
## [157] {citrus fruit,
##      sausage,
##      whipped/sour cream,
##      whole milk}              => {other vegetables} 0.001220132  0.8000000 0.001525165  4.134524
## [158] {rolls/buns,
##      root vegetables,
##      tropical fruit,
##      whipped/sour cream}      => {other vegetables} 0.001220132  0.8000000 0.001525165  4.134524
## [159] {rice,
##      sugar}                   => {whole milk}          0.001220132  1.0000000 0.001220132  3.913649
## [160] {canned fish,
##      hygiene articles}        => {whole milk}          0.001118454  1.0000000 0.001118454  3.913649
## [161] {butter,
##      rice,
##      root vegetables}         => {whole milk}          0.001016777  1.0000000 0.001016777  3.913649
## [162] {flour,
##      root vegetables,
##      whipped/sour cream}      => {whole milk}          0.001728521  1.0000000 0.001728521  3.913649
## [163] {butter,
##      domestic eggs,
##      soft cheese}             => {whole milk}          0.001016777  1.0000000 0.001016777  3.913649
## [164] {butter,
##      hygiene articles,
##      pip fruit}               => {whole milk}          0.001016777  1.0000000 0.001016777  3.913649
## [165] {hygiene articles,
##      root vegetables,
##      whipped/sour cream}      => {whole milk}          0.001016777  1.0000000 0.001016777  3.913649
## [166] {hygiene articles,
##      pip fruit,
##      root vegetables}         => {whole milk}          0.001016777  1.0000000 0.001016777  3.913649
## [167] {cream cheese,
##      domestic eggs,

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##	sugar}	=> {whole milk}	0.001118454	1.0000000	0.001118454	3.913649
## [168]	{curd,					
##	domestic eggs,					
##	sugar}	=> {whole milk}	0.001016777	1.0000000	0.001016777	3.913649
## [169]	{cream cheese,					
##	domestic eggs,					
##	napkins}	=> {whole milk}	0.001118454	1.0000000	0.001118454	3.913649
## [170]	{oil,					
##	root vegetables,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001118454	1.0000000	0.001118454	3.913649
## [171]	{oil,					
##	other vegetables,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001423488	1.0000000	0.001423488	3.913649
## [172]	{butter,					
##	other vegetables,					
##	root vegetables,					
##	white bread}	=> {whole milk}	0.001016777	1.0000000	0.001016777	3.913649
## [173]	{butter,					
##	other vegetables,					
##	pork,					
##	whipped/sour cream}	=> {whole milk}	0.001016777	1.0000000	0.001016777	3.913649
## [174]	{butter,					
##	domestic eggs,					
##	other vegetables,					
##	whipped/sour cream}	=> {whole milk}	0.001220132	1.0000000	0.001220132	3.913649
## [175]	{citrus fruit,					
##	pastry,					
##	rolls/buns,					
##	whipped/sour cream}	=> {whole milk}	0.001016777	1.0000000	0.001016777	3.913649
## [176]	{bottled water,					
##	other vegetables,					
##	pip fruit,					
##	root vegetables}	=> {whole milk}	0.001118454	1.0000000	0.001118454	3.913649
## [177]	{rolls/buns,					
##	root vegetables,					
##	sausage,					
##	tropical fruit}	=> {whole milk}	0.001016777	1.0000000	0.001016777	3.913649
## [178]	{oil,					
##	other vegetables,					
##	root vegetables,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001016777	1.0000000	0.001016777	3.913649
## [179]	{cream cheese,					
##	other vegetables,					
##	sugar}	=> {whole milk}	0.001525165	0.9375000	0.001626843	3.669046
## [180]	{root vegetables,					
##	sausage,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001525165	0.9375000	0.001626843	3.669046
## [181]	{citrus fruit,					
##	domestic eggs,					
##	sugar}	=> {whole milk}	0.001423488	0.9333333	0.001525165	3.652739

## [182]	{domestic eggs, sugar, yogurt}	=> {whole milk}	0.001423488	0.9333333	0.001525165	3.652739
## [183]	{cream cheese, pip fruit, whipped/sour cream}	=> {whole milk}	0.001321810	0.9285714	0.001423488	3.634103
## [184]	{other vegetables, rice, root vegetables, yogurt}	=> {whole milk}	0.001321810	0.9285714	0.001423488	3.634103
## [185]	{beef, rolls/buns, tropical fruit, yogurt}	=> {whole milk}	0.001321810	0.9285714	0.001423488	3.634103
## [186]	{house keeping products, whipped/sour cream}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [187]	{bottled water, rice}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [188]	{root vegetables, soft cheese, whipped/sour cream}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [189]	{butter, sliced cheese, whipped/sour cream}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [190]	{butter, hygiene articles, tropical fruit}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [191]	{domestic eggs, hygiene articles, tropical fruit}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [192]	{root vegetables, sugar, whipped/sour cream}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [193]	{long life bakery product, napkins, tropical fruit}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [194]	{butter, coffee, whipped/sour cream}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [195]	{hard cheese, other vegetables, root vegetables, yogurt}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [196]	{frankfurter, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [197]	{brown bread, other vegetables, pip fruit, root vegetables}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [198]	{butter, domestic eggs, tropical fruit,					

##	yogurt}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [199]	{domestic eggs,					
##	other vegetables,					
##	pip fruit,					
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.9230769	0.001321810	3.612599
## [200]	{bottled beer,					
##	soups}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [201]	{citrus fruit,					
##	herbs,					
##	tropical fruit}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [202]	{domestic eggs,					
##	sugar,					
##	tropical fruit}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [203]	{butter,					
##	root vegetables,					
##	white bread}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [204]	{butter,					
##	curd,					
##	domestic eggs}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [205]	{butter,					
##	citrus fruit,					
##	curd}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [206]	{domestic eggs,					
##	fruit/vegetable juice,					
##	margarine}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [207]	{cream cheese,					
##	other vegetables,					
##	pip fruit,					
##	yogurt}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [208]	{curd,					
##	domestic eggs,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [209]	{butter,					
##	domestic eggs,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [210]	{domestic eggs,					
##	tropical fruit,					
##	whipped/sour cream,					
##	yogurt}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [211]	{domestic eggs,					
##	other vegetables,					
##	tropical fruit,					
##	whipped/sour cream}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [212]	{fruit/vegetable juice,					
##	pip fruit,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [213]	{bottled water,					
##	rolls/buns,					
##	root vegetables,					
##	tropical fruit}	=> {whole milk}	0.001118454	0.9166667	0.001220132	3.587512
## [214]	{cereals,					

##	curd}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [215]	{pastry,					
##	sweet spreads}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [216]	{frankfurter,					
##	frozen meals,					
##	tropical fruit}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [217]	{butter,					
##	frozen meals,					
##	tropical fruit}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [218]	{frankfurter,					
##	root vegetables,					
##	sliced cheese}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [219]	{berries,					
##	butter,					
##	sausage}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [220]	{butter,					
##	hygiene articles,					
##	napkins}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [221]	{pork,					
##	rolls/buns,					
##	waffles}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [222]	{long life bakery product,					
##	napkins,					
##	whipped/sour cream}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [223]	{butter,					
##	long life bakery product,					
##	sausage}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [224]	{butter,					
##	cream cheese,					
##	root vegetables}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [225]	{cream cheese,					
##	pip fruit,					
##	sausage}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [226]	{coffee,					
##	domestic eggs,					
##	root vegetables}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [227]	{bottled beer,					
##	domestic eggs,					
##	margarine}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [228]	{herbs,					
##	other vegetables,					
##	root vegetables,					
##	tropical fruit}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [229]	{frozen meals,					
##	pip fruit,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [230]	{butter,					
##	sliced cheese,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [231]	{other vegetables,					
##	root vegetables,					
##	waffles,					

##	yogurt}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [232]	{cream cheese,					
##	other vegetables,					
##	pip fruit,					
##	root vegetables}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [233]	{citrus fruit,					
##	frozen vegetables,					
##	other vegetables,					
##	yogurt}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [234]	{citrus fruit,					
##	curd,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [235]	{butter,					
##	napkins,					
##	other vegetables,					
##	whipped/sour cream}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [236]	{butter,					
##	other vegetables,					
##	pork,					
##	root vegetables}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [237]	{brown bread,					
##	other vegetables,					
##	rolls/buns,					
##	root vegetables}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [238]	{bottled water,					
##	butter,					
##	citrus fruit,					
##	other vegetables}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [239]	{citrus fruit,					
##	domestic eggs,					
##	other vegetables,					
##	tropical fruit}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [240]	{pastry,					
##	root vegetables,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [241]	{butter,					
##	domestic eggs,					
##	other vegetables,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001016777	0.9090909	0.001118454	3.557863
## [242]	{butter,					
##	pip fruit,					
##	whipped/sour cream}	=> {whole milk}	0.001830198	0.9000000	0.002033554	3.522284
## [243]	{domestic eggs,					
##	tropical fruit,					
##	whipped/sour cream}	=> {whole milk}	0.001830198	0.9000000	0.002033554	3.522284
## [244]	{butter,					
##	root vegetables,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001728521	0.8947368	0.001931876	3.501686
## [245]	{citrus fruit,					
##	cream cheese,					

##	domestic eggs}	=> {whole milk}	0.001626843	0.8888889	0.001830198	3.478799
## [246]	{margarine,					
##	rolls/buns,					
##	whipped/sour cream}	=> {whole milk}	0.001626843	0.8888889	0.001830198	3.478799
## [247]	{herbs,					
##	root vegetables,					
##	tropical fruit}	=> {whole milk}	0.001525165	0.8823529	0.001728521	3.453220
## [248]	{butter milk,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001525165	0.8823529	0.001728521	3.453220
## [249]	{citrus fruit,					
##	pastry,					
##	whipped/sour cream}	=> {whole milk}	0.001525165	0.8823529	0.001728521	3.453220
## [250]	{beef,					
##	other vegetables,					
##	rolls/buns,					
##	tropical fruit}	=> {whole milk}	0.001525165	0.8823529	0.001728521	3.453220
## [251]	{rice,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001423488	0.8750000	0.001626843	3.424443
## [252]	{butter,					
##	pork,					
##	whipped/sour cream}	=> {whole milk}	0.001423488	0.8750000	0.001626843	3.424443
## [253]	{brown bread,					
##	pip fruit,					
##	root vegetables}	=> {whole milk}	0.001423488	0.8750000	0.001626843	3.424443
## [254]	{frozen vegetables,					
##	margarine,					
##	rolls/buns}	=> {whole milk}	0.001321810	0.8666667	0.001525165	3.391829
## [255]	{butter,					
##	onions,					
##	other vegetables,					
##	root vegetables}	=> {whole milk}	0.001321810	0.8666667	0.001525165	3.391829
## [256]	{butter,					
##	other vegetables,					
##	pip fruit,					
##	whipped/sour cream}	=> {whole milk}	0.001321810	0.8666667	0.001525165	3.391829
## [257]	{fruit/vegetable juice,					
##	other vegetables,					
##	pip fruit,					
##	root vegetables}	=> {whole milk}	0.001321810	0.8666667	0.001525165	3.391829
## [258]	{bottled water,					
##	citrus fruit,					
##	other vegetables,					
##	tropical fruit}	=> {whole milk}	0.001321810	0.8666667	0.001525165	3.391829
## [259]	{other vegetables,					
##	pip fruit,					
##	root vegetables,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001321810	0.8666667	0.001525165	3.391829
## [260]	{mustard,					
##	oil}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [261]	{chocolate,					
##	pickled vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556

## [262]	{frozen fish,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [263]	{frozen fish,					
##	other vegetables,					
##	yogurt}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [264]	{curd,					
##	herbs,					
##	root vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [265]	{flour,					
##	other vegetables,					
##	sugar}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [266]	{butter,					
##	onions,					
##	tropical fruit}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [267]	{bottled water,					
##	butter,					
##	hygiene articles}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [268]	{citrus fruit,					
##	hygiene articles,					
##	root vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [269]	{hygiene articles,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [270]	{long life bakery product,					
##	napkins,					
##	other vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [271]	{cream cheese,					
##	domestic eggs,					
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [272]	{chicken,					
##	domestic eggs,					
##	sausage}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [273]	{butter,					
##	domestic eggs,					
##	pip fruit}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [274]	{bottled water,					
##	butter,					
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [275]	{long life bakery product,					
##	other vegetables,					
##	whipped/sour cream,					
##	yogurt}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [276]	{frozen vegetables,					
##	fruit/vegetable juice,					
##	other vegetables,					
##	root vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [277]	{curd,					
##	domestic eggs,					
##	other vegetables,					
##	root vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [278]	{citrus fruit,					
##	curd,					
##	other vegetables,					

##	yogurt}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [279]	{brown bread,					
##	citrus fruit,					
##	other vegetables,					
##	root vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [280]	{citrus fruit,					
##	domestic eggs,					
##	other vegetables,					
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [281]	{domestic eggs,					
##	other vegetables,					
##	pip fruit,					
##	root vegetables}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [282]	{pip fruit,					
##	root vegetables,					
##	soda,					
##	yogurt}	=> {whole milk}	0.001220132	0.8571429	0.001423488	3.354556
## [283]	{butter,					
##	onions,					
##	root vegetables}	=> {whole milk}	0.001728521	0.8500000	0.002033554	3.326602
## [284]	{other vegetables,					
##	pip fruit,					
##	root vegetables,					
##	whipped/sour cream}	=> {whole milk}	0.001728521	0.8500000	0.002033554	3.326602
## [285]	{domestic eggs,					
##	rice}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [286]	{baking powder,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [287]	{curd,					
##	frozen meals,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [288]	{frozen meals,					
##	root vegetables,					
##	tropical fruit}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [289]	{butter milk,					
##	sausage,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [290]	{curd,					
##	onions,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [291]	{butter,					
##	domestic eggs,					
##	onions}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [292]	{pip fruit,					
##	salty snack,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [293]	{citrus fruit,					
##	sugar,					
##	whipped/sour cream}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [294]	{butter,					
##	cream cheese,					
##	whipped/sour cream}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [295]	{cream cheese,					

##	domestic eggs,					
##	pip fruit}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [296]	{citrus fruit,					
##	frozen vegetables,					
##	napkins}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [297]	{bottled water,					
##	butter,					
##	napkins}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [298]	{butter,					
##	napkins,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [299]	{bottled beer,					
##	pork,					
##	rolls/buns}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [300]	{butter,					
##	other vegetables,					
##	pork}	=> {whole milk}	0.002236909	0.8461538	0.002643620	3.311549
## [301]	{cream cheese,					
##	curd,					
##	whipped/sour cream,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [302]	{citrus fruit,					
##	cream cheese,					
##	domestic eggs,					
##	other vegetables}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [303]	{citrus fruit,					
##	cream cheese,					
##	other vegetables,					
##	whipped/sour cream}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [304]	{brown bread,					
##	pip fruit,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [305]	{brown bread,					
##	other vegetables,					
##	soda,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [306]	{margarine,					
##	rolls/buns,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [307]	{margarine,					
##	other vegetables,					
##	rolls/buns,					
##	root vegetables}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [308]	{butter,					
##	root vegetables,					
##	whipped/sour cream,					
##	yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [309]	{beef,					
##	other vegetables,					
##	rolls/buns,					
##	root vegetables,					
##	tropical fruit}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549

## [310]	{butter, other vegetables, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.001118454	0.8461538	0.001321810	3.311549
## [311]	{rolls/buns, root vegetables, waffles}	=> {whole milk}	0.001626843	0.8421053	0.001931876	3.295704
## [312]	{citrus fruit, frozen vegetables, fruit/vegetable juice}	=> {whole milk}	0.001626843	0.8421053	0.001931876	3.295704
## [313]	{butter, domestic eggs, whipped/sour cream}	=> {whole milk}	0.001626843	0.8421053	0.001931876	3.295704
## [314]	{butter, jam}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [315]	{butter, rice}	=> {whole milk}	0.001525165	0.8333333	0.001830198	3.261374
## [316]	{other vegetables, rice, tropical fruit}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [317]	{domestic eggs, herbs, other vegetables}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [318]	{fruit/vegetable juice, herbs, other vegetables}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [319]	{herbs, tropical fruit, yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [320]	{herbs, rolls/buns, root vegetables}	=> {whole milk}	0.001525165	0.8333333	0.001830198	3.261374
## [321]	{detergent, other vegetables, whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [322]	{domestic eggs, root vegetables, soft cheese}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [323]	{frankfurter, sliced cheese, yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [324]	{oil, root vegetables, shopping bags}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [325]	{bottled water, butter, onions}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [326]	{berries, butter, whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [327]	{hamburger meat, root vegetables, whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374

## [328]	{hygiene articles, margarine, rolls/buns}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [329]	{butter, citrus fruit, hygiene articles}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [330]	{hygiene articles, tropical fruit, whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [331]	{long life bakery product, other vegetables, salty snack}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [332]	{butter, sugar, whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [333]	{long life bakery product, sausage, whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [334]	{cream cheese, pork, yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [335]	{cream cheese, frankfurter, yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [336]	{chocolate, domestic eggs, sausage}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [337]	{bottled beer, coffee, yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [338]	{beef, butter, curd}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [339]	{brown bread, domestic eggs, root vegetables}	=> {whole milk}	0.001525165	0.8333333	0.001830198	3.261374
## [340]	{bottled water, margarine, whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [341]	{herbs, other vegetables, rolls/buns, root vegetables}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [342]	{butter milk, other vegetables, root vegetables, yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [343]	{root vegetables, sliced cheese, tropical fruit, yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [344]	{pip fruit, root vegetables, white bread,					

##	yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [345]	{citrus fruit,					
##	frozen vegetables,					
##	fruit/vegetable juice,					
##	other vegetables}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [346]	{bottled water,					
##	frozen vegetables,					
##	other vegetables,					
##	root vegetables}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [347]	{curd,					
##	other vegetables,					
##	pip fruit,					
##	whipped/sour cream}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [348]	{frankfurter,					
##	other vegetables,					
##	pip fruit,					
##	root vegetables}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [349]	{domestic eggs,					
##	root vegetables,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001525165	0.8333333	0.001830198	3.261374
## [350]	{fruit/vegetable juice,					
##	other vegetables,					
##	root vegetables,					
##	yogurt}	=> {whole milk}	0.002033554	0.8333333	0.002440264	3.261374
## [351]	{citrus fruit,					
##	other vegetables,					
##	root vegetables,					
##	whipped/sour cream,					
##	yogurt}	=> {whole milk}	0.001016777	0.8333333	0.001220132	3.261374
## [352]	{hard cheese,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005
## [353]	{butter,					
##	hygiene articles,					
##	root vegetables}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005
## [354]	{curd,					
##	domestic eggs,					
##	other vegetables}	=> {whole milk}	0.002846975	0.8235294	0.003457041	3.223005
## [355]	{butter,					
##	napkins,					
##	whipped/sour cream}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005
## [356]	{butter,					
##	pork,					
##	yogurt}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005
## [357]	{domestic eggs,					
##	pip fruit,					
##	sausage}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005
## [358]	{beef,					
##	rolls/buns,					
##	root vegetables,					
##	tropical fruit}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005
## [359]	{frankfurter,					
##	other vegetables,					

##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005	
## [360]	{citrus fruit,						
##	other vegetables,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.001423488	0.8235294	0.001728521	3.223005	
## [361]	{herbs,						
##	tropical fruit}	=> {whole milk}	0.002338587	0.8214286	0.002846975	3.214783	
## [362]	{citrus fruit,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.002338587	0.8214286	0.002846975	3.214783	
## [363]	{other vegetables,						
##	rice,						
##	root vegetables}	=> {whole milk}	0.001830198	0.8181818	0.002236909	3.202076	
## [364]	{curd,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.001830198	0.8181818	0.002236909	3.202076	
## [365]	{rolls/buns,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.002236909	0.8148148	0.002745297	3.188899	
## [366]	{house keeping products,						
##	napkins}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [367]	{other vegetables,						
##	specialty cheese,						
##	yogurt}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [368]	{citrus fruit,						
##	herbs,						
##	root vegetables}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [369]	{herbs,						
##	other vegetables,						
##	tropical fruit}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [370]	{butter,						
##	hard cheese,						
##	yogurt}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [371]	{butter milk,						
##	dessert,						
##	yogurt}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [372]	{butter,						
##	onions,						
##	yogurt}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [373]	{hygiene articles,						
##	pip fruit,						
##	sausage}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [374]	{bottled water,						
##	other vegetables,						
##	sugar}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [375]	{cream cheese,						
##	domestic eggs,						
##	yogurt}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840	
## [376]	{root vegetables,						
##	whipped/sour cream,						

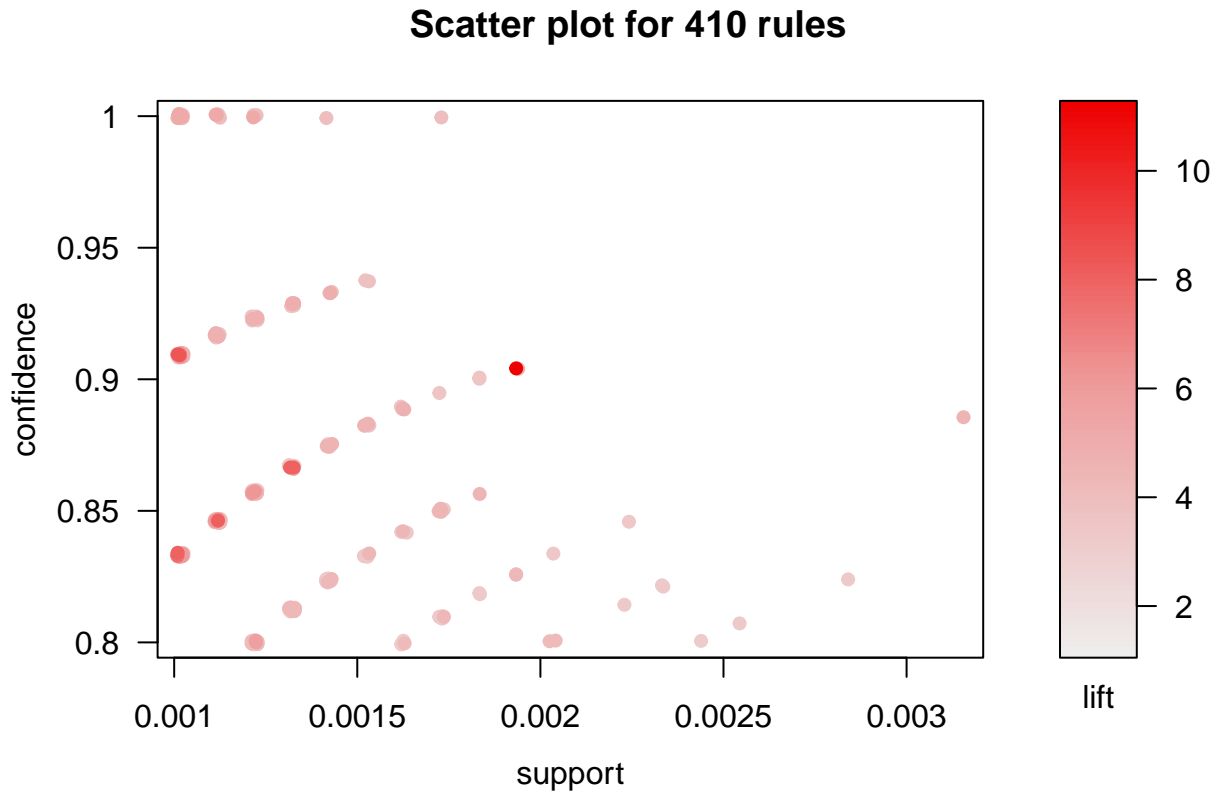
##	white bread}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [377]	{frozen vegetables,					
##	napkins,					
##	other vegetables}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [378]	{beef,					
##	tropical fruit,					
##	whipped/sour cream}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [379]	{curd,					
##	margarine,					
##	rolls/buns}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [380]	{domestic eggs,					
##	napkins,					
##	tropical fruit}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [381]	{bottled water,					
##	butter,					
##	pip fruit}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [382]	{domestic eggs,					
##	pastry,					
##	tropical fruit}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [383]	{frozen vegetables,					
##	other vegetables,					
##	root vegetables,					
##	whipped/sour cream}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [384]	{other vegetables,					
##	pip fruit,					
##	root vegetables,					
##	soda}	=> {whole milk}	0.001321810	0.8125000	0.001626843	3.179840
## [385]	{cereals,					
##	yogurt}	=> {whole milk}	0.001728521	0.8095238	0.002135231	3.168192
## [386]	{bottled beer,					
##	hamburger meat}	=> {whole milk}	0.001728521	0.8095238	0.002135231	3.168192
## [387]	{rolls/buns,					
##	waffles,					
##	whipped/sour cream}	=> {whole milk}	0.001728521	0.8095238	0.002135231	3.168192
## [388]	{long life bakery product,					
##	whipped/sour cream,					
##	yogurt}	=> {whole milk}	0.001728521	0.8095238	0.002135231	3.168192
## [389]	{butter,					
##	pip fruit,					
##	root vegetables}	=> {whole milk}	0.001728521	0.8095238	0.002135231	3.168192
## [390]	{curd,					
##	hamburger meat}	=> {whole milk}	0.002541942	0.8064516	0.003152008	3.156169
## [391]	{herbs,					
##	rolls/buns}	=> {whole milk}	0.002440264	0.8000000	0.003050330	3.130919
## [392]	{butter,					
##	soft cheese,					
##	yogurt}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919
## [393]	{frankfurter,					
##	frozen meals,					
##	other vegetables}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919
## [394]	{frozen meals,					
##	tropical fruit,					
##	yogurt}	=> {whole milk}	0.001626843	0.8000000	0.002033554	3.130919
## [395]	{curd,					

##	hamburger meat,						
##	other vegetables}	=> {whole milk}	0.001626843	0.8000000	0.002033554	3.130919	
##	[396] {butter,						
##	hamburger meat,						
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[397] {hygiene articles,						
##	napkins,						
##	tropical fruit}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[398] {butter,						
##	chicken,						
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[399] {chocolate,						
##	napkins,						
##	root vegetables}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[400] {butter,						
##	curd,						
##	pip fruit}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[401] {bottled beer,						
##	napkins,						
##	rolls/buns}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[402] {domestic eggs,						
##	margarine,						
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[403] {butter,						
##	citrus fruit,						
##	tropical fruit}	=> {whole milk}	0.001626843	0.8000000	0.002033554	3.130919	
##	[404] {pip fruit,						
##	sausage,						
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[405] {chicken,						
##	domestic eggs,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[406] {butter,						
##	curd,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[407] {butter,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[408] {butter,						
##	other vegetables,						
##	rolls/buns,						
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[409] {citrus fruit,						
##	other vegetables,						
##	sausage,						
##	whipped/sour cream}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	
##	[410] {citrus fruit,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.001220132	0.8000000	0.001525165	3.130919	

Plotting various graphs for the rules

```
plot(pd_rules)
```

```
## To reduce overplotting, jitter is added! Use jitter = 0 to prevent jitter.
```



```
plot(pd_rules,method="grouped", jitter = 0)
```

```
## Warning: Unknown control parameters: jitter
```

```
## Available control parameters (with default values):
```

```
## main = Grouped Matrix for 410 Rules
```

```
## k = 20
```

```
## rhs_max = 10
```

```
## lhs_items = 2
```

```
## aggr.fun = function(x, ...) UseMethod("mean")
```

```
## col = c("#EE0000FF", "#EE0303FF", "#EE0606FF", "#EE0909FF", "#EE0C0CFF", "#EE0F0FFF", "#EE1212FF")
```

```
## reverse = TRUE
```

```
## xlab = NULL
```

```
## ylab = NULL
```

```
## legend = Size: support Color: lift
```

```
## spacing = -1
```

```
## panel.function = function(row, size, shading, spacing) { size[size == 0] <- NA shading
```

```
## gp_main = list(cex = 1.2, fontface = "bold", font = c(bold = 2))
```

```
## gp_labels = list(cex = 0.8)
```

```
## gp_labs = list(cex = 1.2, fontface = "bold", font = c(bold = 2))
```

```
## gp_lines = list(col = "gray", lty = 3)
```



```
## newpage = TRUE
## max.shading = NA
## engine = default
## verbose = FALSE
```

Grouped Matrix for 410 Rules

Items in LHS Group

1 rules: {liquor, red/blush wine}
 5 rules: {oil, soda, +8 items}
 2 rules: {ham, grapes, +5 items}
 14 rules: {sliced cheese, margarine, +16 items}
 2 rules: {white bread, butter, +1 items}
 8 rules: {ham, newspapers, +14 items}
 2 rules: {cream cheese, butter, +1 items}
 33 rules: {whole milk, dessert, +27 items}
 31 rules: {meat, newspapers, +30 items}
 47 rules: {turkey, candy, +41 items}
 19 rules: {canned fish, flour, +23 items}
 28 rules: {white bread, soft cheese, +17 items}
 57 rules: {soups, sweet spreads, +38 items}
 10 rules: {butter milk, beef, +15 items}
 29 rules: {mustard, pickled vegetables, +30 items}
 31 rules: {baking powder, frozen meals, +29 items}
 36 rules: {detergent, jam, +37 items}
 13 rules: {hard cheese, frankfurter, +18 items}
 23 rules: {specialty cheese, cereals, +30 items}
 19 rules: {chicken, hamburger meat, +21 items}

Size: support
 Color: lift

RHS

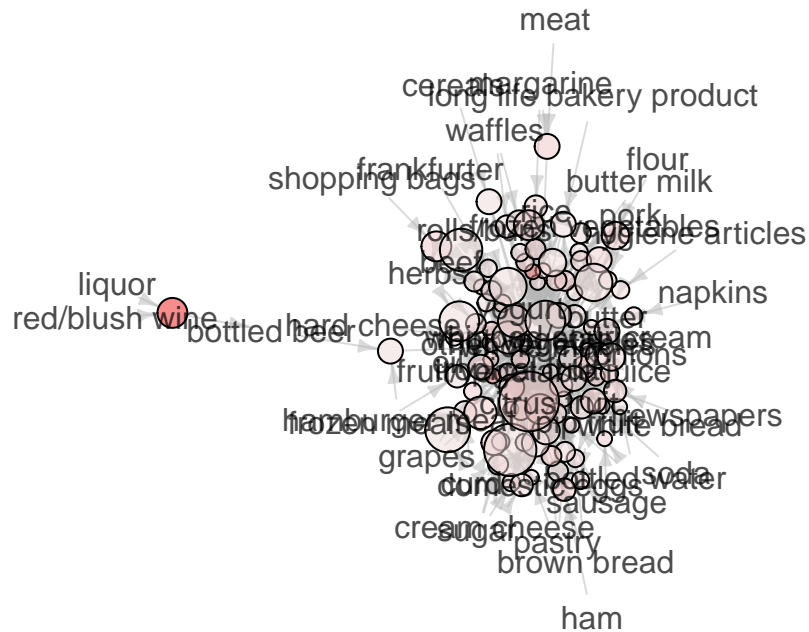
{bottled beer}
 {root vegetables}
 {fruit cap fruit}
 {detergent}
 {root vegetables}
 {whole milk}

```
plot(pd_rules,method="graph")
```

```
## Warning: plot: Too many rules supplied. Only plotting the best 100 rules using
## 'support' (change control parameter max if needed)
```

Graph for 100 rules

size: support (0.001 – 0.003)
color: lift (3.131 – 11.235)

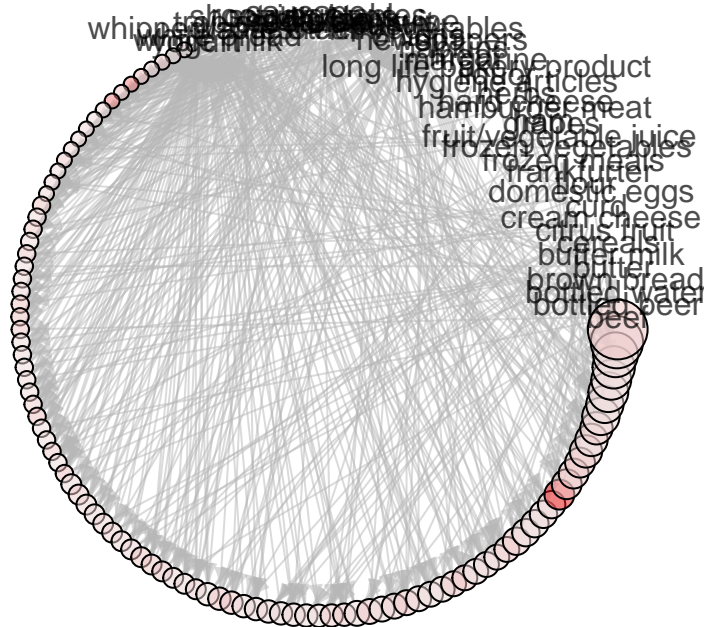


```
plot(pd_rules, method="graph", control=list(layout=igraph::in_circle()))
```

```
## Warning: plot: Too many rules supplied. Only plotting the best 100 rules using
## 'support' (change control parameter max if needed)
```

Graph for 100 rules

size: support (0.001 – 0.003)
color: lift (3.131 – 11.235)



Sorting the rules by confidence value

```
rules = sort(pd_rules, by = "confidence")
options(digits = 2)
inspect(rules)
```

	lhs	rhs	support	confidence	coverage	lift	count
## [1]	{rice,	=> {whole milk}	0.0012	1.00	0.0012	3.9	12
##	sugar}						
## [2]	{canned fish,	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
##	hygiene articles}						
## [3]	{butter,	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
##	rice,						
##	root vegetables}						
## [4]	{flour,	=> {whole milk}	0.0017	1.00	0.0017	3.9	17
##	root vegetables,						
##	whipped/sour cream}						
## [5]	{butter,	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
##	domestic eggs,						
##	soft cheese}						
## [6]	{citrus fruit,	=> {other vegetables}	0.0010	1.00	0.0010	5.2	10
##	root vegetables,						
##	soft cheese}						
## [7]	{butter,	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
##	hygiene articles,						
##	pip fruit}						
## [8]	{hygiene articles,						

##	root vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [9]	{hygiene articles,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [10]	{cream cheese,						
##	domestic eggs,						
##	sugar}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [11]	{curd,						
##	domestic eggs,						
##	sugar}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [12]	{cream cheese,						
##	domestic eggs,						
##	napkins}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [13]	{brown bread,						
##	pip fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0011	1.00	0.0011	5.2	11
## [14]	{grapes,						
##	tropical fruit,						
##	whole milk,						
##	yogurt}	=> {other vegetables}	0.0010	1.00	0.0010	5.2	10
## [15]	{ham,						
##	pip fruit,						
##	tropical fruit,						
##	yogurt}	=> {other vegetables}	0.0010	1.00	0.0010	5.2	10
## [16]	{ham,						
##	pip fruit,						
##	tropical fruit,						
##	whole milk}	=> {other vegetables}	0.0011	1.00	0.0011	5.2	11
## [17]	{oil,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [18]	{oil,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0014	1.00	0.0014	3.9	14
## [19]	{butter,						
##	other vegetables,						
##	root vegetables,						
##	white bread}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [20]	{butter,						
##	other vegetables,						
##	pork,						
##	whipped/sour cream}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [21]	{butter,						
##	domestic eggs,						
##	other vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0012	1.00	0.0012	3.9	12
## [22]	{butter,						
##	fruit/vegetable juice,						
##	tropical fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0010	1.00	0.0010	5.2	10
## [23]	{newspapers,						

##	rolls/buns,						
##	soda,						
##	whole milk}	=> {other vegetables}	0.0010	1.00	0.0010	5.2	10
## [24]	{citrus fruit,						
##	pastry,						
##	rolls/buns,						
##	whipped/sour cream}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [25]	{citrus fruit,						
##	root vegetables,						
##	tropical fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0012	1.00	0.0012	5.2	12
## [26]	{bottled water,						
##	other vegetables,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [27]	{rolls/buns,						
##	root vegetables,						
##	sausage,						
##	tropical fruit}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [28]	{oil,						
##	other vegetables,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [29]	{cream cheese,						
##	other vegetables,						
##	sugar}	=> {whole milk}	0.0015	0.94	0.0016	3.7	15
## [30]	{root vegetables,						
##	sausage,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0015	0.94	0.0016	3.7	15
## [31]	{citrus fruit,						
##	domestic eggs,						
##	sugar}	=> {whole milk}	0.0014	0.93	0.0015	3.7	14
## [32]	{domestic eggs,						
##	sugar,						
##	yogurt}	=> {whole milk}	0.0014	0.93	0.0015	3.7	14
## [33]	{oil,						
##	root vegetables,						
##	whole milk,						
##	yogurt}	=> {other vegetables}	0.0014	0.93	0.0015	4.8	14
## [34]	{citrus fruit,						
##	root vegetables,						
##	tropical fruit,						
##	whole milk,						
##	yogurt}	=> {other vegetables}	0.0014	0.93	0.0015	4.8	14
## [35]	{cream cheese,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0013	0.93	0.0014	3.6	13
## [36]	{butter,						
##	soda,						
##	whipped/sour cream}	=> {other vegetables}	0.0013	0.93	0.0014	4.8	13
## [37]	{butter,						
##	pastry,						

##	pip fruit}	=> {other vegetables}	0.0013	0.93	0.0014	4.8	13
## [38]	{other vegetables,						
##	rice,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0013	0.93	0.0014	3.6	13
## [39]	{rice,						
##	root vegetables,						
##	whole milk,						
##	yogurt}	=> {other vegetables}	0.0013	0.93	0.0014	4.8	13
## [40]	{beef,						
##	rolls/buns,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0013	0.93	0.0014	3.6	13
## [41]	{house keeping products,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [42]	{bottled water,						
##	rice}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [43]	{soft cheese,						
##	tropical fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0012	0.92	0.0013	4.8	12
## [44]	{root vegetables,						
##	soft cheese,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [45]	{butter,						
##	sliced cheese,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [46]	{butter,						
##	hygiene articles,						
##	tropical fruit}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [47]	{domestic eggs,						
##	hygiene articles,						
##	tropical fruit}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [48]	{root vegetables,						
##	sugar,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [49]	{long life bakery product,						
##	napkins,						
##	tropical fruit}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [50]	{citrus fruit,						
##	cream cheese,						
##	root vegetables}	=> {other vegetables}	0.0012	0.92	0.0013	4.8	12
## [51]	{butter,						
##	coffee,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [52]	{hard cheese,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [53]	{frankfurter,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [54]	{brown bread,						
##	other vegetables,						

##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [55]	{butter,						
##	domestic eggs,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [56]	{domestic eggs,						
##	other vegetables,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [57]	{citrus fruit,						
##	domestic eggs,						
##	whipped/sour cream,						
##	whole milk}	=> {other vegetables}	0.0012	0.92	0.0013	4.8	12
## [58]	{bottled beer,						
##	soups}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [59]	{grapes,						
##	onions}	=> {other vegetables}	0.0011	0.92	0.0012	4.7	11
## [60]	{hard cheese,						
##	oil}	=> {other vegetables}	0.0011	0.92	0.0012	4.7	11
## [61]	{citrus fruit,						
##	herbs,						
##	tropical fruit}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [62]	{domestic eggs,						
##	sugar,						
##	tropical fruit}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [63]	{dessert,						
##	tropical fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0011	0.92	0.0012	4.7	11
## [64]	{butter,						
##	root vegetables,						
##	white bread}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [65]	{butter,						
##	curd,						
##	domestic eggs}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [66]	{butter,						
##	citrus fruit,						
##	curd}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [67]	{domestic eggs,						
##	fruit/vegetable juice,						
##	margarine}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [68]	{citrus fruit,						
##	cream cheese,						
##	whipped/sour cream,						
##	whole milk}	=> {other vegetables}	0.0011	0.92	0.0012	4.7	11
## [69]	{cream cheese,						
##	other vegetables,						
##	pip fruit,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [70]	{curd,						
##	domestic eggs,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [71]	{butter,						

##	domestic eggs,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [72]	{domestic eggs,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [73]	{domestic eggs,						
##	other vegetables,						
##	tropical fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [74]	{fruit/vegetable juice,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {other vegetables}	0.0011	0.92	0.0012	4.7	11
## [75]	{fruit/vegetable juice,						
##	pip fruit,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [76]	{bottled water,						
##	rolls/buns,						
##	root vegetables,						
##	tropical fruit}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [77]	{cereals,						
##	curd}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [78]	{pastry,						
##	sweet spreads}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [79]	{fruit/vegetable juice,						
##	herbs,						
##	whole milk}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [80]	{frankfurter,						
##	frozen meals,						
##	tropical fruit}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [81]	{frankfurter,						
##	frozen meals,						
##	tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [82]	{butter,						
##	frozen meals,						
##	tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [83]	{hard cheese,						
##	tropical fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [84]	{butter milk,						
##	pork,						
##	whole milk}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [85]	{butter milk,						
##	fruit/vegetable juice,						
##	pip fruit}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [86]	{frankfurter,						
##	root vegetables,						
##	sliced cheese}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [87]	{coffee,						
##	oil,						
##	yogurt}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10

## [88]	{napkins, onions, root vegetables}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [89]	{berries, butter, sausage}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [90]	{hamburger meat, tropical fruit, whipped/sour cream}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [91]	{butter, hygiene articles, napkins}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [92]	{pork, rolls/buns, waffles}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [93]	{long life bakery product, napkins, whipped/sour cream}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [94]	{butter, long life bakery product, sausage}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [95]	{butter, cream cheese, root vegetables}	=> {yogurt}	0.0010	0.91	0.0011	6.5	10
## [96]	{butter, cream cheese, root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [97]	{cream cheese, pip fruit, sausage}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [98]	{coffee, domestic eggs, root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [99]	{bottled beer, domestic eggs, margarine}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [100]	{herbs, other vegetables, root vegetables, tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [101]	{frozen meals, pip fruit, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [102]	{butter, sliced cheese, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [103]	{butter, sliced cheese, tropical fruit, whole milk}	=> {yogurt}	0.0010	0.91	0.0011	6.5	10
## [104]	{oil, root vegetables,						

##	tropical fruit,						
##	yogurt}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [105]	{other vegetables,						
##	root vegetables,						
##	waffles,						
##	yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [106]	{cream cheese,						
##	curd,						
##	other vegetables,						
##	whipped/sour cream}	=> {yogurt}	0.0010	0.91	0.0011	6.5	10
## [107]	{cream cheese,						
##	other vegetables,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [108]	{butter,						
##	tropical fruit,						
##	white bread,						
##	yogurt}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [109]	{butter,						
##	other vegetables,						
##	tropical fruit,						
##	white bread}	=> {yogurt}	0.0010	0.91	0.0011	6.5	10
## [110]	{butter,						
##	root vegetables,						
##	white bread,						
##	whole milk}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [111]	{citrus fruit,						
##	frozen vegetables,						
##	other vegetables,						
##	yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [112]	{citrus fruit,						
##	curd,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [113]	{butter,						
##	napkins,						
##	other vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [114]	{butter,						
##	other vegetables,						
##	pork,						
##	root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [115]	{brown bread,						
##	other vegetables,						
##	rolls/buns,						
##	root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [116]	{butter,						
##	soda,						
##	whipped/sour cream,						
##	whole milk}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [117]	{bottled water,						
##	butter,						
##	citrus fruit,						
##	other vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10

## [118]	{citrus fruit, domestic eggs, other vegetables, tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [119]	{fruit/vegetable juice, tropical fruit, whipped/sour cream, whole milk}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [120]	{citrus fruit, fruit/vegetable juice, other vegetables, soda}	=> {root vegetables}	0.0010	0.91	0.0011	8.3	10
## [121]	{pastry, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [122]	{oil, root vegetables, tropical fruit, whole milk, yogurt}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [123]	{oil, other vegetables, tropical fruit, whole milk, yogurt}	=> {root vegetables}	0.0010	0.91	0.0011	8.3	10
## [124]	{butter, domestic eggs, other vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [125]	{citrus fruit, root vegetables, whipped/sour cream, whole milk, yogurt}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [126]	{liquor, red/blush wine}	=> {bottled beer}	0.0019	0.90	0.0021	11.2	19
## [127]	{fruit/vegetable juice, tropical fruit, whipped/sour cream}	=> {other vegetables}	0.0019	0.90	0.0021	4.7	19
## [128]	{butter, pip fruit, whipped/sour cream}	=> {whole milk}	0.0018	0.90	0.0020	3.5	18
## [129]	{domestic eggs, tropical fruit, whipped/sour cream}	=> {whole milk}	0.0018	0.90	0.0020	3.5	18
## [130]	{butter, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0017	0.89	0.0019	3.5	17
## [131]	{ham, pip fruit, tropical fruit}	=> {other vegetables}	0.0016	0.89	0.0018	4.6	16

## [132]	{onions, root vegetables, tropical fruit}	=> {other vegetables}	0.0016	0.89	0.0018	4.6	16
## [133]	{citrus fruit, cream cheese, domestic eggs}	=> {whole milk}	0.0016	0.89	0.0018	3.5	16
## [134]	{margarine, rolls/buns, whipped/sour cream}	=> {whole milk}	0.0016	0.89	0.0018	3.5	16
## [135]	{citrus fruit, root vegetables, tropical fruit, whole milk}	=> {other vegetables}	0.0032	0.89	0.0036	4.6	31
## [136]	{herbs, root vegetables, tropical fruit}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [137]	{butter milk, root vegetables, yogurt}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [138]	{citrus fruit, pastry, whipped/sour cream}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [139]	{citrus fruit, pastry, root vegetables}	=> {other vegetables}	0.0015	0.88	0.0017	4.6	15
## [140]	{frozen vegetables, whipped/sour cream, whole milk, yogurt}	=> {other vegetables}	0.0015	0.88	0.0017	4.6	15
## [141]	{frozen vegetables, root vegetables, whole milk, yogurt}	=> {other vegetables}	0.0015	0.88	0.0017	4.6	15
## [142]	{beef, other vegetables, rolls/buns, tropical fruit}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [143]	{rice, root vegetables, yogurt}	=> {other vegetables}	0.0014	0.88	0.0016	4.5	14
## [144]	{rice, root vegetables, yogurt}	=> {whole milk}	0.0014	0.88	0.0016	3.4	14
## [145]	{cream cheese, tropical fruit, whipped/sour cream}	=> {other vegetables}	0.0014	0.88	0.0016	4.5	14
## [146]	{root vegetables, whipped/sour cream, white bread}	=> {other vegetables}	0.0014	0.88	0.0016	4.5	14
## [147]	{beef, tropical fruit, whipped/sour cream}	=> {other vegetables}	0.0014	0.88	0.0016	4.5	14
## [148]	{butter, pork,						

##	whipped/sour cream}	=> {whole milk}	0.0014	0.88	0.0016	3.4	14
## [149]	{brown bread,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0014	0.88	0.0016	3.4	14
## [150]	{frozen vegetables,						
##	onions,						
##	root vegetables}	=> {other vegetables}	0.0013	0.87	0.0015	4.5	13
## [151]	{frozen vegetables,						
##	margarine,						
##	rolls/buns}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [152]	{other vegetables,						
##	rice,						
##	whole milk,						
##	yogurt}	=> {root vegetables}	0.0013	0.87	0.0015	8.0	13
## [153]	{oil,						
##	root vegetables,						
##	tropical fruit,						
##	whole milk}	=> {other vegetables}	0.0013	0.87	0.0015	4.5	13
## [154]	{oil,						
##	other vegetables,						
##	tropical fruit,						
##	whole milk}	=> {root vegetables}	0.0013	0.87	0.0015	8.0	13
## [155]	{butter,						
##	onions,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [156]	{butter,						
##	other vegetables,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [157]	{fruit/vegetable juice,						
##	other vegetables,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [158]	{bottled water,						
##	citrus fruit,						
##	other vegetables,						
##	tropical fruit}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [159]	{other vegetables,						
##	pip fruit,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [160]	{mustard,						
##	oil}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [161]	{chocolate,						
##	pickled vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [162]	{butter milk,						
##	pork}	=> {other vegetables}	0.0018	0.86	0.0021	4.4	18
## [163]	{frozen fish,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [164]	{frozen fish,						
##	other vegetables,						

##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [165]	{curd,						
##	herbs,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [166]	{flour,						
##	other vegetables,						
##	sugar}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [167]	{meat,						
##	root vegetables,						
##	yogurt}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [168]	{butter milk,						
##	pip fruit,						
##	root vegetables}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [169]	{pip fruit,						
##	sausage,						
##	sliced cheese}	=> {yogurt}	0.0012	0.86	0.0014	6.1	12
## [170]	{fruit/vegetable juice,						
##	oil,						
##	tropical fruit}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [171]	{butter,						
##	onions,						
##	tropical fruit}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [172]	{bottled water,						
##	butter,						
##	hygiene articles}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [173]	{citrus fruit,						
##	hygiene articles,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [174]	{hygiene articles,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [175]	{root vegetables,						
##	salty snack,						
##	yogurt}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [176]	{long life bakery product,						
##	napkins,						
##	other vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [177]	{cream cheese,						
##	domestic eggs,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [178]	{chicken,						
##	domestic eggs,						
##	sausage}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [179]	{butter,						
##	domestic eggs,						
##	pip fruit}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [180]	{bottled water,						
##	butter,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [181]	{domestic eggs,						
##	pastry,						
##	whipped/sour cream}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [182]	{domestic eggs,						
##	pastry,						

##	root vegetables}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [183]	{long life bakery product,						
##	other vegetables,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [184]	{frozen vegetables,						
##	fruit/vegetable juice,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [185]	{butter,						
##	curd,						
##	tropical fruit,						
##	whole milk}	=> {yogurt}	0.0012	0.86	0.0014	6.1	12
## [186]	{curd,						
##	domestic eggs,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [187]	{citrus fruit,						
##	curd,						
##	other vegetables,						
##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [188]	{brown bread,						
##	pip fruit,						
##	root vegetables,						
##	whole milk}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [189]	{brown bread,						
##	citrus fruit,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [190]	{citrus fruit,						
##	domestic eggs,						
##	other vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [191]	{domestic eggs,						
##	other vegetables,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [192]	{citrus fruit,						
##	domestic eggs,						
##	root vegetables,						
##	whole milk}	=> {other vegetables}	0.0012	0.86	0.0014	4.4	12
## [193]	{pip fruit,						
##	root vegetables,						
##	soda,						
##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [194]	{margarine,						
##	meat}	=> {other vegetables}	0.0017	0.85	0.0020	4.4	17
## [195]	{oil,						
##	root vegetables,						
##	tropical fruit}	=> {other vegetables}	0.0017	0.85	0.0020	4.4	17
## [196]	{butter,						
##	onions,						
##	root vegetables}	=> {whole milk}	0.0017	0.85	0.0020	3.3	17
## [197]	{cream cheese,						

##	curd,						
##	root vegetables}	=> {other vegetables}	0.0017	0.85	0.0020	4.4	17
## [198]	{tropical fruit,						
##	whipped/sour cream,						
##	white bread}	=> {other vegetables}	0.0017	0.85	0.0020	4.4	17
## [199]	{other vegetables,						
##	pip fruit,						
##	root vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0017	0.85	0.0020	3.3	17
## [200]	{domestic eggs,						
##	rice}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [201]	{frozen fish,						
##	pip fruit,						
##	whole milk}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [202]	{herbs,						
##	root vegetables,						
##	shopping bags}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [203]	{baking powder,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [204]	{citrus fruit,						
##	fruit/vegetable juice,						
##	grapes}	=> {tropical fruit}	0.0011	0.85	0.0013	8.1	11
## [205]	{curd,						
##	frozen meals,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [206]	{frozen meals,						
##	root vegetables,						
##	tropical fruit}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [207]	{butter milk,						
##	sausage,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [208]	{citrus fruit,						
##	fruit/vegetable juice,						
##	oil}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [209]	{curd,						
##	onions,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [210]	{butter,						
##	domestic eggs,						
##	onions}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [211]	{pip fruit,						
##	salty snack,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [212]	{beef,						
##	root vegetables,						
##	sugar}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [213]	{citrus fruit,						
##	sugar,						
##	whipped/sour cream}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [214]	{long life bakery product,						
##	root vegetables,						
##	tropical fruit}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [215]	{butter,						

##	cream cheese,						
##	whipped/sour cream}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [216]	{cream cheese,						
##	domestic eggs,						
##	pip fruit}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [217]	{butter,						
##	tropical fruit,						
##	white bread}	=> {yogurt}	0.0011	0.85	0.0013	6.1	11
## [218]	{butter,						
##	tropical fruit,						
##	white bread}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [219]	{citrus fruit,						
##	frozen vegetables,						
##	napkins}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [220]	{bottled water,						
##	butter,						
##	napkins}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [221]	{butter,						
##	napkins,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [222]	{bottled beer,						
##	pork,						
##	rolls/buns}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [223]	{butter,						
##	other vegetables,						
##	pork}	=> {whole milk}	0.0022	0.85	0.0026	3.3	22
## [224]	{pip fruit,						
##	pork,						
##	soda}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [225]	{butter,						
##	margarine,						
##	tropical fruit}	=> {yogurt}	0.0011	0.85	0.0013	6.1	11
## [226]	{pastry,						
##	root vegetables,						
##	shopping bags}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [227]	{cream cheese,						
##	curd,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [228]	{cream cheese,						
##	curd,						
##	whipped/sour cream,						
##	whole milk}	=> {yogurt}	0.0011	0.85	0.0013	6.1	11
## [229]	{citrus fruit,						
##	cream cheese,						
##	domestic eggs,						
##	other vegetables}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [230]	{citrus fruit,						
##	cream cheese,						
##	other vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [231]	{root vegetables,						
##	whipped/sour cream,						
##	white bread,						

##	whole milk}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[232] {beef,						
##	tropical fruit,						
##	whipped/sour cream,						
##	whole milk}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[233] {citrus fruit,						
##	curd,						
##	root vegetables,						
##	whole milk}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[234] {brown bread,						
##	pip fruit,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
##	[235] {brown bread,						
##	other vegetables,						
##	soda,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
##	[236] {margarine,						
##	rolls/buns,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
##	[237] {margarine,						
##	other vegetables,						
##	rolls/buns,						
##	root vegetables}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
##	[238] {butter,						
##	domestic eggs,						
##	tropical fruit,						
##	yogurt}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[239] {butter,						
##	root vegetables,						
##	tropical fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[240] {butter,						
##	root vegetables,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
##	[241] {newspapers,						
##	soda,						
##	tropical fruit,						
##	whole milk}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[242] {fruit/vegetable juice,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[243] {citrus fruit,						
##	rolls/buns,						
##	root vegetables,						
##	tropical fruit}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
##	[244] {beef,						
##	other vegetables,						
##	rolls/buns,						
##	root vegetables,						
##	tropical fruit}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11

## [245]	{butter, other vegetables, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [246]	{rolls/buns, root vegetables, waffles}	=> {whole milk}	0.0016	0.84	0.0019	3.3	16
## [247]	{citrus fruit, frozen vegetables, fruit/vegetable juice}	=> {whole milk}	0.0016	0.84	0.0019	3.3	16
## [248]	{butter, domestic eggs, whipped/sour cream}	=> {whole milk}	0.0016	0.84	0.0019	3.3	16
## [249]	{citrus fruit, newspapers, root vegetables}	=> {other vegetables}	0.0016	0.84	0.0019	4.4	16
## [250]	{butter, jam}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [251]	{butter, rice}	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
## [252]	{other vegetables, rice, tropical fruit}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [253]	{rice, whole milk, yogurt}	=> {other vegetables}	0.0015	0.83	0.0018	4.3	15
## [254]	{frozen fish, pip fruit, tropical fruit}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [255]	{domestic eggs, herbs, other vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [256]	{fruit/vegetable juice, herbs, other vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [257]	{citrus fruit, herbs, tropical fruit}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [258]	{herbs, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [259]	{herbs, rolls/buns, root vegetables}	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
## [260]	{detergent, other vegetables, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [261]	{flour, rolls/buns, root vegetables}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [262]	{domestic eggs, root vegetables, soft cheese}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10

## [263]	{domestic eggs, root vegetables, soft cheese}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [264]	{grapes, pork, whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [265]	{meat, tropical fruit, whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [266]	{candy, rolls/buns, root vegetables}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [267]	{frozen vegetables, ham, whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [268]	{frankfurter, sliced cheese, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [269]	{oil, root vegetables, shopping bags}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [270]	{bottled water, butter, onions}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [271]	{berries, butter, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [272]	{hamburger meat, root vegetables, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [273]	{hygiene articles, margarine, rolls/buns}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [274]	{butter, citrus fruit, hygiene articles}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [275]	{hygiene articles, tropical fruit, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [276]	{long life bakery product, other vegetables, salty snack}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [277]	{butter, sugar, whipped/sour cream}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [278]	{butter, sugar, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [279]	{long life bakery product, sausage, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [280]	{dessert, sausage, whipped/sour cream}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10

## [281]	{cream cheese, pork, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [282]	{cream cheese, frankfurter, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [283]	{cream cheese, margarine, whipped/sour cream}	=> {yogurt}	0.0010	0.83	0.0012	6.0	10
## [284]	{chicken, pastry, root vegetables}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [285]	{butter, root vegetables, white bread}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [286]	{chocolate, domestic eggs, sausage}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [287]	{bottled beer, coffee, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [288]	{beef, butter, curd}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [289]	{beef, butter, tropical fruit}	=> {yogurt}	0.0010	0.83	0.0012	6.0	10
## [290]	{butter, curd, domestic eggs}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [291]	{fruit/vegetable juice, pork, tropical fruit}	=> {yogurt}	0.0010	0.83	0.0012	6.0	10
## [292]	{brown bread, domestic eggs, root vegetables}	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
## [293]	{brown bread, sausage, whipped/sour cream}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [294]	{bottled water, margarine, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [295]	{herbs, other vegetables, rolls/buns, root vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [296]	{hard cheese, root vegetables, whipped/sour cream, whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [297]	{butter milk, other vegetables, root vegetables, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10

## [298]	{ham, other vegetables, pip fruit, yogurt}	=> {tropical fruit}	0.0010	0.83	0.0012	7.9	10
## [299]	{root vegetables, sliced cheese, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [300]	{onions, root vegetables, tropical fruit, whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [301]	{butter, white bread, whole milk, yogurt}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [302]	{pip fruit, root vegetables, white bread, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [303]	{citrus fruit, frozen vegetables, fruit/vegetable juice, other vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [304]	{bottled water, frozen vegetables, other vegetables, root vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [305]	{bottled water, frozen vegetables, root vegetables, whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [306]	{beef, citrus fruit, root vegetables, tropical fruit}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
## [307]	{beef, citrus fruit, other vegetables, tropical fruit}	=> {root vegetables}	0.0010	0.83	0.0012	7.6	10
## [308]	{butter, curd, other vegetables, tropical fruit}	=> {yogurt}	0.0010	0.83	0.0012	6.0	10
## [309]	{curd, other vegetables, pip fruit, whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [310]	{frankfurter, other vegetables, pip fruit, root vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [311]	{frankfurter, pip fruit,						

##	root vegetables,						
##	whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
##	[312] {margarine,						
##	root vegetables,						
##	tropical fruit,						
##	whole milk}	=> {yogurt}	0.0010	0.83	0.0012	6.0	10
##	[313] {citrus fruit,						
##	newspapers,						
##	root vegetables,						
##	whole milk}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
##	[314] {domestic eggs,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
##	[315] {fruit/vegetable juice,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0020	0.83	0.0024	3.3	20
##	[316] {butter,						
##	domestic eggs,						
##	tropical fruit,						
##	whole milk,						
##	yogurt}	=> {other vegetables}	0.0010	0.83	0.0012	4.3	10
##	[317] {citrus fruit,						
##	other vegetables,						
##	root vegetables,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
##	[318] {rice,						
##	yogurt}	=> {other vegetables}	0.0019	0.83	0.0023	4.3	19
##	[319] {herbs,						
##	shopping bags}	=> {other vegetables}	0.0019	0.83	0.0023	4.3	19
##	[320] {grapes,						
##	tropical fruit,						
##	yogurt}	=> {other vegetables}	0.0014	0.82	0.0017	4.3	14
##	[321] {hard cheese,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
##	[322] {citrus fruit,						
##	onions,						
##	root vegetables}	=> {other vegetables}	0.0014	0.82	0.0017	4.3	14
##	[323] {butter,						
##	hygiene articles,						
##	root vegetables}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
##	[324] {curd,						
##	domestic eggs,						
##	other vegetables}	=> {whole milk}	0.0028	0.82	0.0035	3.2	28
##	[325] {butter,						
##	napkins,						
##	whipped/sour cream}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
##	[326] {butter,						
##	pork,						
##	yogurt}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
##	[327] {domestic eggs,						

##	pip fruit,						
##	sausage}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [328]	{beef,						
##	rolls/buns,						
##	root vegetables,						
##	tropical fruit}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [329]	{frankfurter,						
##	other vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [330]	{citrus fruit,						
##	fruit/vegetable juice,						
##	whole milk,						
##	yogurt}	=> {other vegetables}	0.0014	0.82	0.0017	4.3	14
## [331]	{citrus fruit,						
##	other vegetables,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [332]	{herbs,						
##	tropical fruit}	=> {whole milk}	0.0023	0.82	0.0028	3.2	23
## [333]	{citrus fruit,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0023	0.82	0.0028	3.2	23
## [334]	{other vegetables,						
##	rice,						
##	root vegetables}	=> {whole milk}	0.0018	0.82	0.0022	3.2	18
## [335]	{curd,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0018	0.82	0.0022	3.2	18
## [336]	{rolls/buns,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0022	0.81	0.0027	3.2	22
## [337]	{house keeping products,						
##	napkins}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [338]	{butter milk,						
##	onions}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13
## [339]	{other vegetables,						
##	specialty cheese,						
##	yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [340]	{citrus fruit,						
##	herbs,						
##	root vegetables}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13
## [341]	{citrus fruit,						
##	herbs,						
##	root vegetables}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [342]	{herbs,						
##	other vegetables,						
##	tropical fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [343]	{semi-finished bread,						
##	tropical fruit,						
##	yogurt}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13

## [344]	{butter, hard cheese, yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [345]	{hard cheese, root vegetables, whipped/sour cream}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13
## [346]	{butter milk, dessert, yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [347]	{butter, onions, yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [348]	{hygiene articles, pip fruit, sausage}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [349]	{salty snack, tropical fruit, yogurt}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13
## [350]	{bottled water, other vegetables, sugar}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [351]	{cream cheese, domestic eggs, yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [352]	{citrus fruit, cream cheese, whipped/sour cream}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13
## [353]	{root vegetables, whipped/sour cream, white bread}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [354]	{frozen vegetables, napkins, other vegetables}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [355]	{beef, tropical fruit, whipped/sour cream}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [356]	{curd, margarine, rolls/buns}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [357]	{domestic eggs, napkins, tropical fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [358]	{brown bread, pip fruit, root vegetables}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13
## [359]	{bottled water, butter, pip fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [360]	{domestic eggs, pastry, tropical fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [361]	{bottled water, sausage, whipped/sour cream}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13

## [362]	{frozen vegetables, other vegetables, root vegetables, whipped/sour cream}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [363]	{citrus fruit, fruit/vegetable juice, tropical fruit, whole milk}	=> {other vegetables}	0.0013	0.81	0.0016	4.2	13
## [364]	{other vegetables, pip fruit, root vegetables, soda}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [365]	{cereals, yogurt}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [366]	{bottled beer, hamburger meat}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [367]	{rolls/buns, waffles, whipped/sour cream}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [368]	{long life bakery product, whipped/sour cream, yogurt}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [369]	{butter, pip fruit, root vegetables}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [370]	{citrus fruit, root vegetables, tropical fruit, yogurt}	=> {other vegetables}	0.0017	0.81	0.0021	4.2	17
## [371]	{curd, hamburger meat}	=> {whole milk}	0.0025	0.81	0.0032	3.2	25
## [372]	{curd, turkey}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [373]	{fruit/vegetable juice, herbs}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [374]	{herbs, rolls/buns}	=> {whole milk}	0.0024	0.80	0.0031	3.1	24
## [375]	{onions, waffles}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [376]	{root vegetables, tropical fruit, turkey}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [377]	{root vegetables, turkey, whole milk}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [378]	{butter, soft cheese, yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [379]	{grapes, root vegetables, tropical fruit}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [380]	{grapes, tropical fruit, whole milk}	=> {other vegetables}	0.0020	0.80	0.0025	4.1	20

## [381]	{frankfurter, frozen meals, other vegetables}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [382]	{frozen meals, tropical fruit, yogurt}	=> {whole milk}	0.0016	0.80	0.0020	3.1	16
## [383]	{butter milk, other vegetables, pastry}	=> {yogurt}	0.0012	0.80	0.0015	5.7	12
## [384]	{napkins, onions, whole milk}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [385]	{curd, hamburger meat, other vegetables}	=> {whole milk}	0.0016	0.80	0.0020	3.1	16
## [386]	{butter, hamburger meat, whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [387]	{hygiene articles, napkins, tropical fruit}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [388]	{salty snack, tropical fruit, whipped/sour cream}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [389]	{butter, long life bakery product, whipped/sour cream}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [390]	{butter, chicken, whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [391]	{chocolate, napkins, root vegetables}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [392]	{butter, curd, pip fruit}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [393]	{bottled beer, napkins, rolls/buns}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [394]	{domestic eggs, margarine, whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [395]	{butter, citrus fruit, tropical fruit}	=> {whole milk}	0.0016	0.80	0.0020	3.1	16
## [396]	{fruit/vegetable juice, pastry, whipped/sour cream}	=> {yogurt}	0.0012	0.80	0.0015	5.7	12
## [397]	{pip fruit, sausage, whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [398]	{cream cheese, tropical fruit, whole milk,						

##	yogurt}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [399]	{chicken,						
##	domestic eggs,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [400]	{butter,						
##	curd,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [401]	{butter,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [402]	{butter,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [403]	{butter,						
##	other vegetables,						
##	rolls/buns,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [404]	{domestic eggs,						
##	pip fruit,						
##	whipped/sour cream,						
##	whole milk}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [405]	{fruit/vegetable juice,						
##	root vegetables,						
##	whole milk,						
##	yogurt}	=> {other vegetables}	0.0020	0.80	0.0025	4.1	20
## [406]	{pip fruit,						
##	tropical fruit,						
##	whipped/sour cream,						
##	whole milk}	=> {other vegetables}	0.0016	0.80	0.0020	4.1	16
## [407]	{citrus fruit,						
##	other vegetables,						
##	sausage,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [408]	{citrus fruit,						
##	sausage,						
##	whipped/sour cream,						
##	whole milk}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12
## [409]	{citrus fruit,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [410]	{rolls/buns,						
##	root vegetables,						
##	tropical fruit,						
##	whipped/sour cream}	=> {other vegetables}	0.0012	0.80	0.0015	4.1	12

removing redundant rules

```
inspect(rules[is.redundant(rules)])
```

	lhs	rhs	support	confidence	coverage	lift	count
## [1]	{oil, other vegetables, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [2]	{butter, soda, whipped/sour cream, whole milk}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [3]	{oil, root vegetables, tropical fruit, whole milk, yogurt}	=> {other vegetables}	0.0010	0.91	0.0011	4.7	10
## [4]	{butter, domestic eggs, other vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [5]	{butter, other vegetables, pip fruit, whipped/sour cream}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [6]	{citrus fruit, cream cheese, domestic eggs, other vegetables}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [7]	{root vegetables, whipped/sour cream, white bread, whole milk}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [8]	{beef, tropical fruit, whipped/sour cream, whole milk}	=> {other vegetables}	0.0011	0.85	0.0013	4.4	11
## [9]	{beef, other vegetables, rolls/buns, root vegetables, tropical fruit}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [10]	{butter, other vegetables, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [11]	{herbs, other vegetables, rolls/buns, root vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10

```

## [12] {butter milk,
##       other vegetables,
##       root vegetables,
##       yogurt}          => {whole milk}          0.0010      0.83   0.0012  3.3   10
## [13] {onions,
##       root vegetables,
##       tropical fruit,
##       whole milk}      => {other vegetables} 0.0010      0.83   0.0012  4.3   10
## [14] {citrus fruit,
##       frozen vegetables,
##       fruit/vegetable juice,
##       other vegetables} => {whole milk}          0.0010      0.83   0.0012  3.3   10
## [15] {citrus fruit,
##       newspapers,
##       root vegetables,
##       whole milk}      => {other vegetables} 0.0010      0.83   0.0012  4.3   10
## [16] {butter,
##       domestic eggs,
##       tropical fruit,
##       whole milk,
##       yogurt}          => {other vegetables} 0.0010      0.83   0.0012  4.3   10
## [17] {herbs,
##       other vegetables,
##       tropical fruit}  => {whole milk}          0.0013      0.81   0.0016  3.2   13
## [18] {curd,
##       hamburger meat,
##       other vegetables} => {whole milk}          0.0016      0.80   0.0020  3.1   16
rules = rules[!is.redundant(rules)]
inspect(rules[1:5])

```

	lhs	rhs	support	confidence	coverage	lift	count
## [1]	{rice,						
##	sugar}	=> {whole milk}	0.0012	1	0.0012	3.9	12
## [2]	{canned fish,						
##	hygiene articles}	=> {whole milk}	0.0011	1	0.0011	3.9	11
## [3]	{butter,						
##	rice,						
##	root vegetables}	=> {whole milk}	0.0010	1	0.0010	3.9	10
## [4]	{flour,						
##	root vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0017	1	0.0017	3.9	17
## [5]	{butter,						
##	domestic eggs,						
##	soft cheese}	=> {whole milk}	0.0010	1	0.0010	3.9	10

Rules for “Whole milk” (Most bought product)

```

rules1 = apriori(pd, parameter = list(support = 0.001, confidence = 0.8, minlen = 2),
                  appearance = list(default = "lhs", rhs = "whole milk"))

```

```

## Apriori
##
## Parameter specification:

```

```

## confidence minval smax arem aval originalSupport maxtime support minlen
##      0.8    0.1    1 none FALSE          TRUE      5  0.001    2
## maxlen target  ext
##      10  rules TRUE
##
## Algorithmic control:
## filter tree heap memopt load sort verbose
##      0.1 TRUE TRUE  FALSE TRUE    2    TRUE
##
## Absolute minimum support count: 9
##
## set item appearances ...[1 item(s)] done [0.00s].
## set transactions ...[169 item(s), 9835 transaction(s)] done [0.00s].
## sorting and recoding items ... [157 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 4 5 6 done [0.01s].
## writing ... [252 rule(s)] done [0.00s].
## creating S4 object ... done [0.00s].

```

```

options(digits = 2)
inspect(rules1)

```

	lhs	rhs	support	confidence	coverage	lift	count
## [1]	{cereals,	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [2]	{cereals,	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [3]	{butter,	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [4]	{bottled beer,	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [5]	{house keeping products,	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [6]	{house keeping products,	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [7]	{pastry,	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [8]	{rice,	=> {whole milk}	0.0012	1.00	0.0012	3.9	12
## [9]	{butter,	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
## [10]	{domestic eggs,	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [11]	{bottled water,	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [12]	{mustard,	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [13]	{canned fish,	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [14]	{herbs,	=> {whole milk}	0.0023	0.82	0.0028	3.2	23
## [15]	{herbs,	=> {whole milk}	0.0024	0.80	0.0031	3.1	24
## [16]	{chocolate,	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
##	{pickled vegetables}						

## [17]	{curd, hamburger meat}	=> {whole milk}	0.0025	0.81	0.0032	3.2	25
## [18]	{bottled beer, hamburger meat}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [19]	{other vegetables, specialty cheese, yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [20]	{butter, rice, root vegetables}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [21]	{other vegetables, rice, tropical fruit}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [22]	{rice, root vegetables, yogurt}	=> {whole milk}	0.0014	0.88	0.0016	3.4	14
## [23]	{other vegetables, rice, root vegetables}	=> {whole milk}	0.0018	0.82	0.0022	3.2	18
## [24]	{frozen fish, root vegetables, yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [25]	{frozen fish, other vegetables, yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [26]	{curd, herbs, root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [27]	{domestic eggs, herbs, other vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [28]	{fruit/vegetable juice, herbs, other vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [29]	{citrus fruit, herbs, tropical fruit}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [30]	{citrus fruit, herbs, root vegetables}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [31]	{herbs, root vegetables, tropical fruit}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [32]	{herbs, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [33]	{herbs, other vegetables, tropical fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [34]	{herbs, rolls/buns, root vegetables}	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
## [35]	{detergent, other vegetables,						

##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [36]	{baking powder,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [37]	{flour,						
##	other vegetables,						
##	sugar}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [38]	{flour,						
##	root vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0017	1.00	0.0017	3.9	17
## [39]	{butter,						
##	domestic eggs,						
##	soft cheese}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [40]	{butter,						
##	soft cheese,						
##	yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [41]	{domestic eggs,						
##	root vegetables,						
##	soft cheese}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [42]	{root vegetables,						
##	soft cheese,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [43]	{curd,						
##	frozen meals,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [44]	{frankfurter,						
##	frozen meals,						
##	tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [45]	{frankfurter,						
##	frozen meals,						
##	other vegetables}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [46]	{butter,						
##	frozen meals,						
##	tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [47]	{frozen meals,						
##	root vegetables,						
##	tropical fruit}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [48]	{frozen meals,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0016	0.80	0.0020	3.1	16
## [49]	{butter,						
##	hard cheese,						
##	yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [50]	{hard cheese,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [51]	{butter milk,						
##	dessert,						
##	yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [52]	{butter milk,						
##	sausage,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [53]	{butter milk,						
##	root vegetables,						

##	yogurt}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [54]	{frankfurter,						
##	root vegetables,						
##	sliced cheese}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [55]	{frankfurter,						
##	sliced cheese,						
##	yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [56]	{butter,						
##	sliced cheese,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [57]	{oil,						
##	root vegetables,						
##	shopping bags}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [58]	{curd,						
##	onions,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [59]	{butter,						
##	domestic eggs,						
##	onions}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [60]	{bottled water,						
##	butter,						
##	onions}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [61]	{butter,						
##	onions,						
##	tropical fruit}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [62]	{butter,						
##	onions,						
##	root vegetables}	=> {whole milk}	0.0017	0.85	0.0020	3.3	17
## [63]	{butter,						
##	onions,						
##	yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [64]	{berries,						
##	butter,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [65]	{berries,						
##	butter,						
##	sausage}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [66]	{curd,						
##	hamburger meat,						
##	other vegetables}	=> {whole milk}	0.0016	0.80	0.0020	3.1	16
## [67]	{butter,						
##	hamburger meat,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [68]	{hamburger meat,						
##	root vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [69]	{butter,						
##	hygiene articles,						
##	napkins}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [70]	{hygiene articles,						
##	napkins,						
##	tropical fruit}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [71]	{hygiene articles,						
##	margarine,						

##	rolls/buns}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [72]	{butter,						
##	hygiene articles,						
##	pip fruit}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [73]	{butter,						
##	citrus fruit,						
##	hygiene articles}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [74]	{bottled water,						
##	butter,						
##	hygiene articles}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [75]	{butter,						
##	hygiene articles,						
##	tropical fruit}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [76]	{butter,						
##	hygiene articles,						
##	root vegetables}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [77]	{domestic eggs,						
##	hygiene articles,						
##	tropical fruit}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [78]	{hygiene articles,						
##	tropical fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [79]	{hygiene articles,						
##	root vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [80]	{hygiene articles,						
##	pip fruit,						
##	sausage}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [81]	{hygiene articles,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [82]	{citrus fruit,						
##	hygiene articles,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [83]	{hygiene articles,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [84]	{long life bakery product,						
##	other vegetables,						
##	salty snack}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [85]	{pip fruit,						
##	salty snack,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [86]	{cream cheese,						
##	domestic eggs,						
##	sugar}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [87]	{cream cheese,						
##	other vegetables,						
##	sugar}	=> {whole milk}	0.0015	0.94	0.0016	3.7	15
## [88]	{curd,						
##	domestic eggs,						
##	sugar}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [89]	{butter,						
##	sugar,						

##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [90]	{citrus fruit,						
##	domestic eggs,						
##	sugar}	=> {whole milk}	0.0014	0.93	0.0015	3.7	14
## [91]	{domestic eggs,						
##	sugar,						
##	tropical fruit}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [92]	{domestic eggs,						
##	sugar,						
##	yogurt}	=> {whole milk}	0.0014	0.93	0.0015	3.7	14
## [93]	{citrus fruit,						
##	sugar,						
##	whipped/sour cream}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [94]	{root vegetables,						
##	sugar,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [95]	{bottled water,						
##	other vegetables,						
##	sugar}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [96]	{pork,						
##	rolls/buns,						
##	waffles}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [97]	{rolls/buns,						
##	waffles,						
##	whipped/sour cream}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [98]	{rolls/buns,						
##	root vegetables,						
##	waffles}	=> {whole milk}	0.0016	0.84	0.0019	3.3	16
## [99]	{long life bakery product,						
##	napkins,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [100]	{long life bakery product,						
##	napkins,						
##	tropical fruit}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [101]	{long life bakery product,						
##	napkins,						
##	other vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [102]	{butter,						
##	long life bakery product,						
##	sausage}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [103]	{long life bakery product,						
##	sausage,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [104]	{long life bakery product,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [105]	{cream cheese,						
##	domestic eggs,						
##	napkins}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [106]	{cream cheese,						
##	pork,						
##	yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [107]	{cream cheese,						
##	frankfurter,						

##	yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [108]	{butter,						
##	cream cheese,						
##	whipped/sour cream}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [109]	{butter,						
##	cream cheese,						
##	root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [110]	{cream cheese,						
##	domestic eggs,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [111]	{cream cheese,						
##	domestic eggs,						
##	pip fruit}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [112]	{citrus fruit,						
##	cream cheese,						
##	domestic eggs}	=> {whole milk}	0.0016	0.89	0.0018	3.5	16
## [113]	{cream cheese,						
##	domestic eggs,						
##	yogurt}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [114]	{cream cheese,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0013	0.93	0.0014	3.6	13
## [115]	{cream cheese,						
##	pip fruit,						
##	sausage}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [116]	{butter,						
##	chicken,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [117]	{chicken,						
##	domestic eggs,						
##	sausage}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [118]	{butter,						
##	root vegetables,						
##	white bread}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [119]	{root vegetables,						
##	whipped/sour cream,						
##	white bread}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [120]	{chocolate,						
##	napkins,						
##	root vegetables}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [121]	{chocolate,						
##	domestic eggs,						
##	sausage}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [122]	{bottled beer,						
##	coffee,						
##	yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [123]	{butter,						
##	coffee,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [124]	{coffee,						
##	domestic eggs,						
##	root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [125]	{citrus fruit,						
##	frozen vegetables,						

##	napkins}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [126]	{frozen vegetables,						
##	napkins,						
##	other vegetables}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [127]	{frozen vegetables,						
##	margarine,						
##	rolls/buns}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [128]	{citrus fruit,						
##	frozen vegetables,						
##	fruit/vegetable juice}	=> {whole milk}	0.0016	0.84	0.0019	3.3	16
## [129]	{beef,						
##	butter,						
##	curd}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [130]	{beef,						
##	tropical fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [131]	{curd,						
##	margarine,						
##	rolls/buns}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [132]	{butter,						
##	curd,						
##	domestic eggs}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [133]	{butter,						
##	curd,						
##	pip fruit}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [134]	{butter,						
##	citrus fruit,						
##	curd}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [135]	{curd,						
##	domestic eggs,						
##	other vegetables}	=> {whole milk}	0.0028	0.82	0.0035	3.2	28
## [136]	{curd,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0018	0.82	0.0022	3.2	18
## [137]	{bottled beer,						
##	napkins,						
##	rolls/buns}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [138]	{butter,						
##	napkins,						
##	whipped/sour cream}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [139]	{bottled water,						
##	butter,						
##	napkins}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [140]	{butter,						
##	napkins,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [141]	{domestic eggs,						
##	napkins,						
##	tropical fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [142]	{bottled beer,						
##	pork,						
##	rolls/buns}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [143]	{butter,						
##	pork,						

##	whipped/sour cream}	=> {whole milk}	0.0014	0.88	0.0016	3.4	14
## [144]	{butter,						
##	pork,						
##	yogurt}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [145]	{butter,						
##	other vegetables,						
##	pork}	=> {whole milk}	0.0022	0.85	0.0026	3.3	22
## [146]	{bottled beer,						
##	domestic eggs,						
##	margarine}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [147]	{brown bread,						
##	domestic eggs,						
##	root vegetables}	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
## [148]	{brown bread,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0014	0.88	0.0016	3.4	14
## [149]	{domestic eggs,						
##	fruit/vegetable juice,						
##	margarine}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [150]	{domestic eggs,						
##	margarine,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [151]	{bottled water,						
##	margarine,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [152]	{margarine,						
##	rolls/buns,						
##	whipped/sour cream}	=> {whole milk}	0.0016	0.89	0.0018	3.5	16
## [153]	{butter,						
##	domestic eggs,						
##	whipped/sour cream}	=> {whole milk}	0.0016	0.84	0.0019	3.3	16
## [154]	{butter,						
##	domestic eggs,						
##	pip fruit}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [155]	{butter,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0018	0.90	0.0020	3.5	18
## [156]	{bottled water,						
##	butter,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [157]	{bottled water,						
##	butter,						
##	pip fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [158]	{butter,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0017	0.81	0.0021	3.2	17
## [159]	{butter,						
##	citrus fruit,						
##	tropical fruit}	=> {whole milk}	0.0016	0.80	0.0020	3.1	16
## [160]	{domestic eggs,						
##	tropical fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0018	0.90	0.0020	3.5	18
## [161]	{domestic eggs,						
##	pip fruit,						

##	sausage}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [162]	{domestic eggs,						
##	pastry,						
##	tropical fruit}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [163]	{pip fruit,						
##	sausage,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [164]	{citrus fruit,						
##	pastry,						
##	whipped/sour cream}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [165]	{other vegetables,						
##	rice,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0013	0.93	0.0014	3.6	13
## [166]	{herbs,						
##	other vegetables,						
##	root vegetables,						
##	tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [167]	{herbs,						
##	other vegetables,						
##	rolls/buns,						
##	root vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [168]	{frozen meals,						
##	pip fruit,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [169]	{hard cheese,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [170]	{butter milk,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [171]	{butter,						
##	sliced cheese,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [172]	{root vegetables,						
##	sliced cheese,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [173]	{oil,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [174]	{oil,						
##	other vegetables,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0014	1.00	0.0014	3.9	14
## [175]	{butter,						
##	onions,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13

## [176]	{other vegetables, root vegetables, waffles, yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [177]	{long life bakery product, other vegetables, whipped/sour cream, yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [178]	{cream cheese, curd, whipped/sour cream, yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [179]	{citrus fruit, cream cheese, domestic eggs, other vegetables}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [180]	{citrus fruit, cream cheese, other vegetables, whipped/sour cream}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [181]	{cream cheese, other vegetables, pip fruit, root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [182]	{cream cheese, other vegetables, pip fruit, yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [183]	{chicken, domestic eggs, other vegetables, root vegetables}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [184]	{butter, other vegetables, root vegetables, white bread}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [185]	{pip fruit, root vegetables, white bread, yogurt}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [186]	{citrus fruit, frozen vegetables, fruit/vegetable juice, other vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [187]	{frozen vegetables, fruit/vegetable juice, other vegetables, root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [188]	{frozen vegetables, other vegetables, root vegetables, whipped/sour cream}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [189]	{citrus fruit, frozen vegetables,						

##	other vegetables,						
##	yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [190]	{bottled water,						
##	frozen vegetables,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [191]	{beef,						
##	rolls/buns,						
##	root vegetables,						
##	tropical fruit}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [192]	{beef,						
##	rolls/buns,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0013	0.93	0.0014	3.6	13
## [193]	{beef,						
##	other vegetables,						
##	rolls/buns,						
##	tropical fruit}	=> {whole milk}	0.0015	0.88	0.0017	3.5	15
## [194]	{butter,						
##	curd,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [195]	{curd,						
##	domestic eggs,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [196]	{curd,						
##	domestic eggs,						
##	other vegetables,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [197]	{curd,						
##	other vegetables,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [198]	{citrus fruit,						
##	curd,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [199]	{citrus fruit,						
##	curd,						
##	other vegetables,						
##	yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [200]	{butter,						
##	napkins,						
##	other vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [201]	{butter,						
##	other vegetables,						
##	pork,						
##	whipped/sour cream}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [202]	{butter,						
##	other vegetables,						
##	pork,						
##	root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10

## [203]	{frankfurter, other vegetables, pip fruit, root vegetables}	=> {whole milk}	0.0010	0.83	0.0012	3.3	10
## [204]	{frankfurter, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [205]	{frankfurter, other vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0014	0.82	0.0017	3.2	14
## [206]	{brown bread, pip fruit, tropical fruit, yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [207]	{brown bread, other vegetables, pip fruit, root vegetables}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [208]	{brown bread, citrus fruit, other vegetables, root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [209]	{brown bread, other vegetables, rolls/buns, root vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [210]	{brown bread, other vegetables, soda, yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [211]	{margarine, rolls/buns, root vegetables, yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [212]	{margarine, other vegetables, rolls/buns, root vegetables}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [213]	{butter, domestic eggs, other vegetables, whipped/sour cream}	=> {whole milk}	0.0012	1.00	0.0012	3.9	12
## [214]	{butter, domestic eggs, tropical fruit, yogurt}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [215]	{butter, domestic eggs, root vegetables, yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [216]	{butter, other vegetables,						

##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [217]	{butter,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [218]	{butter,						
##	root vegetables,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0011	0.85	0.0013	3.3	11
## [219]	{butter,						
##	other vegetables,						
##	rolls/buns,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [220]	{bottled water,						
##	butter,						
##	citrus fruit,						
##	other vegetables}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [221]	{butter,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0017	0.89	0.0019	3.5	17
## [222]	{domestic eggs,						
##	other vegetables,						
##	pip fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.92	0.0013	3.6	12
## [223]	{citrus fruit,						
##	domestic eggs,						
##	other vegetables,						
##	whipped/sour cream}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [224]	{domestic eggs,						
##	tropical fruit,						
##	whipped/sour cream,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [225]	{domestic eggs,						
##	other vegetables,						
##	tropical fruit,						
##	whipped/sour cream}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11
## [226]	{domestic eggs,						
##	other vegetables,						
##	pip fruit,						
##	root vegetables}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [227]	{citrus fruit,						
##	domestic eggs,						
##	other vegetables,						
##	tropical fruit}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [228]	{domestic eggs,						
##	root vegetables,						
##	tropical fruit,						
##	yogurt}	=> {whole milk}	0.0015	0.83	0.0018	3.3	15
## [229]	{fruit/vegetable juice,						
##	pip fruit,						
##	root vegetables,						
##	yogurt}	=> {whole milk}	0.0011	0.92	0.0012	3.6	11

## [230]	{fruit/vegetable juice, other vegetables, pip fruit, root vegetables}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [231]	{fruit/vegetable juice, other vegetables, root vegetables, yogurt}	=> {whole milk}	0.0020	0.83	0.0024	3.3	20
## [232]	{other vegetables, pip fruit, root vegetables, whipped/sour cream}	=> {whole milk}	0.0017	0.85	0.0020	3.3	17
## [233]	{citrus fruit, pastry, rolls/buns, whipped/sour cream}	=> {whole milk}	0.0010	1.00	0.0010	3.9	10
## [234]	{citrus fruit, other vegetables, sausage, whipped/sour cream}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [235]	{citrus fruit, tropical fruit, whipped/sour cream, yogurt}	=> {whole milk}	0.0012	0.80	0.0015	3.1	12
## [236]	{bottled water, other vegetables, pip fruit, root vegetables}	=> {whole milk}	0.0011	1.00	0.0011	3.9	11
## [237]	{pip fruit, root vegetables, soda, yogurt}	=> {whole milk}	0.0012	0.86	0.0014	3.4	12
## [238]	{other vegetables, pip fruit, root vegetables, soda}	=> {whole milk}	0.0013	0.81	0.0016	3.2	13
## [239]	{pastry, root vegetables, tropical fruit, yogurt}	=> {whole milk}	0.0010	0.91	0.0011	3.6	10
## [240]	{bottled water, citrus fruit, other vegetables, tropical fruit}	=> {whole milk}	0.0013	0.87	0.0015	3.4	13
## [241]	{citrus fruit, other vegetables, root vegetables, yogurt}	=> {whole milk}	0.0023	0.82	0.0028	3.2	23
## [242]	{root vegetables, sausage, tropical fruit, yogurt}	=> {whole milk}	0.0015	0.94	0.0016	3.7	15
## [243]	{rolls/buns, root vegetables,						

```

##      sausage,
##      tropical fruit}      => {whole milk}  0.0010      1.00  0.0010  3.9   10
## [244] {bottled water,
##      rolls/buns,
##      root vegetables,
##      tropical fruit}      => {whole milk}  0.0011      0.92  0.0012  3.6   11
## [245] {rolls/buns,
##      root vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}  0.0022      0.81  0.0027  3.2   22
## [246] {oil,
##      other vegetables,
##      root vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}  0.0010      1.00  0.0010  3.9   10
## [247] {beef,
##      other vegetables,
##      rolls/buns,
##      root vegetables,
##      tropical fruit}      => {whole milk}  0.0011      0.85  0.0013  3.3   11
## [248] {butter,
##      domestic eggs,
##      other vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}  0.0010      0.91  0.0011  3.6   10
## [249] {butter,
##      other vegetables,
##      root vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}  0.0011      0.85  0.0013  3.3   11
## [250] {citrus fruit,
##      other vegetables,
##      root vegetables,
##      whipped/sour cream,
##      yogurt}              => {whole milk}  0.0010      0.83  0.0012  3.3   10
## [251] {other vegetables,
##      pip fruit,
##      root vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}  0.0013      0.87  0.0015  3.4   13
## [252] {citrus fruit,
##      other vegetables,
##      root vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}  0.0014      0.82  0.0017  3.2   14

```

Plotting graphs for the new rules

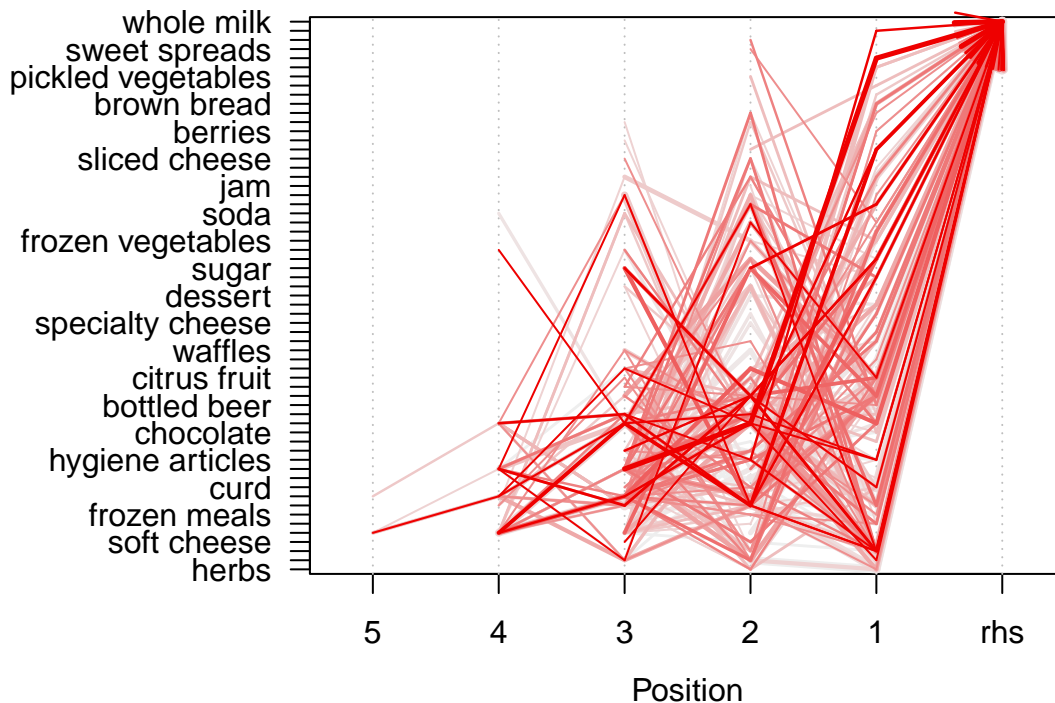
```

# Only for interactive sessions
# plot(rules1, method = "graph", engine = "interactive")

```

```
plot(rules1, method = "paracoord")
```

Parallel coordinates plot for 252 rules



```
plot(rules1, method = "matrix", control = list(reorder = "none"))
```

```
## Itemsets in Antecedent (LHS)
## [1] "{cereals,curd}"
## [2] "{cereals,yogurt}"
## [3] "{butter,jam}"
## [4] "{bottled beer,soups}"
## [5] "{house keeping products,napkins}"
## [6] "{house keeping products,whipped/sour cream}"
## [7] "{pastry,sweet spreads}"
## [8] "{rice,sugar}"
## [9] "{butter,rice}"
## [10] "{domestic eggs,rice}"
## [11] "{bottled water,rice}"
## [12] "{mustard,oil}"
## [13] "{canned fish,hygiene articles}"
## [14] "{herbs,tropical fruit}"
## [15] "{herbs,rolls/buns}"
## [16] "{chocolate,pickled vegetables}"
## [17] "{curd,hamburger meat}"
## [18] "{bottled beer,hamburger meat}"
## [19] "{other vegetables,specialty cheese,yogurt}"
## [20] "{butter,rice,root vegetables}"
## [21] "{other vegetables,rice,tropical fruit}"
```

```

## [22] "{rice,root vegetables,yogurt}"
## [23] "{other vegetables,rice,root vegetables}"
## [24] "{frozen fish,root vegetables,yogurt}"
## [25] "{frozen fish,other vegetables,yogurt}"
## [26] "{curd,herbs,root vegetables}"
## [27] "{domestic eggs,herbs,other vegetables}"
## [28] "{fruit/vegetable juice,herbs,other vegetables}"
## [29] "{citrus fruit,herbs,tropical fruit}"
## [30] "{citrus fruit,herbs,root vegetables}"
## [31] "{herbs,root vegetables,tropical fruit}"
## [32] "{herbs,tropical fruit,yogurt}"
## [33] "{herbs,other vegetables,tropical fruit}"
## [34] "{herbs,rolls/buns,root vegetables}"
## [35] "{detergent,other vegetables,whipped/sour cream}"
## [36] "{baking powder,tropical fruit,yogurt}"
## [37] "{flour,other vegetables,sugar}"
## [38] "{flour,root vegetables,whipped/sour cream}"
## [39] "{butter,domestic eggs,soft cheese}"
## [40] "{butter,soft cheese,yogurt}"
## [41] "{domestic eggs,root vegetables,soft cheese}"
## [42] "{root vegetables,soft cheese,whipped/sour cream}"
## [43] "{curd,frozen meals,yogurt}"
## [44] "{frankfurter,frozen meals,tropical fruit}"
## [45] "{frankfurter,frozen meals,other vegetables}"
## [46] "{butter,frozen meals,tropical fruit}"
## [47] "{frozen meals,root vegetables,tropical fruit}"
## [48] "{frozen meals,tropical fruit,yogurt}"
## [49] "{butter,hard cheese,yogurt}"
## [50] "{hard cheese,tropical fruit,yogurt}"
## [51] "{butter milk,dessert,yogurt}"
## [52] "{butter milk,sausage,yogurt}"
## [53] "{butter milk,root vegetables,yogurt}"
## [54] "{frankfurter,root vegetables,sliced cheese}"
## [55] "{frankfurter,sliced cheese,yogurt}"
## [56] "{butter,sliced cheese,whipped/sour cream}"
## [57] "{oil,root vegetables,shopping bags}"
## [58] "{curd,onions,yogurt}"
## [59] "{butter,domestic eggs,onions}"
## [60] "{bottled water,butter,onions}"
## [61] "{butter,onions,tropical fruit}"
## [62] "{butter,onions,root vegetables}"
## [63] "{butter,onions,yogurt}"
## [64] "{berries,butter,whipped/sour cream}"
## [65] "{berries,butter,sausage}"
## [66] "{curd,hamburger meat,other vegetables}"
## [67] "{butter,hamburger meat,whipped/sour cream}"
## [68] "{hamburger meat,root vegetables,whipped/sour cream}"
## [69] "{butter,hygiene articles,napkins}"
## [70] "{hygiene articles,napkins,tropical fruit}"
## [71] "{hygiene articles,margarine,rolls/buns}"
## [72] "{butter,hygiene articles,pip fruit}"
## [73] "{butter,citrus fruit,hygiene articles}"
## [74] "{bottled water,butter,hygiene articles}"
## [75] "{butter,hygiene articles,tropical fruit}"

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## [76] "{butter,hygiene articles,root vegetables}"
## [77] "{domestic eggs,hygiene articles,tropical fruit}"
## [78] "{hygiene articles,tropical fruit,whipped/sour cream}"
## [79] "{hygiene articles,root vegetables,whipped/sour cream}"
## [80] "{hygiene articles,pip fruit,sausage}"
## [81] "{hygiene articles,pip fruit,root vegetables}"
## [82] "{citrus fruit,hygiene articles,root vegetables}"
## [83] "{hygiene articles,root vegetables,yogurt}"
## [84] "{long life bakery product,other vegetables,salty snack}"
## [85] "{pip fruit,salty snack,yogurt}"
## [86] "{cream cheese,domestic eggs,sugar}"
## [87] "{cream cheese,other vegetables,sugar}"
## [88] "{curd,domestic eggs,sugar}"
## [89] "{butter,sugar,whipped/sour cream}"
## [90] "{citrus fruit,domestic eggs,sugar}"
## [91] "{domestic eggs,sugar,tropical fruit}"
## [92] "{domestic eggs,sugar,yogurt}"
## [93] "{citrus fruit,sugar,whipped/sour cream}"
## [94] "{root vegetables,sugar,whipped/sour cream}"
## [95] "{bottled water,other vegetables,sugar}"
## [96] "{pork,rolls/buns,waffles}"
## [97] "{rolls/buns,waffles,whipped/sour cream}"
## [98] "{rolls/buns,root vegetables,waffles}"
## [99] "{long life bakery product,napkins,whipped/sour cream}"
## [100] "{long life bakery product,napkins,tropical fruit}"
## [101] "{long life bakery product,napkins,other vegetables}"
## [102] "{butter,long life bakery product,sausage}"
## [103] "{long life bakery product,sausage,whipped/sour cream}"
## [104] "{long life bakery product,whipped/sour cream,yogurt}"
## [105] "{cream cheese,domestic eggs,napkins}"
## [106] "{cream cheese,pork,yogurt}"
## [107] "{cream cheese,frankfurter,yogurt}"
## [108] "{butter,cream cheese,whipped/sour cream}"
## [109] "{butter,cream cheese,root vegetables}"
## [110] "{cream cheese,domestic eggs,whipped/sour cream}"
## [111] "{cream cheese,domestic eggs,pip fruit}"
## [112] "{citrus fruit,cream cheese,domestic eggs}"
## [113] "{cream cheese,domestic eggs,yogurt}"
## [114] "{cream cheese,pip fruit,whipped/sour cream}"
## [115] "{cream cheese,pip fruit,sausage}"
## [116] "{butter,chicken,whipped/sour cream}"
## [117] "{chicken,domestic eggs,sausage}"
## [118] "{butter,root vegetables,white bread}"
## [119] "{root vegetables,whipped/sour cream,white bread}"
## [120] "{chocolate,napkins,root vegetables}"
## [121] "{chocolate,domestic eggs,sausage}"
## [122] "{bottled beer,coffee,yogurt}"
## [123] "{butter,coffee,whipped/sour cream}"
## [124] "{coffee,domestic eggs,root vegetables}"
## [125] "{citrus fruit,frozen vegetables,napkins}"
## [126] "{frozen vegetables,napkins,other vegetables}"
## [127] "{frozen vegetables,margarine,rolls/buns}"
## [128] "{citrus fruit,frozen vegetables,fruit/vegetable juice}"
## [129] "{beef,butter,curd}"

```

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## [130] "{beef,tropical fruit,whipped/sour cream}"
## [131] "{curd,margarine,rolls/buns}"
## [132] "{butter,curd,domestic eggs}"
## [133] "{butter,curd,pip fruit}"
## [134] "{butter,citrus fruit,curd}"
## [135] "{curd,domestic eggs,other vegetables}"
## [136] "{curd,pip fruit,whipped/sour cream}"
## [137] "{bottled beer,napkins,rolls/buns}"
## [138] "{butter,napkins,whipped/sour cream}"
## [139] "{bottled water,butter,napkins}"
## [140] "{butter,napkins,yogurt}"
## [141] "{domestic eggs,napkins,tropical fruit}"
## [142] "{bottled beer,pork,rolls/buns}"
## [143] "{butter,pork,whipped/sour cream}"
## [144] "{butter,pork,yogurt}"
## [145] "{butter,other vegetables,pork}"
## [146] "{bottled beer,domestic eggs,margarine}"
## [147] "{brown bread,domestic eggs,root vegetables}"
## [148] "{brown bread,pip fruit,root vegetables}"
## [149] "{domestic eggs,fruit/vegetable juice,margarine}"
## [150] "{domestic eggs,margarine,whipped/sour cream}"
## [151] "{bottled water,margarine,whipped/sour cream}"
## [152] "{margarine,rolls/buns,whipped/sour cream}"
## [153] "{butter,domestic eggs,whipped/sour cream}"
## [154] "{butter,domestic eggs,pip fruit}"
## [155] "{butter,pip fruit,whipped/sour cream}"
## [156] "{bottled water,butter,whipped/sour cream}"
## [157] "{bottled water,butter,pip fruit}"
## [158] "{butter,pip fruit,root vegetables}"
## [159] "{butter,citrus fruit,tropical fruit}"
## [160] "{domestic eggs,tropical fruit,whipped/sour cream}"
## [161] "{domestic eggs,pip fruit,sausage}"
## [162] "{domestic eggs,pastry,tropical fruit}"
## [163] "{pip fruit,sausage,whipped/sour cream}"
## [164] "{citrus fruit,pastry,whipped/sour cream}"
## [165] "{other vegetables,rice,root vegetables,yogurt}"
## [166] "{herbs,other vegetables,root vegetables,tropical fruit}"
## [167] "{herbs,other vegetables,rolls/buns,root vegetables}"
## [168] "{frozen meals,pip fruit,tropical fruit,yogurt}"
## [169] "{hard cheese,other vegetables,root vegetables,yogurt}"
## [170] "{butter milk,other vegetables,root vegetables,yogurt}"
## [171] "{butter,sliced cheese,tropical fruit,yogurt}"
## [172] "{root vegetables,sliced cheese,tropical fruit,yogurt}"
## [173] "{oil,root vegetables,tropical fruit,yogurt}"
## [174] "{oil,other vegetables,root vegetables,yogurt}"
## [175] "{butter,onions,other vegetables,root vegetables}"
## [176] "{other vegetables,root vegetables,waffles,yogurt}"
## [177] "{long life bakery product,other vegetables,whipped/sour cream,yogurt}"
## [178] "{cream cheese,curd,whipped/sour cream,yogurt}"
## [179] "{citrus fruit,cream cheese,domestic eggs,other vegetables}"
## [180] "{citrus fruit,cream cheese,other vegetables,whipped/sour cream}"
## [181] "{cream cheese,other vegetables,pip fruit,root vegetables}"
## [182] "{cream cheese,other vegetables,pip fruit,yogurt}"
## [183] "{chicken,domestic eggs,other vegetables,root vegetables}"

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## [184] "{butter,other vegetables,root vegetables,white bread}"
## [185] "{pip fruit,root vegetables,white bread,yogurt}"
## [186] "{citrus fruit,frozen vegetables,fruit/vegetable juice,other vegetables}"
## [187] "{frozen vegetables,fruit/vegetable juice,other vegetables,root vegetables}"
## [188] "{frozen vegetables,other vegetables,root vegetables,whipped/sour cream}"
## [189] "{citrus fruit,frozen vegetables,other vegetables,yogurt}"
## [190] "{bottled water,frozen vegetables,other vegetables,root vegetables}"
## [191] "{beef,rolls/buns,root vegetables,tropical fruit}"
## [192] "{beef,rolls/buns,tropical fruit,yogurt}"
## [193] "{beef,other vegetables,rolls/buns,tropical fruit}"
## [194] "{butter,curd,tropical fruit,yogurt}"
## [195] "{curd,domestic eggs,tropical fruit,yogurt}"
## [196] "{curd,domestic eggs,other vegetables,root vegetables}"
## [197] "{curd,other vegetables,pip fruit,whipped/sour cream}"
## [198] "{citrus fruit,curd,tropical fruit,yogurt}"
## [199] "{citrus fruit,curd,other vegetables,yogurt}"
## [200] "{butter,napkins,other vegetables,whipped/sour cream}"
## [201] "{butter,other vegetables,pork,whipped/sour cream}"
## [202] "{butter,other vegetables,pork,root vegetables}"
## [203] "{frankfurter,other vegetables,pip fruit,root vegetables}"
## [204] "{frankfurter,root vegetables,tropical fruit,yogurt}"
## [205] "{frankfurter,other vegetables,tropical fruit,yogurt}"
## [206] "{brown bread,pip fruit,tropical fruit,yogurt}"
## [207] "{brown bread,other vegetables,pip fruit,root vegetables}"
## [208] "{brown bread,citrus fruit,other vegetables,root vegetables}"
## [209] "{brown bread,other vegetables,rolls/buns,root vegetables}"
## [210] "{brown bread,other vegetables,soda,yogurt}"
## [211] "{margarine,rolls/buns,root vegetables,yogurt}"
## [212] "{margarine,other vegetables,rolls/buns,root vegetables}"
## [213] "{butter,domestic eggs,other vegetables,whipped/sour cream}"
## [214] "{butter,domestic eggs,tropical fruit,yogurt}"
## [215] "{butter,domestic eggs,root vegetables,yogurt}"
## [216] "{butter,other vegetables,pip fruit,whipped/sour cream}"
## [217] "{butter,tropical fruit,whipped/sour cream,yogurt}"
## [218] "{butter,root vegetables,whipped/sour cream,yogurt}"
## [219] "{butter,other vegetables,rolls/buns,whipped/sour cream}"
## [220] "{bottled water,butter,citrus fruit,other vegetables}"
## [221] "{butter,root vegetables,tropical fruit,yogurt}"
## [222] "{domestic eggs,other vegetables,pip fruit,whipped/sour cream}"
## [223] "{citrus fruit,domestic eggs,other vegetables,whipped/sour cream}"
## [224] "{domestic eggs,tropical fruit,whipped/sour cream,yogurt}"
## [225] "{domestic eggs,other vegetables,tropical fruit,whipped/sour cream}"
## [226] "{domestic eggs,other vegetables,pip fruit,root vegetables}"
## [227] "{citrus fruit,domestic eggs,other vegetables,tropical fruit}"
## [228] "{domestic eggs,root vegetables,tropical fruit,yogurt}"
## [229] "{fruit/vegetable juice,pip fruit,root vegetables,yogurt}"
## [230] "{fruit/vegetable juice,other vegetables,pip fruit,root vegetables}"
## [231] "{fruit/vegetable juice,other vegetables,root vegetables,yogurt}"
## [232] "{other vegetables,pip fruit,root vegetables,whipped/sour cream}"
## [233] "{citrus fruit,pastry,rolls/buns,whipped/sour cream}"
## [234] "{citrus fruit,other vegetables,sausage,whipped/sour cream}"
## [235] "{citrus fruit,tropical fruit,whipped/sour cream,yogurt}"
## [236] "{bottled water,other vegetables,pip fruit,root vegetables}"
## [237] "{pip fruit,root vegetables,soda,yogurt}"

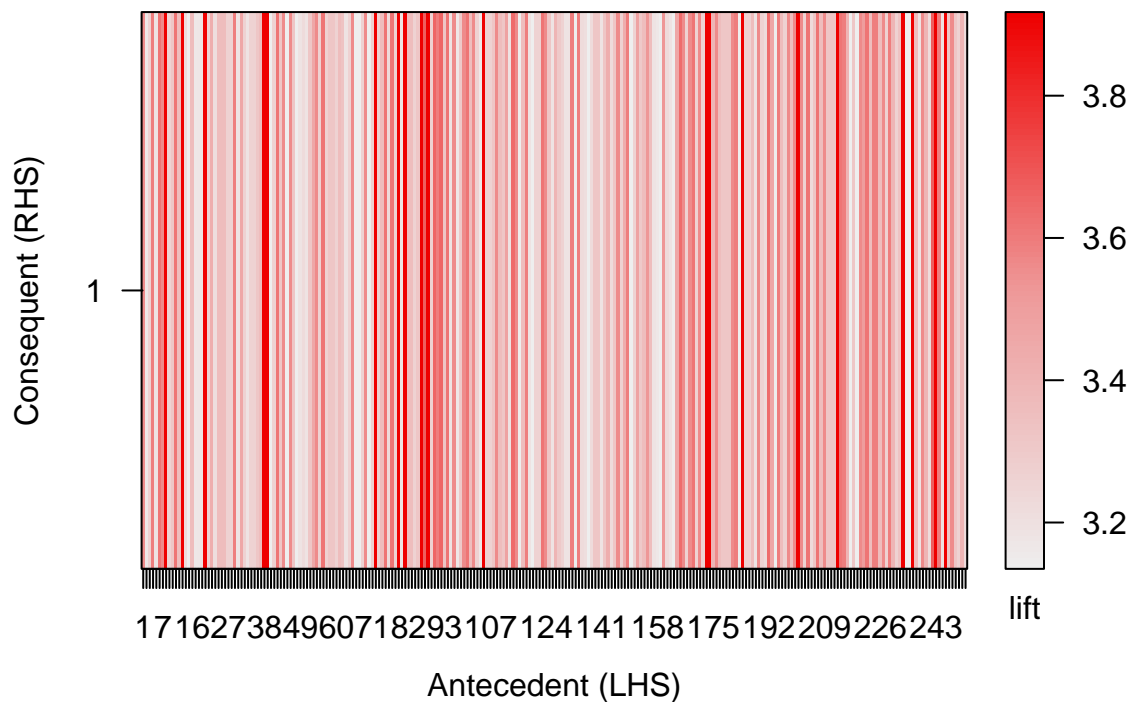
```

```

## [238] "{other vegetables,pip fruit,root vegetables,soda}"
## [239] "{pastry,root vegetables,tropical fruit,yogurt}"
## [240] "{bottled water,citrus fruit,other vegetables,tropical fruit}"
## [241] "{citrus fruit,other vegetables,root vegetables,yogurt}"
## [242] "{root vegetables,sausage,tropical fruit,yogurt}"
## [243] "{rolls/buns,root vegetables,sausage,tropical fruit}"
## [244] "{bottled water,rolls/buns,root vegetables,tropical fruit}"
## [245] "{rolls/buns,root vegetables,tropical fruit,yogurt}"
## [246] "{oil,other vegetables,root vegetables,tropical fruit,yogurt}"
## [247] "{beef,other vegetables,rolls/buns,root vegetables,tropical fruit}"
## [248] "{butter,domestic eggs,other vegetables,tropical fruit,yogurt}"
## [249] "{butter,other vegetables,root vegetables,tropical fruit,yogurt}"
## [250] "{citrus fruit,other vegetables,root vegetables,whipped/sour cream,yogurt}"
## [251] "{other vegetables,pip fruit,root vegetables,tropical fruit,yogurt}"
## [252] "{citrus fruit,other vegetables,root vegetables,tropical fruit,yogurt}"
## Itemsets in Consequent (RHS)
## [1] "{whole milk}"

```

Matrix with 252 rules



```
plot(rules1, jitter = 0)
```

Scatter plot for 252 rules

