

Assignment 8 - Association Mining

2024-08-15

```
# Load necessary libraries
library(tidyverse)

## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.1     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr    1.3.1
## v purrr    1.0.2
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()   masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

library(igraph)

##
## Attaching package: 'igraph'
##
## The following objects are masked from 'package:lubridate':
##
##     %-%, union
##
## The following objects are masked from 'package:dplyr':
##
##     as_data_frame, groups, union
##
## The following objects are masked from 'package:purrr':
##
##     compose, simplify
##
## The following object is masked from 'package:tidyrr':
##
##     crossing
##
## The following object is masked from 'package:tibble':
##
##     as_data_frame
##
## The following objects are masked from 'package:stats':
##
##     decompose, spectrum
##
```

```
## The following object is masked from 'package:base':  
##  
##      union
```

```
library(arules)
```

```
## Loading required package: Matrix  
##  
## Attaching package: 'Matrix'  
##  
## The following objects are masked from 'package:tidyverse':  
##  
##      expand, pack, unpack  
##  
##  
## Attaching package: 'arules'  
##  
## The following object is masked from 'package:dplyr':  
##  
##      recode  
##  
## The following objects are masked from 'package:base':  
##  
##      abbreviate, write
```

```
library(arulesViz)
```

```
# Read in grocery data  
baskets <- read.transactions("groceries.txt",  
                           format = "basket", sep = ",")
```

```
# Check the structure and summary of the transaction data  
str(baskets)
```

```
## Formal class 'transactions' [package "arules"] with 3 slots  
##   ..@ data      :Formal class 'ngCMatrix' [package "Matrix"] with 5 slots  
##     ... . . @ i      : int [1:43367] 29 88 118 132 33 157 167 166 38 91 ...  
##     ... . . @ p      : int [1:9836] 0 4 7 8 12 16 21 22 27 28 ...  
##     ... . . @ Dim     : int [1:2] 169 9835  
##     ... . . @ Dimnames:List of 2  
##     ... . . . $ : NULL  
##     ... . . . $ : NULL  
##     ... . . @ factors : list()  
##     ... @ itemInfo  :'data.frame': 169 obs. of 1 variable:  
##     ... . $ labels: chr [1:169] "abrasive cleaner" "artif. sweetener" "baby cosmetics" "baby food" ...  
##     .. @ itemsetInfo:'data.frame': 0 obs. of 0 variables
```

```
summary(baskets)
```

```
## 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

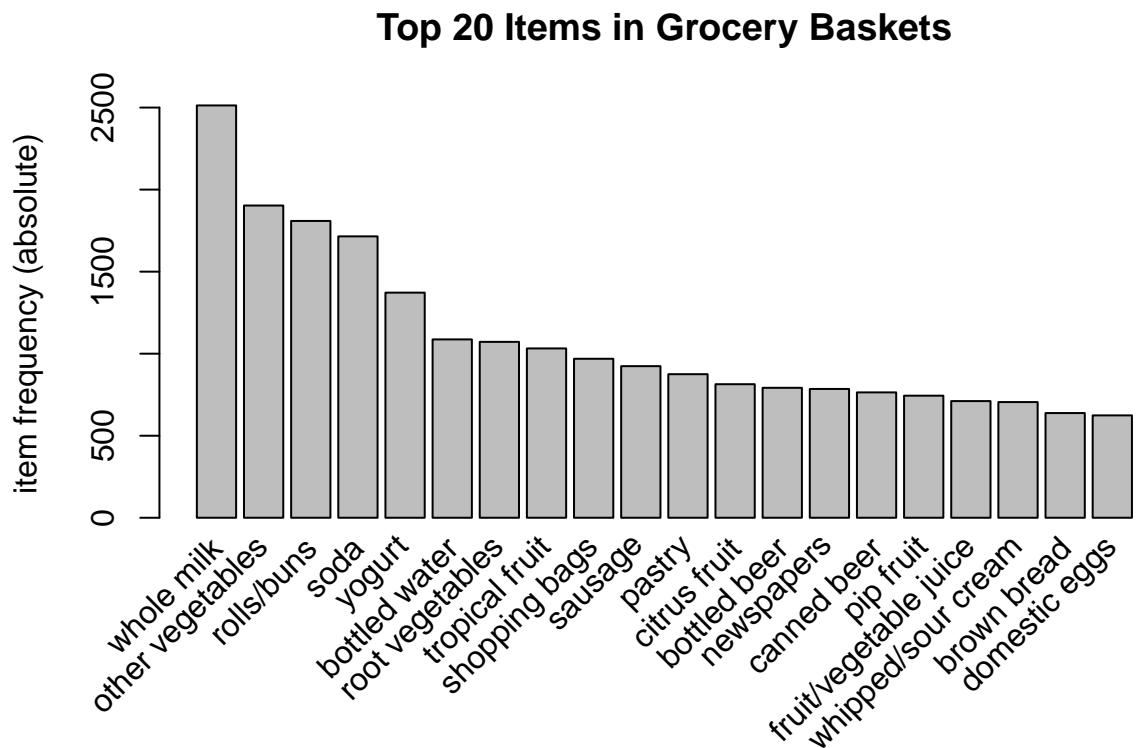
##
##      Min. 1st Qu. Median      Mean 3rd Qu.      Max.
##      1.000  2.000  3.000  4.409  6.000 32.000

##
## includes extended item information - examples:
##      labels
## 1 abrasive cleaner
## 2 artif. sweetener
## 3 baby cosmetics

```

Barplot of the top 20 items

```
itemFrequencyPlot(baskets, topN = 20, type = "absolute", main = "Top 20 Items in Grocery Baskets")
```



```

# Now run the 'apriori' algorithm
# Look at rules with support > 0.005 & confidence > 0.1 & length (# items) <= 4
grocery_rules <- apriori(baskets,
                           parameter = list(support = 0.005, confidence = 0.1, maxlen = 4))

```

```

## Apriori
##
## Parameter specification:
##   confidence minval smax arem  aval originalSupport maxtime support minlen
##           0.1      0.1     1 none FALSE                  TRUE       5  0.005      1
##   maxlen target  ext
##         4    rules TRUE
##
## Algorithmic control:
##   filter tree heap memopt load sort verbose
##   0.1 TRUE TRUE FALSE TRUE     2     TRUE
##
## Absolute minimum support count: 49
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[169 item(s), 9835 transaction(s)] done [0.00s].
## sorting and recoding items ... [120 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 4

## Warning in apriori(baskets, parameter = list(support = 0.005, confidence = 0.1,
## : Mining stopped (maxlen reached). Only patterns up to a length of 4 returned!

## done [0.00s].
## writing ... [1582 rule(s)] done [0.00s].
## creating S4 object ... done [0.00s].

```

```
inspect(grocery_rules)
```

##	lhs	rhs	support	confidence	coverage
## [1]	{}	=> {bottled water}	0.110523640	0.1105236	1.0000000000
## [2]	{}	=> {tropical fruit}	0.104931368	0.1049314	1.0000000000
## [3]	{}	=> {root vegetables}	0.108998475	0.1089985	1.0000000000
## [4]	{}	=> {soda}	0.174377224	0.1743772	1.0000000000
## [5]	{}	=> {yogurt}	0.139501779	0.1395018	1.0000000000
## [6]	{}	=> {rolls/buns}	0.183934926	0.1839349	1.0000000000
## [7]	{}	=> {other vegetables}	0.193492628	0.1934926	1.0000000000
## [8]	{}	=> {whole milk}	0.255516014	0.2555160	1.0000000000
## [9]	{cake bar}	=> {whole milk}	0.005592272	0.4230769	0.013218099
## [10]	{dishes}	=> {other vegetables}	0.005998983	0.3410405	0.017590239
## [11]	{dishes}	=> {whole milk}	0.005287239	0.3005780	0.017590239
## [12]	{mustard}	=> {whole milk}	0.005185562	0.4322034	0.011997966
## [13]	{pot plants}	=> {whole milk}	0.006914082	0.4000000	0.017285206
## [14]	{chewing gum}	=> {soda}	0.005388917	0.2560386	0.021047280
## [15]	{chewing gum}	=> {whole milk}	0.005083884	0.2415459	0.021047280
## [16]	{canned fish}	=> {other vegetables}	0.005083884	0.3378378	0.015048297
## [17]	{pasta}	=> {whole milk}	0.006100661	0.4054054	0.015048297

## [18]	{herbs}	=> {root vegetables}	0.007015760	0.4312500	0.016268429
## [19]	{herbs}	=> {other vegetables}	0.007727504	0.4750000	0.016268429
## [20]	{herbs}	=> {whole milk}	0.007727504	0.4750000	0.016268429
## [21]	{processed cheese}	=> {soda}	0.005287239	0.3190184	0.016573462
## [22]	{processed cheese}	=> {other vegetables}	0.005490595	0.3312883	0.016573462
## [23]	{processed cheese}	=> {whole milk}	0.007015760	0.4233129	0.016573462
## [24]	{semi-finished bread}	=> {other vegetables}	0.005185562	0.2931034	0.017691917
## [25]	{semi-finished bread}	=> {whole milk}	0.007117438	0.4022989	0.017691917
## [26]	{beverages}	=> {yogurt}	0.005490595	0.2109375	0.026029487
## [27]	{beverages}	=> {rolls/buns}	0.005388917	0.2070312	0.026029487
## [28]	{beverages}	=> {other vegetables}	0.005185562	0.1992188	0.026029487
## [29]	{beverages}	=> {whole milk}	0.006812405	0.2617188	0.026029487
## [30]	{ice cream}	=> {soda}	0.006100661	0.2439024	0.025012710
## [31]	{ice cream}	=> {other vegetables}	0.005083884	0.2032520	0.025012710
## [32]	{ice cream}	=> {whole milk}	0.005897306	0.2357724	0.025012710
## [33]	{detergent}	=> {other vegetables}	0.006405694	0.3333333	0.019217082
## [34]	{detergent}	=> {whole milk}	0.008947636	0.4656085	0.019217082
## [35]	{pickled vegetables}	=> {other vegetables}	0.006405694	0.3579545	0.017895272
## [36]	{pickled vegetables}	=> {whole milk}	0.007117438	0.3977273	0.017895272
## [37]	{baking powder}	=> {other vegetables}	0.007320793	0.4137931	0.017691917
## [38]	{baking powder}	=> {whole milk}	0.009252669	0.5229885	0.017691917
## [39]	{flour}	=> {other vegetables}	0.006304016	0.3625731	0.017386884
## [40]	{flour}	=> {whole milk}	0.008439248	0.4853801	0.017386884
## [41]	{soft cheese}	=> {yogurt}	0.005998983	0.3511905	0.017081851
## [42]	{soft cheese}	=> {rolls/buns}	0.005388917	0.3154762	0.017081851
## [43]	{soft cheese}	=> {other vegetables}	0.007117438	0.4166667	0.017081851
## [44]	{soft cheese}	=> {whole milk}	0.007524148	0.4404762	0.017081851
## [45]	{specialty bar}	=> {soda}	0.007219115	0.2639405	0.027351296
## [46]	{specialty bar}	=> {rolls/buns}	0.005592272	0.2044610	0.027351296
## [47]	{specialty bar}	=> {other vegetables}	0.005592272	0.2044610	0.027351296
## [48]	{specialty bar}	=> {whole milk}	0.006507372	0.2379182	0.027351296
## [49]	{misc. beverages}	=> {bottled water}	0.005287239	0.1863799	0.028368073
## [50]	{misc. beverages}	=> {soda}	0.007320793	0.2580645	0.028368073
## [51]	{misc. beverages}	=> {other vegetables}	0.005592272	0.1971326	0.028368073
## [52]	{misc. beverages}	=> {whole milk}	0.007015760	0.2473118	0.028368073
## [53]	{grapes}	=> {tropical fruit}	0.006100661	0.2727273	0.022369090
## [54]	{grapes}	=> {other vegetables}	0.009049314	0.4045455	0.022369090
## [55]	{grapes}	=> {whole milk}	0.007320793	0.3272727	0.022369090
## [56]	{cat food}	=> {yogurt}	0.006202339	0.2663755	0.023284189
## [57]	{cat food}	=> {other vegetables}	0.006507372	0.2794760	0.023284189
## [58]	{cat food}	=> {whole milk}	0.008845958	0.3799127	0.023284189
## [59]	{specialty chocolate}	=> {soda}	0.006304016	0.2073579	0.030401627
## [60]	{specialty chocolate}	=> {rolls/buns}	0.005592272	0.1839465	0.030401627
## [61]	{specialty chocolate}	=> {other vegetables}	0.006100661	0.2006689	0.030401627
## [62]	{specialty chocolate}	=> {whole milk}	0.008032537	0.2642140	0.030401627
## [63]	{meat}	=> {sausage}	0.005287239	0.2047244	0.025826131
## [64]	{meat}	=> {root vegetables}	0.005083884	0.1968504	0.025826131
## [65]	{meat}	=> {soda}	0.005490595	0.2125984	0.025826131
## [66]	{meat}	=> {yogurt}	0.005287239	0.2047244	0.025826131
## [67]	{meat}	=> {rolls/buns}	0.006914082	0.2677165	0.025826131
## [68]	{meat}	=> {other vegetables}	0.009964413	0.3858268	0.025826131
## [69]	{meat}	=> {whole milk}	0.009964413	0.3858268	0.025826131
## [70]	{frozen meals}	=> {tropical fruit}	0.005490595	0.1935484	0.028368073
## [71]	{frozen meals}	=> {soda}	0.006202339	0.2186380	0.028368073

## [72]	{frozen meals}	=> {yogurt}	0.006202339	0.2186380	0.028368073
## [73]	{frozen meals}	=> {other vegetables}	0.007524148	0.2652330	0.028368073
## [74]	{frozen meals}	=> {whole milk}	0.009862735	0.3476703	0.028368073
## [75]	{hard cheese}	=> {sausage}	0.005185562	0.2116183	0.024504321
## [76]	{hard cheese}	=> {root vegetables}	0.005592272	0.2282158	0.024504321
## [77]	{hard cheese}	=> {yogurt}	0.006405694	0.2614108	0.024504321
## [78]	{hard cheese}	=> {rolls/buns}	0.005897306	0.2406639	0.024504321
## [79]	{hard cheese}	=> {other vegetables}	0.009456024	0.3858921	0.024504321
## [80]	{hard cheese}	=> {whole milk}	0.010066090	0.4107884	0.024504321
## [81]	{butter milk}	=> {pip fruit}	0.005083884	0.1818182	0.027961362
## [82]	{butter milk}	=> {tropical fruit}	0.005490595	0.1963636	0.027961362
## [83]	{butter milk}	=> {root vegetables}	0.005083884	0.1818182	0.027961362
## [84]	{butter milk}	=> {yogurt}	0.008540925	0.3054545	0.027961362
## [85]	{butter milk}	=> {rolls/buns}	0.007625826	0.2727273	0.027961362
## [86]	{butter milk}	=> {other vegetables}	0.010371124	0.3709091	0.027961362
## [87]	{butter milk}	=> {whole milk}	0.011591256	0.4145455	0.027961362
## [88]	{candy}	=> {tropical fruit}	0.005388917	0.1802721	0.029893238
## [89]	{candy}	=> {soda}	0.008642603	0.2891156	0.029893238
## [90]	{candy}	=> {yogurt}	0.005490595	0.1836735	0.029893238
## [91]	{candy}	=> {rolls/buns}	0.007117438	0.2380952	0.029893238
## [92]	{candy}	=> {other vegetables}	0.006914082	0.2312925	0.029893238
## [93]	{candy}	=> {whole milk}	0.008235892	0.2755102	0.029893238
## [94]	{ham}	=> {white bread}	0.005083884	0.1953125	0.026029487
## [95]	{white bread}	=> {ham}	0.005083884	0.1207729	0.042094560
## [96]	{ham}	=> {tropical fruit}	0.005388917	0.2070312	0.026029487
## [97]	{ham}	=> {yogurt}	0.006710727	0.2578125	0.026029487
## [98]	{ham}	=> {rolls/buns}	0.006914082	0.2656250	0.026029487
## [99]	{ham}	=> {other vegetables}	0.009150991	0.3515625	0.026029487
## [100]	{ham}	=> {whole milk}	0.011489578	0.4414062	0.026029487
## [101]	{sliced cheese}	=> {sausage}	0.007015760	0.2863071	0.024504321
## [102]	{sliced cheese}	=> {tropical fruit}	0.005287239	0.2157676	0.024504321
## [103]	{sliced cheese}	=> {root vegetables}	0.005592272	0.2282158	0.024504321
## [104]	{sliced cheese}	=> {soda}	0.005083884	0.2074689	0.024504321
## [105]	{sliced cheese}	=> {yogurt}	0.008032537	0.3278008	0.024504321
## [106]	{sliced cheese}	=> {rolls/buns}	0.007625826	0.3112033	0.024504321
## [107]	{sliced cheese}	=> {other vegetables}	0.009049314	0.3692946	0.024504321
## [108]	{sliced cheese}	=> {whole milk}	0.010777834	0.4398340	0.024504321
## [109]	{UHT-milk}	=> {bottled water}	0.007320793	0.2188450	0.033451957
## [110]	{UHT-milk}	=> {soda}	0.007625826	0.2279635	0.033451957
## [111]	{UHT-milk}	=> {yogurt}	0.007422471	0.2218845	0.033451957
## [112]	{UHT-milk}	=> {rolls/buns}	0.006405694	0.1914894	0.033451957
## [113]	{UHT-milk}	=> {other vegetables}	0.008134215	0.2431611	0.033451957
## [114]	{oil}	=> {root vegetables}	0.007015760	0.2500000	0.028063040
## [115]	{oil}	=> {yogurt}	0.005287239	0.1884058	0.028063040
## [116]	{oil}	=> {rolls/buns}	0.005083884	0.1811594	0.028063040
## [117]	{oil}	=> {other vegetables}	0.009964413	0.3550725	0.028063040
## [118]	{oil}	=> {whole milk}	0.011286223	0.4021739	0.028063040
## [119]	{onions}	=> {whipped/sour cream}	0.005083884	0.1639344	0.031011693
## [120]	{onions}	=> {citrus fruit}	0.005592272	0.1803279	0.031011693
## [121]	{onions}	=> {bottled water}	0.005897306	0.1901639	0.031011693
## [122]	{onions}	=> {tropical fruit}	0.005693950	0.1836066	0.031011693
## [123]	{onions}	=> {root vegetables}	0.009456024	0.3049180	0.031011693
## [124]	{onions}	=> {soda}	0.005287239	0.1704918	0.031011693
## [125]	{onions}	=> {yogurt}	0.007219115	0.2327869	0.031011693

```

## [126] {onions}          => {rolls/buns}           0.006812405 0.2196721 0.031011693
## [127] {onions}          => {other vegetables} 0.014234875 0.4590164 0.031011693
## [128] {onions}          => {whole milk}          0.012099644 0.3901639 0.031011693
## [129] {berries}         => {whipped/sour cream} 0.009049314 0.2721713 0.033248602
## [130] {whipped/sour cream} => {berries}           0.009049314 0.1262411 0.071682766
## [131] {berries}         => {citrus fruit}        0.005388917 0.1620795 0.033248602
## [132] {berries}         => {tropical fruit}      0.006710727 0.2018349 0.033248602
## [133] {berries}         => {root vegetables}     0.006609049 0.1987768 0.033248602
## [134] {berries}         => {soda}                0.007320793 0.2201835 0.033248602
## [135] {berries}         => {yogurt}              0.010574479 0.3180428 0.033248602
## [136] {berries}         => {rolls/buns}          0.006609049 0.1987768 0.033248602
## [137] {berries}         => {other vegetables}    0.010269446 0.3088685 0.033248602
## [138] {berries}         => {whole milk}          0.011794611 0.3547401 0.033248602
## [139] {hamburger meat}  => {sausage}             0.005185562 0.1559633 0.033248602
## [140] {hamburger meat}  => {root vegetables}     0.006202339 0.1865443 0.033248602
## [141] {hamburger meat}  => {soda}                0.005795628 0.1743119 0.033248602
## [142] {hamburger meat}  => {yogurt}              0.006507372 0.1957187 0.033248602
## [143] {hamburger meat}  => {rolls/buns}          0.008642603 0.2599388 0.033248602
## [144] {hamburger meat}  => {other vegetables}    0.013828165 0.4159021 0.033248602
## [145] {hamburger meat}  => {whole milk}          0.014743264 0.4434251 0.033248602
## [146] {hygiene articles}=> {napkins}             0.006100661 0.1851852 0.032943569
## [147] {napkins}          => {hygiene articles}   0.006100661 0.1165049 0.052364006
## [148] {hygiene articles}=> {citrus fruit}        0.005287239 0.1604938 0.032943569
## [149] {hygiene articles}=> {shopping bags}       0.005185562 0.1574074 0.032943569
## [150] {hygiene articles}=> {bottled water}        0.005693950 0.1728395 0.032943569
## [151] {hygiene articles}=> {tropical fruit}       0.006710727 0.2037037 0.032943569
## [152] {hygiene articles}=> {root vegetables}     0.005388917 0.1635802 0.032943569
## [153] {hygiene articles}=> {soda}                0.007015760 0.2129630 0.032943569
## [154] {hygiene articles}=> {yogurt}              0.007320793 0.2222222 0.032943569
## [155] {hygiene articles}=> {rolls/buns}          0.005897306 0.1790123 0.032943569
## [156] {hygiene articles}=> {other vegetables}    0.009557702 0.2901235 0.032943569
## [157] {hygiene articles}=> {whole milk}          0.012811388 0.3888889 0.032943569
## [158] {salty snack}      => {fruit/vegetable juice} 0.005998983 0.1586022 0.037824098
## [159] {salty snack}      => {whipped/sour cream} 0.005185562 0.1370968 0.037824098
## [160] {salty snack}      => {pastry}              0.005185562 0.1370968 0.037824098
## [161] {salty snack}      => {shopping bags}       0.005998983 0.1586022 0.037824098
## [162] {salty snack}      => {sausage}             0.005287239 0.1397849 0.037824098
## [163] {salty snack}      => {tropical fruit}      0.005592272 0.1478495 0.037824098
## [164] {salty snack}      => {soda}                0.009354347 0.2473118 0.037824098
## [165] {salty snack}      => {yogurt}              0.006202339 0.1639785 0.037824098
## [166] {salty snack}      => {other vegetables}    0.010777834 0.2849462 0.037824098
## [167] {salty snack}      => {whole milk}          0.011184545 0.2956989 0.037824098
## [168] {sugar}            => {margarine}           0.005490595 0.1621622 0.033858668
## [169] {sugar}            => {pastry}              0.005185562 0.1531532 0.033858668
## [170] {sugar}            => {root vegetables}     0.006405694 0.1891892 0.033858668
## [171] {sugar}            => {soda}                0.007320793 0.2162162 0.033858668
## [172] {sugar}            => {yogurt}              0.006914082 0.2042042 0.033858668
## [173] {sugar}            => {rolls/buns}          0.007015760 0.2072072 0.033858668
## [174] {sugar}            => {other vegetables}    0.010777834 0.3183183 0.033858668
## [175] {sugar}            => {whole milk}          0.015048297 0.4444444 0.033858668
## [176] {waffles}          => {chocolate}           0.005795628 0.1507937 0.038434164
## [177] {chocolate}         => {waffles}             0.005795628 0.1168033 0.049618709
## [178] {waffles}          => {whipped/sour cream} 0.005083884 0.1322751 0.038434164
## [179] {waffles}          => {pastry}              0.007015760 0.1825397 0.038434164

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## [180]	{waffles}	=> {shopping bags}	0.005490595	0.1428571	0.038434164
## [181]	{waffles}	=> {tropical fruit}	0.006100661	0.1587302	0.038434164
## [182]	{waffles}	=> {root vegetables}	0.006609049	0.1719577	0.038434164
## [183]	{waffles}	=> {soda}	0.009557702	0.2486772	0.038434164
## [184]	{waffles}	=> {yogurt}	0.007524148	0.1957672	0.038434164
## [185]	{waffles}	=> {rolls/buns}	0.009150991	0.2380952	0.038434164
## [186]	{waffles}	=> {other vegetables}	0.010066090	0.2619048	0.038434164
## [187]	{waffles}	=> {whole milk}	0.012709710	0.3306878	0.038434164
## [188]	{long life bakery product}	=> {chocolate}	0.005287239	0.1413043	0.037417387
## [189]	{chocolate}	=> {long life bakery product}	0.005287239	0.1065574	0.049618709
## [190]	{long life bakery product}	=> {fruit/vegetable juice}	0.006202339	0.1657609	0.037417387
## [191]	{long life bakery product}	=> {whipped/sour cream}	0.005795628	0.1548913	0.037417387
## [192]	{long life bakery product}	=> {pastry}	0.005897306	0.1576087	0.037417387
## [193]	{long life bakery product}	=> {shopping bags}	0.005388917	0.1440217	0.037417387
## [194]	{long life bakery product}	=> {sausage}	0.005388917	0.1440217	0.037417387
## [195]	{long life bakery product}	=> {tropical fruit}	0.006304016	0.1684783	0.037417387
## [196]	{long life bakery product}	=> {root vegetables}	0.005287239	0.1413043	0.037417387
## [197]	{long life bakery product}	=> {soda}	0.007625826	0.2038043	0.037417387
## [198]	{long life bakery product}	=> {yogurt}	0.008744281	0.2336957	0.037417387
## [199]	{long life bakery product}	=> {rolls/buns}	0.007930859	0.2119565	0.037417387
## [200]	{long life bakery product}	=> {other vegetables}	0.010676157	0.2853261	0.037417387
## [201]	{long life bakery product}	=> {whole milk}	0.013523132	0.3614130	0.037417387
## [202]	{dessert}	=> {curd}	0.005185562	0.1397260	0.037112354
## [203]	{dessert}	=> {fruit/vegetable juice}	0.005998983	0.1616438	0.037112354
## [204]	{dessert}	=> {pastry}	0.005388917	0.1452055	0.037112354
## [205]	{dessert}	=> {shopping bags}	0.006202339	0.1671233	0.037112354
## [206]	{dessert}	=> {sausage}	0.005897306	0.1589041	0.037112354
## [207]	{dessert}	=> {bottled water}	0.005185562	0.1397260	0.037112354
## [208]	{dessert}	=> {tropical fruit}	0.006304016	0.1698630	0.037112354
## [209]	{dessert}	=> {root vegetables}	0.005795628	0.1561644	0.037112354
## [210]	{dessert}	=> {soda}	0.009862735	0.2657534	0.037112354
## [211]	{dessert}	=> {yogurt}	0.009862735	0.2657534	0.037112354
## [212]	{dessert}	=> {rolls/buns}	0.006812405	0.1835616	0.037112354
## [213]	{dessert}	=> {other vegetables}	0.011591256	0.3123288	0.037112354
## [214]	{dessert}	=> {whole milk}	0.013726487	0.3698630	0.037112354
## [215]	{canned beer}	=> {shopping bags}	0.011387900	0.1465969	0.077681749
## [216]	{shopping bags}	=> {canned beer}	0.011387900	0.1155831	0.098525674
## [217]	{canned beer}	=> {bottled water}	0.008032537	0.1034031	0.077681749
## [218]	{canned beer}	=> {soda}	0.013828165	0.1780105	0.077681749
## [219]	{canned beer}	=> {rolls/buns}	0.011286223	0.1452880	0.077681749
## [220]	{canned beer}	=> {other vegetables}	0.009049314	0.1164921	0.077681749
## [221]	{canned beer}	=> {whole milk}	0.008845958	0.1138743	0.077681749
## [222]	{cream cheese}	=> {curd}	0.005083884	0.1282051	0.039654296
## [223]	{cream cheese}	=> {domestic eggs}	0.005083884	0.1282051	0.039654296
## [224]	{cream cheese}	=> {fruit/vegetable juice}	0.005693950	0.1435897	0.039654296
## [225]	{cream cheese}	=> {whipped/sour cream}	0.006405694	0.1615385	0.039654296
## [226]	{cream cheese}	=> {pip fruit}	0.006100661	0.1538462	0.039654296
## [227]	{cream cheese}	=> {citrus fruit}	0.005693950	0.1435897	0.039654296
## [228]	{cream cheese}	=> {shopping bags}	0.005592272	0.1410256	0.039654296
## [229]	{cream cheese}	=> {sausage}	0.005592272	0.1410256	0.039654296
## [230]	{cream cheese}	=> {bottled water}	0.005897306	0.1487179	0.039654296
## [231]	{cream cheese}	=> {tropical fruit}	0.007219115	0.1820513	0.039654296
## [232]	{cream cheese}	=> {root vegetables}	0.007524148	0.1897436	0.039654296
## [233]	{cream cheese}	=> {soda}	0.006812405	0.1717949	0.039654296

## [234]	{cream cheese}	=> {yogurt}	0.012404677	0.3128205	0.039654296
## [235]	{cream cheese}	=> {rolls/buns}	0.009964413	0.2512821	0.039654296
## [236]	{cream cheese}	=> {other vegetables}	0.013726487	0.3461538	0.039654296
## [237]	{cream cheese}	=> {whole milk}	0.016471784	0.4153846	0.039654296
## [238]	{chicken}	=> {frozen vegetables}	0.006710727	0.1563981	0.042907982
## [239]	{frozen vegetables}	=> {chicken}	0.006710727	0.1395349	0.048093543
## [240]	{chicken}	=> {pork}	0.005795628	0.1350711	0.042907982
## [241]	{pork}	=> {chicken}	0.005795628	0.1005291	0.057651246
## [242]	{chicken}	=> {butter}	0.005795628	0.1350711	0.042907982
## [243]	{butter}	=> {chicken}	0.005795628	0.1045872	0.055414337
## [244]	{chicken}	=> {newspapers}	0.005185562	0.1208531	0.042907982
## [245]	{chicken}	=> {domestic eggs}	0.006202339	0.1445498	0.042907982
## [246]	{chicken}	=> {whipped/sour cream}	0.007219115	0.1682464	0.042907982
## [247]	{whipped/sour cream}	=> {chicken}	0.007219115	0.1007092	0.071682766
## [248]	{chicken}	=> {citrus fruit}	0.006914082	0.1611374	0.042907982
## [249]	{chicken}	=> {sausage}	0.005287239	0.1232227	0.042907982
## [250]	{chicken}	=> {bottled water}	0.005287239	0.1232227	0.042907982
## [251]	{chicken}	=> {tropical fruit}	0.006405694	0.1492891	0.042907982
## [252]	{chicken}	=> {root vegetables}	0.010879512	0.2535545	0.042907982
## [253]	{chicken}	=> {soda}	0.008337570	0.1943128	0.042907982
## [254]	{chicken}	=> {yogurt}	0.008337570	0.1943128	0.042907982
## [255]	{chicken}	=> {rolls/buns}	0.009659380	0.2251185	0.042907982
## [256]	{chicken}	=> {other vegetables}	0.017895272	0.4170616	0.042907982
## [257]	{chicken}	=> {whole milk}	0.017590239	0.4099526	0.042907982
## [258]	{white bread}	=> {frankfurter}	0.005185562	0.1231884	0.042094560
## [259]	{white bread}	=> {domestic eggs}	0.005795628	0.1376812	0.042094560
## [260]	{white bread}	=> {fruit/vegetable juice}	0.007422471	0.1763285	0.042094560
## [261]	{fruit/vegetable juice}	=> {white bread}	0.007422471	0.1026723	0.072292832
## [262]	{white bread}	=> {whipped/sour cream}	0.005490595	0.1304348	0.042094560
## [263]	{white bread}	=> {pip fruit}	0.006609049	0.1570048	0.042094560
## [264]	{white bread}	=> {pastry}	0.005592272	0.1328502	0.042094560
## [265]	{white bread}	=> {shopping bags}	0.007422471	0.1763285	0.042094560
## [266]	{white bread}	=> {sausage}	0.007219115	0.1714976	0.042094560
## [267]	{white bread}	=> {tropical fruit}	0.008744281	0.2077295	0.042094560
## [268]	{white bread}	=> {root vegetables}	0.007930859	0.1884058	0.042094560
## [269]	{white bread}	=> {soda}	0.010269446	0.2439614	0.042094560
## [270]	{white bread}	=> {yogurt}	0.009049314	0.2149758	0.042094560
## [271]	{white bread}	=> {rolls/buns}	0.006507372	0.1545894	0.042094560
## [272]	{white bread}	=> {other vegetables}	0.013726487	0.3260870	0.042094560
## [273]	{white bread}	=> {whole milk}	0.017081851	0.4057971	0.042094560
## [274]	{chocolate}	=> {butter}	0.006202339	0.1250000	0.049618709
## [275]	{butter}	=> {chocolate}	0.006202339	0.1119266	0.055414337
## [276]	{chocolate}	=> {newspapers}	0.005490595	0.1106557	0.049618709
## [277]	{chocolate}	=> {fruit/vegetable juice}	0.006812405	0.1372951	0.049618709
## [278]	{chocolate}	=> {pip fruit}	0.006100661	0.1229508	0.049618709
## [279]	{chocolate}	=> {pastry}	0.008032537	0.1618852	0.049618709
## [280]	{chocolate}	=> {citrus fruit}	0.006405694	0.1290984	0.049618709
## [281]	{chocolate}	=> {shopping bags}	0.008134215	0.1639344	0.049618709
## [282]	{chocolate}	=> {sausage}	0.006609049	0.1331967	0.049618709
## [283]	{chocolate}	=> {bottled water}	0.005795628	0.1168033	0.049618709
## [284]	{chocolate}	=> {tropical fruit}	0.008134215	0.1639344	0.049618709
## [285]	{chocolate}	=> {root vegetables}	0.006405694	0.1290984	0.049618709
## [286]	{chocolate}	=> {soda}	0.013523132	0.2725410	0.049618709
## [287]	{chocolate}	=> {yogurt}	0.009252669	0.1864754	0.049618709

## [288]	{chocolate}	=> {rolls/buns}	0.011794611	0.2377049	0.049618709
## [289]	{chocolate}	=> {other vegetables}	0.012709710	0.2561475	0.049618709
## [290]	{chocolate}	=> {whole milk}	0.016675140	0.3360656	0.049618709
## [291]	{coffee}	=> {fruit/vegetable juice}	0.005998983	0.1033275	0.058057956
## [292]	{coffee}	=> {whipped/sour cream}	0.006100661	0.1050788	0.058057956
## [293]	{coffee}	=> {pip fruit}	0.006914082	0.1190893	0.058057956
## [294]	{coffee}	=> {pastry}	0.006914082	0.1190893	0.058057956
## [295]	{coffee}	=> {citrus fruit}	0.006405694	0.1103327	0.058057956
## [296]	{coffee}	=> {shopping bags}	0.009354347	0.1611208	0.058057956
## [297]	{coffee}	=> {sausage}	0.006914082	0.1190893	0.058057956
## [298]	{coffee}	=> {bottled water}	0.007320793	0.1260946	0.058057956
## [299]	{coffee}	=> {tropical fruit}	0.007117438	0.1225919	0.058057956
## [300]	{coffee}	=> {root vegetables}	0.007320793	0.1260946	0.058057956
## [301]	{coffee}	=> {soda}	0.009964413	0.1716287	0.058057956
## [302]	{coffee}	=> {yogurt}	0.009761057	0.1681261	0.058057956
## [303]	{coffee}	=> {rolls/buns}	0.010981190	0.1891419	0.058057956
## [304]	{coffee}	=> {other vegetables}	0.013421454	0.2311734	0.058057956
## [305]	{coffee}	=> {whole milk}	0.018708693	0.3222417	0.058057956
## [306]	{frozen vegetables}	=> {pork}	0.006405694	0.1331924	0.048093543
## [307]	{pork}	=> {frozen vegetables}	0.006405694	0.1111111	0.057651246
## [308]	{frozen vegetables}	=> {frankfurter}	0.005083884	0.1057082	0.048093543
## [309]	{frozen vegetables}	=> {margarine}	0.005083884	0.1057082	0.048093543
## [310]	{frozen vegetables}	=> {butter}	0.005795628	0.1205074	0.048093543
## [311]	{butter}	=> {frozen vegetables}	0.005795628	0.1045872	0.055414337
## [312]	{frozen vegetables}	=> {domestic eggs}	0.005185562	0.1078224	0.048093543
## [313]	{frozen vegetables}	=> {fruit/vegetable juice}	0.007829181	0.1627907	0.048093543
## [314]	{fruit/vegetable juice}	=> {frozen vegetables}	0.007829181	0.1082982	0.072292832
## [315]	{frozen vegetables}	=> {whipped/sour cream}	0.007930859	0.1649049	0.048093543
## [316]	{whipped/sour cream}	=> {frozen vegetables}	0.007930859	0.1106383	0.071682766
## [317]	{frozen vegetables}	=> {pip fruit}	0.007320793	0.1522199	0.048093543
## [318]	{frozen vegetables}	=> {citrus fruit}	0.006609049	0.1374207	0.048093543
## [319]	{frozen vegetables}	=> {sausage}	0.005998983	0.1247357	0.048093543
## [320]	{frozen vegetables}	=> {bottled water}	0.006202339	0.1289641	0.048093543
## [321]	{frozen vegetables}	=> {tropical fruit}	0.008744281	0.1818182	0.048093543
## [322]	{frozen vegetables}	=> {root vegetables}	0.011591256	0.2410148	0.048093543
## [323]	{root vegetables}	=> {frozen vegetables}	0.011591256	0.1063433	0.108998475
## [324]	{frozen vegetables}	=> {soda}	0.008642603	0.1797040	0.048093543
## [325]	{frozen vegetables}	=> {yogurt}	0.012404677	0.2579281	0.048093543
## [326]	{frozen vegetables}	=> {rolls/buns}	0.010167768	0.2114165	0.048093543
## [327]	{frozen vegetables}	=> {other vegetables}	0.017793594	0.3699789	0.048093543
## [328]	{frozen vegetables}	=> {whole milk}	0.020437214	0.4249471	0.048093543
## [329]	{beef}	=> {pork}	0.007625826	0.1453488	0.052465684
## [330]	{pork}	=> {beef}	0.007625826	0.1322751	0.057651246
## [331]	{beef}	=> {margarine}	0.006202339	0.1182171	0.052465684
## [332]	{margarine}	=> {beef}	0.006202339	0.1059028	0.058566345
## [333]	{beef}	=> {butter}	0.005795628	0.1104651	0.052465684
## [334]	{butter}	=> {beef}	0.005795628	0.1045872	0.055414337
## [335]	{beef}	=> {newspapers}	0.006405694	0.1220930	0.052465684
## [336]	{beef}	=> {domestic eggs}	0.005998983	0.1143411	0.052465684
## [337]	{beef}	=> {whipped/sour cream}	0.006710727	0.1279070	0.052465684
## [338]	{beef}	=> {pastry}	0.006304016	0.1201550	0.052465684
## [339]	{beef}	=> {citrus fruit}	0.008439248	0.1608527	0.052465684
## [340]	{citrus fruit}	=> {beef}	0.008439248	0.1019656	0.082765633
## [341]	{beef}	=> {sausage}	0.005592272	0.1065891	0.052465684

## [342]	{beef}	=> {bottled water}	0.006202339	0.1182171	0.052465684
## [343]	{beef}	=> {tropical fruit}	0.007625826	0.1453488	0.052465684
## [344]	{beef}	=> {root vegetables}	0.017386884	0.3313953	0.052465684
## [345]	{root vegetables}	=> {beef}	0.017386884	0.1595149	0.108998475
## [346]	{beef}	=> {soda}	0.008134215	0.1550388	0.052465684
## [347]	{beef}	=> {yogurt}	0.011692933	0.2228682	0.052465684
## [348]	{beef}	=> {rolls/buns}	0.013624809	0.2596899	0.052465684
## [349]	{beef}	=> {other vegetables}	0.019725470	0.3759690	0.052465684
## [350]	{other vegetables}	=> {beef}	0.019725470	0.1019443	0.193492628
## [351]	{beef}	=> {whole milk}	0.021250635	0.4050388	0.052465684
## [352]	{curd}	=> {margarine}	0.006304016	0.1183206	0.053279105
## [353]	{margarine}	=> {curd}	0.006304016	0.1076389	0.058566345
## [354]	{curd}	=> {butter}	0.006812405	0.1278626	0.053279105
## [355]	{butter}	=> {curd}	0.006812405	0.1229358	0.055414337
## [356]	{curd}	=> {newspapers}	0.005693950	0.1068702	0.053279105
## [357]	{curd}	=> {domestic eggs}	0.006507372	0.1221374	0.053279105
## [358]	{domestic eggs}	=> {curd}	0.006507372	0.1025641	0.063446873
## [359]	{curd}	=> {whipped/sour cream}	0.010472801	0.1965649	0.053279105
## [360]	{whipped/sour cream}	=> {curd}	0.010472801	0.1460993	0.071682766
## [361]	{curd}	=> {pip fruit}	0.007829181	0.1469466	0.053279105
## [362]	{pip fruit}	=> {curd}	0.007829181	0.1034946	0.075648195
## [363]	{curd}	=> {pastry}	0.007524148	0.1412214	0.053279105
## [364]	{curd}	=> {citrus fruit}	0.007117438	0.1335878	0.053279105
## [365]	{curd}	=> {shopping bags}	0.005388917	0.1011450	0.053279105
## [366]	{curd}	=> {sausage}	0.007625826	0.1431298	0.053279105
## [367]	{curd}	=> {bottled water}	0.006100661	0.1145038	0.053279105
## [368]	{curd}	=> {tropical fruit}	0.010269446	0.1927481	0.053279105
## [369]	{curd}	=> {root vegetables}	0.010879512	0.2041985	0.053279105
## [370]	{curd}	=> {soda}	0.008134215	0.1526718	0.053279105
## [371]	{curd}	=> {yogurt}	0.017285206	0.3244275	0.053279105
## [372]	{yogurt}	=> {curd}	0.017285206	0.1239067	0.139501779
## [373]	{curd}	=> {rolls/buns}	0.010066090	0.1889313	0.053279105
## [374]	{curd}	=> {other vegetables}	0.017183528	0.3225191	0.053279105
## [375]	{curd}	=> {whole milk}	0.026131164	0.4904580	0.053279105
## [376]	{whole milk}	=> {curd}	0.026131164	0.1022682	0.255516014
## [377]	{napkins}	=> {newspapers}	0.006202339	0.1184466	0.052364006
## [378]	{napkins}	=> {domestic eggs}	0.005998983	0.1145631	0.052364006
## [379]	{napkins}	=> {fruit/vegetable juice}	0.006914082	0.1320388	0.052364006
## [380]	{napkins}	=> {whipped/sour cream}	0.007219115	0.1378641	0.052364006
## [381]	{whipped/sour cream}	=> {napkins}	0.007219115	0.1007092	0.071682766
## [382]	{napkins}	=> {pip fruit}	0.006710727	0.1281553	0.052364006
## [383]	{napkins}	=> {pastry}	0.007015760	0.1339806	0.052364006
## [384]	{napkins}	=> {citrus fruit}	0.007625826	0.1456311	0.052364006
## [385]	{napkins}	=> {shopping bags}	0.007219115	0.1378641	0.052364006
## [386]	{napkins}	=> {sausage}	0.006710727	0.1281553	0.052364006
## [387]	{napkins}	=> {bottled water}	0.008642603	0.1650485	0.052364006
## [388]	{napkins}	=> {tropical fruit}	0.010066090	0.1922330	0.052364006
## [389]	{napkins}	=> {root vegetables}	0.009964413	0.1902913	0.052364006
## [390]	{napkins}	=> {soda}	0.011997966	0.2291262	0.052364006
## [391]	{napkins}	=> {yogurt}	0.012302999	0.2349515	0.052364006
## [392]	{napkins}	=> {rolls/buns}	0.011692933	0.2233010	0.052364006
## [393]	{napkins}	=> {other vegetables}	0.014438231	0.2757282	0.052364006
## [394]	{napkins}	=> {whole milk}	0.019725470	0.3766990	0.052364006
## [395]	{pork}	=> {frankfurter}	0.005897306	0.1022928	0.057651246

```

## [396] {frankfurter}          => {pork}           0.005897306  0.1000000  0.058973055
## [397] {pork}                => {margarine}      0.006405694  0.1111111  0.057651246
## [398] {margarine}          => {pork}           0.006405694  0.1093750  0.058566345
## [399] {pork}                => {newspapers}     0.006609049  0.1146384  0.057651246
## [400] {pork}                => {whipped/sour cream} 0.008235892  0.1428571  0.057651246
## [401] {whipped/sour cream} => {pork}           0.008235892  0.1148936  0.071682766
## [402] {pork}                => {pip fruit}      0.006100661  0.1058201  0.057651246
## [403] {pork}                => {pastry}         0.006304016  0.1093474  0.057651246
## [404] {pork}                => {citrus fruit}   0.006507372  0.1128748  0.057651246
## [405] {pork}                => {shopping bags} 0.006405694  0.1111111  0.057651246
## [406] {pork}                => {sausage}        0.006507372  0.1128748  0.057651246
## [407] {pork}                => {bottled water}  0.007422471  0.1287478  0.057651246
## [408] {pork}                => {tropical fruit} 0.008540925  0.1481481  0.057651246
## [409] {pork}                => {root vegetables} 0.013624809  0.2363316  0.057651246
## [410] {root vegetables}    => {pork}           0.013624809  0.1250000  0.108998475
## [411] {pork}                => {soda}            0.011896289  0.2063492  0.057651246
## [412] {pork}                => {yogurt}          0.009557702  0.1657848  0.057651246
## [413] {pork}                => {rolls/buns}     0.011286223  0.1957672  0.057651246
## [414] {pork}                => {other vegetables} 0.021657346  0.3756614  0.057651246
## [415] {other vegetables}   => {pork}           0.021657346  0.1119285  0.193492628
## [416] {pork}                => {whole milk}      0.022165735  0.3844797  0.057651246
## [417] {frankfurter}         => {brown bread}    0.007117438  0.1206897  0.058973055
## [418] {brown bread}        => {frankfurter}     0.007117438  0.1097179  0.064870361
## [419] {frankfurter}         => {margarine}       0.006405694  0.1086207  0.058973055
## [420] {margarine}          => {frankfurter}     0.006405694  0.1093750  0.058566345
## [421] {frankfurter}         => {domestic eggs}   0.007015760  0.1189655  0.058973055
## [422] {domestic eggs}      => {frankfurter}     0.007015760  0.1105769  0.063446873
## [423] {frankfurter}         => {whipped/sour cream} 0.006202339  0.1051724  0.058973055
## [424] {frankfurter}         => {pip fruit}       0.007219115  0.1224138  0.058973055
## [425] {frankfurter}         => {pastry}          0.008337570  0.1413793  0.058973055
## [426] {frankfurter}         => {citrus fruit}     0.006507372  0.1103448  0.058973055
## [427] {frankfurter}         => {shopping bags}   0.008235892  0.1396552  0.058973055
## [428] {frankfurter}         => {sausage}         0.010066090  0.1706897  0.058973055
## [429] {sausage}             => {frankfurter}     0.010066090  0.1071429  0.093950178
## [430] {frankfurter}         => {bottled water}   0.007320793  0.1241379  0.058973055
## [431] {frankfurter}         => {tropical fruit}  0.009456024  0.1603448  0.058973055
## [432] {frankfurter}         => {root vegetables} 0.010167768  0.1724138  0.058973055
## [433] {frankfurter}         => {soda}             0.011286223  0.1913793  0.058973055
## [434] {frankfurter}         => {yogurt}          0.011184545  0.1896552  0.058973055
## [435] {frankfurter}         => {rolls/buns}      0.019217082  0.3258621  0.058973055
## [436] {rolls/buns}          => {frankfurter}     0.019217082  0.1044776  0.183934926
## [437] {frankfurter}         => {other vegetables} 0.016471784  0.2793103  0.058973055
## [438] {frankfurter}         => {whole milk}       0.020538892  0.3482759  0.058973055
## [439] {margarine}           => {bottled beer}     0.006100661  0.1041667  0.058566345
## [440] {butter}              => {bottled beer}     0.005795628  0.1045872  0.055414337
## [441] {bottled beer}        => {bottled water}   0.015760041  0.1957071  0.080528724
## [442] {bottled water}       => {bottled beer}     0.015760041  0.1425943  0.110523640
## [443] {bottled beer}        => {tropical fruit}  0.008235892  0.1022727  0.080528724
## [444] {bottled beer}        => {root vegetables} 0.009659380  0.1199495  0.080528724
## [445] {bottled beer}        => {soda}             0.016980173  0.2108586  0.080528724
## [446] {bottled beer}        => {yogurt}          0.009252669  0.1148990  0.080528724
## [447] {bottled beer}        => {rolls/buns}      0.013624809  0.1691919  0.080528724
## [448] {bottled beer}        => {other vegetables} 0.016166751  0.2007576  0.080528724
## [449] {bottled beer}        => {whole milk}       0.020437214  0.2537879  0.080528724

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## [450]	{brown bread}	=> {margarine}	0.006507372	0.1003135	0.064870361
## [451]	{margarine}	=> {brown bread}	0.006507372	0.1111111	0.058566345
## [452]	{butter}	=> {brown bread}	0.005795628	0.1045872	0.055414337
## [453]	{brown bread}	=> {newspapers}	0.007625826	0.1175549	0.064870361
## [454]	{brown bread}	=> {domestic eggs}	0.006812405	0.1050157	0.064870361
## [455]	{domestic eggs}	=> {brown bread}	0.006812405	0.1073718	0.063446873
## [456]	{brown bread}	=> {fruit/vegetable juice}	0.008337570	0.1285266	0.064870361
## [457]	{fruit/vegetable juice}	=> {brown bread}	0.008337570	0.1153305	0.072292832
## [458]	{brown bread}	=> {pip fruit}	0.007625826	0.1175549	0.064870361
## [459]	{pip fruit}	=> {brown bread}	0.007625826	0.1008065	0.075648195
## [460]	{brown bread}	=> {pastry}	0.009659380	0.1489028	0.064870361
## [461]	{pastry}	=> {brown bread}	0.009659380	0.1085714	0.088967972
## [462]	{brown bread}	=> {citrus fruit}	0.008337570	0.1285266	0.064870361
## [463]	{citrus fruit}	=> {brown bread}	0.008337570	0.1007371	0.082765633
## [464]	{brown bread}	=> {shopping bags}	0.009252669	0.1426332	0.064870361
## [465]	{brown bread}	=> {sausage}	0.010676157	0.1645768	0.064870361
## [466]	{sausage}	=> {brown bread}	0.010676157	0.1136364	0.093950178
## [467]	{brown bread}	=> {bottled water}	0.008235892	0.1269592	0.064870361
## [468]	{brown bread}	=> {tropical fruit}	0.010676157	0.1645768	0.064870361
## [469]	{tropical fruit}	=> {brown bread}	0.010676157	0.1017442	0.104931368
## [470]	{brown bread}	=> {root vegetables}	0.010167768	0.1567398	0.064870361
## [471]	{brown bread}	=> {soda}	0.012608033	0.1943574	0.064870361
## [472]	{brown bread}	=> {yogurt}	0.014539908	0.2241379	0.064870361
## [473]	{yogurt}	=> {brown bread}	0.014539908	0.1042274	0.139501779
## [474]	{brown bread}	=> {rolls/buns}	0.012608033	0.1943574	0.064870361
## [475]	{brown bread}	=> {other vegetables}	0.018708693	0.2884013	0.064870361
## [476]	{brown bread}	=> {whole milk}	0.025216065	0.3887147	0.064870361
## [477]	{margarine}	=> {butter}	0.006710727	0.1145833	0.058566345
## [478]	{butter}	=> {margarine}	0.006710727	0.1211009	0.055414337
## [479]	{margarine}	=> {newspapers}	0.007117438	0.1215278	0.058566345
## [480]	{margarine}	=> {domestic eggs}	0.008337570	0.1423611	0.058566345
## [481]	{domestic eggs}	=> {margarine}	0.008337570	0.1314103	0.063446873
## [482]	{margarine}	=> {fruit/vegetable juice}	0.006202339	0.1059028	0.058566345
## [483]	{margarine}	=> {whipped/sour cream}	0.006812405	0.1163194	0.058566345
## [484]	{margarine}	=> {pip fruit}	0.008540925	0.1458333	0.058566345
## [485]	{pip fruit}	=> {margarine}	0.008540925	0.1129032	0.075648195
## [486]	{margarine}	=> {pastry}	0.006812405	0.1163194	0.058566345
## [487]	{margarine}	=> {citrus fruit}	0.007930859	0.1354167	0.058566345
## [488]	{margarine}	=> {sausage}	0.007117438	0.1215278	0.058566345
## [489]	{margarine}	=> {bottled water}	0.010269446	0.1753472	0.058566345
## [490]	{margarine}	=> {tropical fruit}	0.009354347	0.1597222	0.058566345
## [491]	{margarine}	=> {root vegetables}	0.011082867	0.1892361	0.058566345
## [492]	{root vegetables}	=> {margarine}	0.011082867	0.1016791	0.108998475
## [493]	{margarine}	=> {soda}	0.010167768	0.1736111	0.058566345
## [494]	{margarine}	=> {yogurt}	0.014234875	0.2430556	0.058566345
## [495]	{yogurt}	=> {margarine}	0.014234875	0.1020408	0.139501779
## [496]	{margarine}	=> {rolls/buns}	0.014743264	0.2517361	0.058566345
## [497]	{margarine}	=> {other vegetables}	0.019725470	0.3368056	0.058566345
## [498]	{other vegetables}	=> {margarine}	0.019725470	0.1019443	0.193492628
## [499]	{margarine}	=> {whole milk}	0.024199288	0.4131944	0.058566345
## [500]	{butter}	=> {newspapers}	0.005795628	0.1045872	0.055414337
## [501]	{butter}	=> {domestic eggs}	0.009659380	0.1743119	0.055414337
## [502]	{domestic eggs}	=> {butter}	0.009659380	0.1522436	0.063446873
## [503]	{butter}	=> {fruit/vegetable juice}	0.008032537	0.1449541	0.055414337

```

## [504] {fruit/vegetable juice} => {butter} 0.008032537 0.1111111 0.072292832
## [505] {butter} => {whipped/sour cream} 0.010167768 0.1834862 0.055414337
## [506] {whipped/sour cream} => {butter} 0.010167768 0.1418440 0.071682766
## [507] {butter} => {pip fruit} 0.007320793 0.1321101 0.055414337
## [508] {butter} => {pastry} 0.007625826 0.1376147 0.055414337
## [509] {butter} => {citrus fruit} 0.009150991 0.1651376 0.055414337
## [510] {citrus fruit} => {butter} 0.009150991 0.1105651 0.082765633
## [511] {butter} => {sausage} 0.008642603 0.1559633 0.055414337
## [512] {butter} => {bottled water} 0.008947636 0.1614679 0.055414337
## [513] {butter} => {tropical fruit} 0.009964413 0.1798165 0.055414337
## [514] {butter} => {root vegetables} 0.012913066 0.2330275 0.055414337
## [515] {root vegetables} => {butter} 0.012913066 0.1184701 0.108998475
## [516] {butter} => {soda} 0.008845958 0.1596330 0.055414337
## [517] {butter} => {yogurt} 0.014641586 0.2642202 0.055414337
## [518] {yogurt} => {butter} 0.014641586 0.1049563 0.139501779
## [519] {butter} => {rolls/buns} 0.013421454 0.2422018 0.055414337
## [520] {butter} => {other vegetables} 0.020030503 0.3614679 0.055414337
## [521] {other vegetables} => {butter} 0.020030503 0.1035208 0.193492628
## [522] {butter} => {whole milk} 0.027554652 0.4972477 0.055414337
## [523] {whole milk} => {butter} 0.027554652 0.1078392 0.255516014
## [524] {domestic eggs} => {newspapers} 0.006914082 0.1089744 0.063446873
## [525] {newspapers} => {fruit/vegetable juice} 0.008235892 0.1031847 0.079816980
## [526] {fruit/vegetable juice} => {newspapers} 0.008235892 0.1139241 0.072292832
## [527] {whipped/sour cream} => {newspapers} 0.007219115 0.1007092 0.071682766
## [528] {newspapers} => {pastry} 0.008439248 0.1057325 0.079816980
## [529] {newspapers} => {citrus fruit} 0.008337570 0.1044586 0.079816980
## [530] {citrus fruit} => {newspapers} 0.008337570 0.1007371 0.082765633
## [531] {newspapers} => {sausage} 0.008032537 0.1006369 0.079816980
## [532] {newspapers} => {bottled water} 0.011286223 0.1414013 0.079816980
## [533] {bottled water} => {newspapers} 0.011286223 0.1021159 0.110523640
## [534] {newspapers} => {tropical fruit} 0.011794611 0.1477707 0.079816980
## [535] {tropical fruit} => {newspapers} 0.011794611 0.1124031 0.104931368
## [536] {newspapers} => {root vegetables} 0.011489578 0.1439490 0.079816980
## [537] {root vegetables} => {newspapers} 0.011489578 0.1054104 0.108998475
## [538] {newspapers} => {soda} 0.014641586 0.1834395 0.079816980
## [539] {newspapers} => {yogurt} 0.015353330 0.1923567 0.079816980
## [540] {yogurt} => {newspapers} 0.015353330 0.1100583 0.139501779
## [541] {newspapers} => {rolls/buns} 0.019725470 0.2471338 0.079816980
## [542] {rolls/buns} => {newspapers} 0.019725470 0.1072416 0.183934926
## [543] {newspapers} => {other vegetables} 0.019318760 0.2420382 0.079816980
## [544] {newspapers} => {whole milk} 0.027351296 0.3426752 0.079816980
## [545] {whole milk} => {newspapers} 0.027351296 0.1070434 0.255516014
## [546] {domestic eggs} => {fruit/vegetable juice} 0.008032537 0.1266026 0.063446873
## [547] {fruit/vegetable juice} => {domestic eggs} 0.008032537 0.1111111 0.072292832
## [548] {domestic eggs} => {whipped/sour cream} 0.009964413 0.1570513 0.063446873
## [549] {whipped/sour cream} => {domestic eggs} 0.009964413 0.1390071 0.071682766
## [550] {domestic eggs} => {pip fruit} 0.008642603 0.1362179 0.063446873
## [551] {pip fruit} => {domestic eggs} 0.008642603 0.1142473 0.075648195
## [552] {domestic eggs} => {pastry} 0.009049314 0.1426282 0.063446873
## [553] {pastry} => {domestic eggs} 0.009049314 0.1017143 0.088967972
## [554] {domestic eggs} => {citrus fruit} 0.010371124 0.1634615 0.063446873
## [555] {citrus fruit} => {domestic eggs} 0.010371124 0.1253071 0.082765633
## [556] {domestic eggs} => {shopping bags} 0.009049314 0.1426282 0.063446873
## [557] {domestic eggs} => {sausage} 0.009557702 0.1506410 0.063446873

```

## [558]	{sausage}	=> {domestic eggs}	0.009557702	0.1017316	0.093950178
## [559]	{domestic eggs}	=> {bottled water}	0.009150991	0.1442308	0.063446873
## [560]	{domestic eggs}	=> {tropical fruit}	0.011387900	0.1794872	0.063446873
## [561]	{tropical fruit}	=> {domestic eggs}	0.011387900	0.1085271	0.104931368
## [562]	{domestic eggs}	=> {root vegetables}	0.014336553	0.2259615	0.063446873
## [563]	{root vegetables}	=> {domestic eggs}	0.014336553	0.1315299	0.108998475
## [564]	{domestic eggs}	=> {soda}	0.012404677	0.1955128	0.063446873
## [565]	{domestic eggs}	=> {yogurt}	0.014336553	0.2259615	0.063446873
## [566]	{yogurt}	=> {domestic eggs}	0.014336553	0.1027697	0.139501779
## [567]	{domestic eggs}	=> {rolls/buns}	0.015658363	0.2467949	0.063446873
## [568]	{domestic eggs}	=> {other vegetables}	0.022267412	0.3509615	0.063446873
## [569]	{other vegetables}	=> {domestic eggs}	0.022267412	0.1150815	0.193492628
## [570]	{domestic eggs}	=> {whole milk}	0.029994916	0.4727564	0.063446873
## [571]	{whole milk}	=> {domestic eggs}	0.029994916	0.1173896	0.255516014
## [572]	{fruit/vegetable juice}	=> {whipped/sour cream}	0.009049314	0.1251758	0.072292832
## [573]	{whipped/sour cream}	=> {fruit/vegetable juice}	0.009049314	0.1262411	0.071682766
## [574]	{fruit/vegetable juice}	=> {pip fruit}	0.009557702	0.1322082	0.072292832
## [575]	{pip fruit}	=> {fruit/vegetable juice}	0.009557702	0.1263441	0.075648195
## [576]	{fruit/vegetable juice}	=> {pastry}	0.008540925	0.1181435	0.072292832
## [577]	{fruit/vegetable juice}	=> {citrus fruit}	0.010371124	0.1434599	0.072292832
## [578]	{citrus fruit}	=> {fruit/vegetable juice}	0.010371124	0.1253071	0.082765633
## [579]	{fruit/vegetable juice}	=> {shopping bags}	0.010676157	0.1476793	0.072292832
## [580]	{shopping bags}	=> {fruit/vegetable juice}	0.010676157	0.1083591	0.098525674
## [581]	{fruit/vegetable juice}	=> {sausage}	0.010066090	0.1392405	0.072292832
## [582]	{sausage}	=> {fruit/vegetable juice}	0.010066090	0.1071429	0.093950178
## [583]	{fruit/vegetable juice}	=> {bottled water}	0.014234875	0.1969058	0.072292832
## [584]	{bottled water}	=> {fruit/vegetable juice}	0.014234875	0.1287948	0.110523640
## [585]	{fruit/vegetable juice}	=> {tropical fruit}	0.013726487	0.1898734	0.072292832
## [586]	{tropical fruit}	=> {fruit/vegetable juice}	0.013726487	0.1308140	0.104931368
## [587]	{fruit/vegetable juice}	=> {root vegetables}	0.011997966	0.1659634	0.072292832
## [588]	{root vegetables}	=> {fruit/vegetable juice}	0.011997966	0.1100746	0.108998475
## [589]	{fruit/vegetable juice}	=> {soda}	0.018403660	0.2545710	0.072292832
## [590]	{soda}	=> {fruit/vegetable juice}	0.018403660	0.1055394	0.174377224
## [591]	{fruit/vegetable juice}	=> {yogurt}	0.018708693	0.2587904	0.072292832
## [592]	{yogurt}	=> {fruit/vegetable juice}	0.018708693	0.1341108	0.139501779
## [593]	{fruit/vegetable juice}	=> {rolls/buns}	0.014539908	0.2011252	0.072292832
## [594]	{fruit/vegetable juice}	=> {other vegetables}	0.021047280	0.2911392	0.072292832
## [595]	{other vegetables}	=> {fruit/vegetable juice}	0.021047280	0.1087756	0.193492628
## [596]	{fruit/vegetable juice}	=> {whole milk}	0.026639553	0.3684951	0.072292832
## [597]	{whole milk}	=> {fruit/vegetable juice}	0.026639553	0.1042579	0.255516014
## [598]	{whipped/sour cream}	=> {pip fruit}	0.009252669	0.1290780	0.071682766
## [599]	{pip fruit}	=> {whipped/sour cream}	0.009252669	0.1223118	0.075648195
## [600]	{whipped/sour cream}	=> {pastry}	0.007524148	0.1049645	0.071682766
## [601]	{whipped/sour cream}	=> {citrus fruit}	0.010879512	0.1517730	0.071682766
## [602]	{citrus fruit}	=> {whipped/sour cream}	0.010879512	0.1314496	0.082765633
## [603]	{whipped/sour cream}	=> {shopping bags}	0.007930859	0.1106383	0.071682766
## [604]	{whipped/sour cream}	=> {sausage}	0.009049314	0.1262411	0.071682766
## [605]	{whipped/sour cream}	=> {bottled water}	0.008744281	0.1219858	0.071682766
## [606]	{whipped/sour cream}	=> {tropical fruit}	0.013828165	0.1929078	0.071682766
## [607]	{tropical fruit}	=> {whipped/sour cream}	0.013828165	0.1317829	0.104931368
## [608]	{whipped/sour cream}	=> {root vegetables}	0.017081851	0.2382979	0.071682766
## [609]	{root vegetables}	=> {whipped/sour cream}	0.017081851	0.1567164	0.108998475
## [610]	{whipped/sour cream}	=> {soda}	0.011591256	0.1617021	0.071682766
## [611]	{whipped/sour cream}	=> {yogurt}	0.020742247	0.2893617	0.071682766

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## [612] {yogurt} => {whipped/sour cream} 0.020742247 0.1486880 0.139501779
## [613] {whipped/sour cream} => {rolls/buns} 0.014641586 0.2042553 0.071682766
## [614] {whipped/sour cream} => {other vegetables} 0.028876462 0.4028369 0.071682766
## [615] {other vegetables} => {whipped/sour cream} 0.028876462 0.1492380 0.193492628
## [616] {whipped/sour cream} => {whole milk} 0.032231825 0.4496454 0.071682766
## [617] {whole milk} => {whipped/sour cream} 0.032231825 0.1261441 0.255516014
## [618] {pip fruit} => {pastry} 0.010676157 0.1411290 0.075648195
## [619] {pastry} => {pip fruit} 0.010676157 0.1200000 0.088967972
## [620] {pip fruit} => {citrus fruit} 0.013828165 0.1827957 0.075648195
## [621] {citrus fruit} => {pip fruit} 0.013828165 0.1670762 0.082765633
## [622] {pip fruit} => {shopping bags} 0.009354347 0.1236559 0.075648195
## [623] {pip fruit} => {sausage} 0.010777834 0.1424731 0.075648195
## [624] {sausage} => {pip fruit} 0.010777834 0.1147186 0.093950178
## [625] {pip fruit} => {bottled water} 0.010574479 0.1397849 0.075648195
## [626] {pip fruit} => {tropical fruit} 0.020437214 0.2701613 0.075648195
## [627] {tropical fruit} => {pip fruit} 0.020437214 0.1947674 0.104931368
## [628] {pip fruit} => {root vegetables} 0.015556685 0.2056452 0.075648195
## [629] {root vegetables} => {pip fruit} 0.015556685 0.1427239 0.108998475
## [630] {pip fruit} => {soda} 0.013319776 0.1760753 0.075648195
## [631] {pip fruit} => {yogurt} 0.017996950 0.2379032 0.075648195
## [632] {yogurt} => {pip fruit} 0.017996950 0.1290087 0.139501779
## [633] {pip fruit} => {rolls/buns} 0.013929842 0.1841398 0.075648195
## [634] {pip fruit} => {other vegetables} 0.026131164 0.3454301 0.075648195
## [635] {other vegetables} => {pip fruit} 0.026131164 0.1350499 0.193492628
## [636] {pip fruit} => {whole milk} 0.030096594 0.3978495 0.075648195
## [637] {whole milk} => {pip fruit} 0.030096594 0.1177875 0.255516014
## [638] {pastry} => {citrus fruit} 0.009761057 0.1097143 0.088967972
## [639] {citrus fruit} => {pastry} 0.009761057 0.1179361 0.082765633
## [640] {pastry} => {shopping bags} 0.011896289 0.1337143 0.088967972
## [641] {shopping bags} => {pastry} 0.011896289 0.1207430 0.098525674
## [642] {pastry} => {sausage} 0.012506355 0.1405714 0.088967972
## [643] {sausage} => {pastry} 0.012506355 0.1331169 0.093950178
## [644] {pastry} => {bottled water} 0.008947636 0.1005714 0.088967972
## [645] {pastry} => {tropical fruit} 0.013218099 0.1485714 0.088967972
## [646] {tropical fruit} => {pastry} 0.013218099 0.1259690 0.104931368
## [647] {pastry} => {root vegetables} 0.010981190 0.1234286 0.088967972
## [648] {root vegetables} => {pastry} 0.010981190 0.1007463 0.108998475
## [649] {pastry} => {soda} 0.021047280 0.2365714 0.088967972
## [650] {soda} => {pastry} 0.021047280 0.1206997 0.174377224
## [651] {pastry} => {yogurt} 0.017691917 0.1988571 0.088967972
## [652] {yogurt} => {pastry} 0.017691917 0.1268222 0.139501779
## [653] {pastry} => {rolls/buns} 0.020945602 0.2354286 0.088967972
## [654] {rolls/buns} => {pastry} 0.020945602 0.1138751 0.183934926
## [655] {pastry} => {other vegetables} 0.022572445 0.2537143 0.088967972
## [656] {other vegetables} => {pastry} 0.022572445 0.1166579 0.193492628
## [657] {pastry} => {whole milk} 0.033248602 0.3737143 0.088967972
## [658] {whole milk} => {pastry} 0.033248602 0.1301234 0.255516014
## [659] {citrus fruit} => {shopping bags} 0.009761057 0.1179361 0.082765633
## [660] {citrus fruit} => {sausage} 0.011286223 0.1363636 0.082765633
## [661] {sausage} => {citrus fruit} 0.011286223 0.1201299 0.093950178
## [662] {citrus fruit} => {bottled water} 0.013523132 0.1633907 0.082765633
## [663] {bottled water} => {citrus fruit} 0.013523132 0.1223551 0.110523640
## [664] {citrus fruit} => {tropical fruit} 0.019928826 0.2407862 0.082765633
## [665] {tropical fruit} => {citrus fruit} 0.019928826 0.1899225 0.104931368

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## [666] {citrus fruit}          => {root vegetables}      0.017691917 0.2137592 0.082765633
## [667] {root vegetables}       => {citrus fruit}        0.017691917 0.1623134 0.108998475
## [668] {citrus fruit}          => {soda}                0.012811388 0.1547912 0.082765633
## [669] {citrus fruit}          => {yogurt}              0.021657346 0.2616708 0.082765633
## [670] {yogurt}                => {citrus fruit}        0.021657346 0.1552478 0.139501779
## [671] {citrus fruit}          => {rolls/buns}         0.016776817 0.2027027 0.082765633
## [672] {citrus fruit}          => {other vegetables}   0.028876462 0.3488943 0.082765633
## [673] {other vegetables}      => {citrus fruit}        0.028876462 0.1492380 0.193492628
## [674] {citrus fruit}          => {whole milk}         0.030503305 0.3685504 0.082765633
## [675] {whole milk}            => {citrus fruit}        0.030503305 0.1193792 0.255516014
## [676] {shopping bags}         => {sausage}             0.015658363 0.1589267 0.098525674
## [677] {sausage}               => {shopping bags}      0.015658363 0.1666667 0.093950178
## [678] {shopping bags}         => {bottled water}       0.010981190 0.1114551 0.098525674
## [679] {shopping bags}         => {tropical fruit}     0.013523132 0.1372549 0.098525674
## [680] {tropical fruit}        => {shopping bags}      0.013523132 0.1288760 0.104931368
## [681] {shopping bags}         => {root vegetables}    0.012811388 0.1300310 0.098525674
## [682] {root vegetables}       => {shopping bags}      0.012811388 0.1175373 0.108998475
## [683] {shopping bags}         => {soda}                0.024605999 0.2497420 0.098525674
## [684] {soda}                  => {shopping bags}      0.024605999 0.1411079 0.174377224
## [685] {shopping bags}         => {yogurt}              0.015251652 0.1547988 0.098525674
## [686] {yogurt}                => {shopping bags}      0.015251652 0.1093294 0.139501779
## [687] {shopping bags}         => {rolls/buns}         0.019522115 0.1981424 0.098525674
## [688] {rolls/buns}            => {shopping bags}      0.019522115 0.1061360 0.183934926
## [689] {shopping bags}         => {other vegetables}   0.023182511 0.2352941 0.098525674
## [690] {other vegetables}      => {shopping bags}      0.023182511 0.1198108 0.193492628
## [691] {shopping bags}         => {whole milk}          0.024504321 0.2487100 0.098525674
## [692] {sausage}               => {bottled water}       0.011997966 0.1277056 0.093950178
## [693] {bottled water}          => {sausage}             0.011997966 0.1085557 0.110523640
## [694] {sausage}               => {tropical fruit}     0.013929842 0.1482684 0.093950178
## [695] {tropical fruit}        => {sausage}             0.013929842 0.1327519 0.104931368
## [696] {sausage}               => {root vegetables}    0.014946619 0.1590909 0.093950178
## [697] {root vegetables}       => {sausage}             0.014946619 0.1371269 0.108998475
## [698] {sausage}               => {soda}                0.024300966 0.2586580 0.093950178
## [699] {soda}                  => {sausage}             0.024300966 0.1393586 0.174377224
## [700] {sausage}               => {yogurt}              0.019623793 0.2088745 0.093950178
## [701] {yogurt}                => {sausage}             0.019623793 0.1406706 0.139501779
## [702] {sausage}               => {rolls/buns}         0.030604982 0.3257576 0.093950178
## [703] {rolls/buns}            => {sausage}             0.030604982 0.1663903 0.183934926
## [704] {sausage}               => {other vegetables}   0.026944586 0.2867965 0.093950178
## [705] {other vegetables}      => {sausage}             0.026944586 0.1392538 0.193492628
## [706] {sausage}               => {whole milk}          0.029893238 0.3181818 0.093950178
## [707] {whole milk}            => {sausage}             0.029893238 0.1169916 0.255516014
## [708] {bottled water}          => {tropical fruit}     0.018505338 0.1674333 0.110523640
## [709] {tropical fruit}        => {bottled water}        0.018505338 0.1763566 0.104931368
## [710] {bottled water}          => {root vegetables}    0.015658363 0.1416743 0.110523640
## [711] {root vegetables}        => {bottled water}        0.015658363 0.1436567 0.108998475
## [712] {bottled water}          => {soda}                0.028978139 0.2621895 0.110523640
## [713] {soda}                  => {bottled water}        0.028978139 0.1661808 0.174377224
## [714] {bottled water}          => {yogurt}              0.022979156 0.2079117 0.110523640
## [715] {yogurt}                => {bottled water}        0.022979156 0.1647230 0.139501779
## [716] {bottled water}          => {rolls/buns}         0.024199288 0.2189512 0.110523640
## [717] {rolls/buns}            => {bottled water}        0.024199288 0.1315644 0.183934926
## [718] {bottled water}          => {other vegetables}   0.024809354 0.2244710 0.110523640
## [719] {other vegetables}      => {bottled water}        0.024809354 0.1282186 0.193492628

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## [720] {bottled water}
## [721] {whole milk}
## [722] {tropical fruit}
## [723] {root vegetables}
## [724] {tropical fruit}
## [725] {soda}
## [726] {tropical fruit}
## [727] {yogurt}
## [728] {tropical fruit}
## [729] {rolls/buns}
## [730] {tropical fruit}
## [731] {other vegetables}
## [732] {tropical fruit}
## [733] {whole milk}
## [734] {root vegetables}
## [735] {soda}
## [736] {root vegetables}
## [737] {yogurt}
## [738] {root vegetables}
## [739] {rolls/buns}
## [740] {root vegetables}
## [741] {other vegetables}
## [742] {root vegetables}
## [743] {whole milk}
## [744] {soda}
## [745] {yogurt}
## [746] {soda}
## [747] {rolls/buns}
## [748] {soda}
## [749] {other vegetables}
## [750] {soda}
## [751] {whole milk}
## [752] {yogurt}
## [753] {rolls/buns}
## [754] {yogurt}
## [755] {other vegetables}
## [756] {yogurt}
## [757] {whole milk}
## [758] {rolls/buns}
## [759] {other vegetables}
## [760] {rolls/buns}
## [761] {whole milk}
## [762] {other vegetables}
## [763] {whole milk}
## [764] {oil,
##       other vegetables}
## [765] {oil,
##       whole milk}
## [766] {onions,
##       root vegetables}
## [767] {onions,
##       other vegetables}
## [768] {other vegetables,
##       root vegetables}
=> {whole milk}          0.034367056  0.3109476  0.110523640
=> {bottled water}        0.034367056  0.1345006  0.255516014
=> {root vegetables}      0.021047280  0.2005814  0.104931368
=> {tropical fruit}       0.021047280  0.1930970  0.108998475
=> {soda}                  0.020843925  0.1986434  0.104931368
=> {tropical fruit}       0.020843925  0.1195335  0.174377224
=> {yogurt}                 0.029283172  0.2790698  0.104931368
=> {tropical fruit}       0.029283172  0.2099125  0.139501779
=> {rolls/buns}            0.024605999  0.2344961  0.104931368
=> {tropical fruit}       0.024605999  0.1337756  0.183934926
=> {other vegetables}     0.035892222  0.3420543  0.104931368
=> {tropical fruit}       0.035892222  0.1854966  0.193492628
=> {whole milk}             0.042297916  0.4031008  0.104931368
=> {tropical fruit}       0.042297916  0.1655392  0.255516014
=> {soda}                  0.018607016  0.1707090  0.108998475
=> {root vegetables}      0.018607016  0.1067055  0.174377224
=> {yogurt}                 0.025826131  0.2369403  0.108998475
=> {root vegetables}      0.025826131  0.1851312  0.139501779
=> {rolls/buns}            0.024300966  0.2229478  0.108998475
=> {root vegetables}      0.024300966  0.1321172  0.183934926
=> {other vegetables}     0.047381800  0.4347015  0.108998475
=> {root vegetables}      0.047381800  0.2448765  0.193492628
=> {whole milk}             0.048906965  0.4486940  0.108998475
=> {root vegetables}      0.048906965  0.1914047  0.255516014
=> {soda}                  0.027351296  0.1568513  0.174377224
=> {soda}                  0.027351296  0.1960641  0.139501779
=> {rolls/buns}            0.038332486  0.2198251  0.174377224
=> {soda}                  0.038332486  0.2084024  0.183934926
=> {other vegetables}     0.032740214  0.1877551  0.174377224
=> {soda}                  0.032740214  0.1692065  0.193492628
=> {whole milk}             0.040061007  0.2297376  0.174377224
=> {soda}                  0.040061007  0.1567847  0.255516014
=> {rolls/buns}            0.034367056  0.2463557  0.139501779
=> {yogurt}                 0.034367056  0.1868436  0.183934926
=> {other vegetables}     0.043416370  0.3112245  0.139501779
=> {yogurt}                 0.043416370  0.2243826  0.193492628
=> {whole milk}             0.056024403  0.4016035  0.139501779
=> {yogurt}                 0.056024403  0.2192598  0.255516014
=> {other vegetables}     0.042602949  0.2316197  0.183934926
=> {rolls/buns}            0.042602949  0.2201787  0.193492628
=> {whole milk}             0.056634469  0.3079049  0.183934926
=> {rolls/buns}            0.056634469  0.2216474  0.255516014
=> {whole milk}             0.074834774  0.3867578  0.193492628
=> {other vegetables}     0.074834774  0.2928770  0.255516014
=> {whole milk}             0.005083884  0.5102041  0.009964413
=> {other vegetables}     0.005083884  0.4504505  0.011286223
=> {whole milk}             0.005693950  0.6021505  0.009456024
=> {other vegetables}     0.005693950  0.4000000  0.014234875
=> {onions}                 0.005693950  0.1201717  0.047381800

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## [769]	{onions, ## other vegetables}	=> {whole milk}	0.006609049	0.4642857	0.014234875
## [770]	{onions, ## whole milk}	=> {other vegetables}	0.006609049	0.5462185	0.012099644
## [771]	{hamburger meat, ## other vegetables}	=> {whole milk}	0.006304016	0.4558824	0.013828165
## [772]	{hamburger meat, ## whole milk}	=> {other vegetables}	0.006304016	0.4275862	0.014743264
## [773]	{hygiene articles, ## other vegetables}	=> {whole milk}	0.005185562	0.5425532	0.009557702
## [774]	{hygiene articles, ## whole milk}	=> {other vegetables}	0.005185562	0.4047619	0.012811388
## [775]	{other vegetables, ## sugar}	=> {whole milk}	0.006304016	0.5849057	0.010777834
## [776]	{sugar, ## whole milk}	=> {other vegetables}	0.006304016	0.4189189	0.015048297
## [777]	{long life bakery product, ## other vegetables}	=> {whole milk}	0.005693950	0.5333333	0.010676157
## [778]	{long life bakery product, ## whole milk}	=> {other vegetables}	0.005693950	0.4210526	0.013523132
## [779]	{cream cheese, ## yogurt}	=> {other vegetables}	0.005287239	0.4262295	0.012404677
## [780]	{cream cheese, ## other vegetables}	=> {yogurt}	0.005287239	0.3851852	0.013726487
## [781]	{other vegetables, ## yogurt}	=> {cream cheese}	0.005287239	0.1217799	0.043416370
## [782]	{cream cheese, ## yogurt}	=> {whole milk}	0.006609049	0.5327869	0.012404677
## [783]	{cream cheese, ## whole milk}	=> {yogurt}	0.006609049	0.4012346	0.016471784
## [784]	{whole milk, ## yogurt}	=> {cream cheese}	0.006609049	0.1179673	0.056024403
## [785]	{cream cheese, ## other vegetables}	=> {whole milk}	0.006710727	0.4888889	0.013726487
## [786]	{cream cheese, ## whole milk}	=> {other vegetables}	0.006710727	0.4074074	0.016471784
## [787]	{chicken, ## root vegetables}	=> {other vegetables}	0.005693950	0.5233645	0.010879512
## [788]	{chicken, ## other vegetables}	=> {root vegetables}	0.005693950	0.3181818	0.017895272
## [789]	{other vegetables, ## root vegetables}	=> {chicken}	0.005693950	0.1201717	0.047381800
## [790]	{chicken, ## root vegetables}	=> {whole milk}	0.005998983	0.5514019	0.010879512
## [791]	{chicken, ## whole milk}	=> {root vegetables}	0.005998983	0.3410405	0.017590239
## [792]	{root vegetables, ## whole milk}	=> {chicken}	0.005998983	0.1226611	0.048906965
## [793]	{chicken, ## rolls/buns}	=> {whole milk}	0.005287239	0.5473684	0.009659380
## [794]	{chicken, ## whole milk}	=> {rolls/buns}	0.005287239	0.3005780	0.017590239
## [795]	{chicken, ## other vegetables}	=> {whole milk}	0.008439248	0.4715909	0.017895272

## [796]	{chicken, ## whole milk}	=> {other vegetables}	0.008439248	0.4797688	0.017590239
## [797]	{other vegetables, ## whole milk}	=> {chicken}	0.008439248	0.1127717	0.074834774
## [798]	{other vegetables, ## white bread}	=> {whole milk}	0.005897306	0.4296296	0.013726487
## [799]	{white bread, ## whole milk}	=> {other vegetables}	0.005897306	0.3452381	0.017081851
## [800]	{chocolate, ## soda}	=> {whole milk}	0.005083884	0.3759398	0.013523132
## [801]	{chocolate, ## whole milk}	=> {soda}	0.005083884	0.3048780	0.016675140
## [802]	{soda, ## whole milk}	=> {chocolate}	0.005083884	0.1269036	0.040061007
## [803]	{chocolate, ## other vegetables}	=> {whole milk}	0.005490595	0.4320000	0.012709710
## [804]	{chocolate, ## whole milk}	=> {other vegetables}	0.005490595	0.3292683	0.016675140
## [805]	{coffee, ## yogurt}	=> {whole milk}	0.005083884	0.5208333	0.009761057
## [806]	{coffee, ## whole milk}	=> {yogurt}	0.005083884	0.2717391	0.018708693
## [807]	{coffee, ## other vegetables}	=> {whole milk}	0.006405694	0.4772727	0.013421454
## [808]	{coffee, ## whole milk}	=> {other vegetables}	0.006405694	0.3423913	0.018708693
## [809]	{frozen vegetables, ## root vegetables}	=> {other vegetables}	0.006100661	0.5263158	0.011591256
## [810]	{frozen vegetables, ## other vegetables}	=> {root vegetables}	0.006100661	0.3428571	0.017793594
## [811]	{other vegetables, ## root vegetables}	=> {frozen vegetables}	0.006100661	0.1287554	0.047381800
## [812]	{frozen vegetables, ## root vegetables}	=> {whole milk}	0.006202339	0.5350877	0.011591256
## [813]	{frozen vegetables, ## whole milk}	=> {root vegetables}	0.006202339	0.3034826	0.020437214
## [814]	{root vegetables, ## whole milk}	=> {frozen vegetables}	0.006202339	0.1268191	0.048906965
## [815]	{frozen vegetables, ## yogurt}	=> {other vegetables}	0.005287239	0.4262295	0.012404677
## [816]	{frozen vegetables, ## other vegetables}	=> {yogurt}	0.005287239	0.2971429	0.017793594
## [817]	{other vegetables, ## yogurt}	=> {frozen vegetables}	0.005287239	0.1217799	0.043416370
## [818]	{frozen vegetables, ## yogurt}	=> {whole milk}	0.006100661	0.4918033	0.012404677
## [819]	{frozen vegetables, ## whole milk}	=> {yogurt}	0.006100661	0.2985075	0.020437214
## [820]	{whole milk, ## yogurt}	=> {frozen vegetables}	0.006100661	0.1088929	0.056024403
## [821]	{frozen vegetables, ## rolls/buns}	=> {whole milk}	0.005083884	0.5000000	0.010167768
## [822]	{frozen vegetables, ## whole milk}	=> {rolls/buns}	0.005083884	0.2487562	0.020437214

## [823]	{frozen vegetables, ## other vegetables}	=> {whole milk}	0.009659380	0.5428571	0.017793594
## [824]	{frozen vegetables, ## whole milk}	=> {other vegetables}	0.009659380	0.4726368	0.020437214
## [825]	{other vegetables, ## whole milk}	=> {frozen vegetables}	0.009659380	0.1290761	0.074834774
## [826]	{beef, ## root vegetables}	=> {other vegetables}	0.007930859	0.4561404	0.017386884
## [827]	{beef, ## other vegetables}	=> {root vegetables}	0.007930859	0.4020619	0.019725470
## [828]	{other vegetables, ## root vegetables}	=> {beef}	0.007930859	0.1673820	0.047381800
## [829]	{beef, ## root vegetables}	=> {whole milk}	0.008032537	0.4619883	0.017386884
## [830]	{beef, ## whole milk}	=> {root vegetables}	0.008032537	0.3779904	0.021250635
## [831]	{root vegetables, ## whole milk}	=> {beef}	0.008032537	0.1642412	0.048906965
## [832]	{beef, ## yogurt}	=> {other vegetables}	0.005185562	0.4434783	0.011692933
## [833]	{beef, ## other vegetables}	=> {yogurt}	0.005185562	0.2628866	0.019725470
## [834]	{other vegetables, ## yogurt}	=> {beef}	0.005185562	0.1194379	0.043416370
## [835]	{beef, ## yogurt}	=> {whole milk}	0.006100661	0.5217391	0.011692933
## [836]	{beef, ## whole milk}	=> {yogurt}	0.006100661	0.2870813	0.021250635
## [837]	{whole milk, ## yogurt}	=> {beef}	0.006100661	0.1088929	0.056024403
## [838]	{beef, ## rolls/buns}	=> {other vegetables}	0.005795628	0.4253731	0.013624809
## [839]	{beef, ## other vegetables}	=> {rolls/buns}	0.005795628	0.2938144	0.019725470
## [840]	{other vegetables, ## rolls/buns}	=> {beef}	0.005795628	0.1360382	0.042602949
## [841]	{beef, ## rolls/buns}	=> {whole milk}	0.006812405	0.5000000	0.013624809
## [842]	{beef, ## whole milk}	=> {rolls/buns}	0.006812405	0.3205742	0.021250635
## [843]	{rolls/buns, ## whole milk}	=> {beef}	0.006812405	0.1202873	0.056634469
## [844]	{beef, ## other vegetables}	=> {whole milk}	0.009252669	0.4690722	0.019725470
## [845]	{beef, ## whole milk}	=> {other vegetables}	0.009252669	0.4354067	0.021250635
## [846]	{other vegetables, ## whole milk}	=> {beef}	0.009252669	0.1236413	0.074834774
## [847]	{curd, ## whipped/sour cream}	=> {whole milk}	0.005897306	0.5631068	0.010472801
## [848]	{curd, ## whole milk}	=> {whipped/sour cream}	0.005897306	0.2256809	0.026131164
## [849]	{whipped/sour cream, ## whole milk}	=> {curd}	0.005897306	0.1829653	0.032231825

## [850]	{curd, ## tropical fruit}	=> {yogurt}	0.005287239	0.5148515	0.010269446
## [851]	{curd, ## yogurt}	=> {tropical fruit}	0.005287239	0.3058824	0.017285206
## [852]	{tropical fruit, ## yogurt}	=> {curd}	0.005287239	0.1805556	0.029283172
## [853]	{curd, ## tropical fruit}	=> {other vegetables}	0.005287239	0.5148515	0.010269446
## [854]	{curd, ## other vegetables}	=> {tropical fruit}	0.005287239	0.3076923	0.017183528
## [855]	{other vegetables, ## tropical fruit}	=> {curd}	0.005287239	0.1473088	0.035892222
## [856]	{curd, ## tropical fruit}	=> {whole milk}	0.006507372	0.6336634	0.010269446
## [857]	{curd, ## whole milk}	=> {tropical fruit}	0.006507372	0.2490272	0.026131164
## [858]	{tropical fruit, ## whole milk}	=> {curd}	0.006507372	0.1538462	0.042297916
## [859]	{curd, ## root vegetables}	=> {other vegetables}	0.005490595	0.5046729	0.010879512
## [860]	{curd, ## other vegetables}	=> {root vegetables}	0.005490595	0.3195266	0.017183528
## [861]	{other vegetables, ## root vegetables}	=> {curd}	0.005490595	0.1158798	0.047381800
## [862]	{curd, ## root vegetables}	=> {whole milk}	0.006202339	0.5700935	0.010879512
## [863]	{curd, ## whole milk}	=> {root vegetables}	0.006202339	0.2373541	0.026131164
## [864]	{root vegetables, ## whole milk}	=> {curd}	0.006202339	0.1268191	0.048906965
## [865]	{curd, ## yogurt}	=> {other vegetables}	0.006100661	0.3529412	0.017285206
## [866]	{curd, ## other vegetables}	=> {yogurt}	0.006100661	0.3550296	0.017183528
## [867]	{other vegetables, ## yogurt}	=> {curd}	0.006100661	0.1405152	0.043416370
## [868]	{curd, ## yogurt}	=> {whole milk}	0.010066090	0.5823529	0.017285206
## [869]	{curd, ## whole milk}	=> {yogurt}	0.010066090	0.3852140	0.026131164
## [870]	{whole milk, ## yogurt}	=> {curd}	0.010066090	0.1796733	0.056024403
## [871]	{curd, ## rolls/buns}	=> {whole milk}	0.005897306	0.5858586	0.01066090
## [872]	{curd, ## whole milk}	=> {rolls/buns}	0.005897306	0.2256809	0.026131164
## [873]	{rolls/buns, ## whole milk}	=> {curd}	0.005897306	0.1041293	0.056634469
## [874]	{curd, ## other vegetables}	=> {whole milk}	0.009862735	0.5739645	0.017183528
## [875]	{curd, ## whole milk}	=> {other vegetables}	0.009862735	0.3774319	0.026131164
## [876]	{other vegetables, ## whole milk}	=> {curd}	0.009862735	0.1317935	0.074834774

## [877]	{napkins, ## yogurt}	=> {whole milk}	0.006100661	0.4958678	0.012302999
## [878]	{napkins, ## whole milk}	=> {yogurt}	0.006100661	0.3092784	0.019725470
## [879]	{whole milk, ## yogurt}	=> {napkins}	0.006100661	0.1088929	0.056024403
## [880]	{napkins, ## rolls/buns}	=> {whole milk}	0.005287239	0.4521739	0.011692933
## [881]	{napkins, ## whole milk}	=> {rolls/buns}	0.005287239	0.2680412	0.019725470
## [882]	{napkins, ## other vegetables}	=> {whole milk}	0.006812405	0.4718310	0.014438231
## [883]	{napkins, ## whole milk}	=> {other vegetables}	0.006812405	0.3453608	0.019725470
## [884]	{pork, ## root vegetables}	=> {other vegetables}	0.007015760	0.5149254	0.013624809
## [885]	{other vegetables, ## pork}	=> {root vegetables}	0.007015760	0.3239437	0.021657346
## [886]	{other vegetables, ## root vegetables}	=> {pork}	0.007015760	0.1480687	0.047381800
## [887]	{pork, ## root vegetables}	=> {whole milk}	0.006812405	0.5000000	0.013624809
## [888]	{pork, ## whole milk}	=> {root vegetables}	0.006812405	0.3073394	0.022165735
## [889]	{root vegetables, ## whole milk}	=> {pork}	0.006812405	0.1392931	0.048906965
## [890]	{pork, ## rolls/buns}	=> {other vegetables}	0.005592272	0.4954955	0.011286223
## [891]	{other vegetables, ## pork}	=> {rolls/buns}	0.005592272	0.2582160	0.021657346
## [892]	{other vegetables, ## rolls/buns}	=> {pork}	0.005592272	0.1312649	0.042602949
## [893]	{pork, ## rolls/buns}	=> {whole milk}	0.006202339	0.5495495	0.011286223
## [894]	{pork, ## whole milk}	=> {rolls/buns}	0.006202339	0.2798165	0.022165735
## [895]	{rolls/buns, ## whole milk}	=> {pork}	0.006202339	0.1095153	0.056634469
## [896]	{other vegetables, ## pork}	=> {whole milk}	0.010167768	0.4694836	0.021657346
## [897]	{pork, ## whole milk}	=> {other vegetables}	0.010167768	0.4587156	0.022165735
## [898]	{other vegetables, ## whole milk}	=> {pork}	0.010167768	0.1358696	0.074834774
## [899]	{frankfurter, ## tropical fruit}	=> {whole milk}	0.005185562	0.5483871	0.009456024
## [900]	{frankfurter, ## whole milk}	=> {tropical fruit}	0.005185562	0.2524752	0.020538892
## [901]	{tropical fruit, ## whole milk}	=> {frankfurter}	0.005185562	0.1225962	0.042297916
## [902]	{frankfurter, ## root vegetables}	=> {whole milk}	0.005083884	0.5000000	0.010167768
## [903]	{frankfurter, ## whole milk}	=> {root vegetables}	0.005083884	0.2475248	0.020538892

```

## [904] {root vegetables,
##       whole milk}          => {frankfurter}           0.005083884 0.1039501 0.048906965
## [905] {frankfurter,
##       yogurt}              => {whole milk}            0.006202339 0.5545455 0.011184545
## [906] {frankfurter,
##       whole milk}          => {yogurt}                0.006202339 0.3019802 0.020538892
## [907] {whole milk,
##       yogurt}              => {frankfurter}           0.006202339 0.1107078 0.056024403
## [908] {frankfurter,
##       rolls/buns}          => {other vegetables}  0.005592272 0.2910053 0.019217082
## [909] {frankfurter,
##       other vegetables}    => {rolls/buns}            0.005592272 0.3395062 0.016471784
## [910] {other vegetables,
##       rolls/buns}          => {frankfurter}           0.005592272 0.1312649 0.042602949
## [911] {frankfurter,
##       rolls/buns}          => {whole milk}             0.005998983 0.3121693 0.019217082
## [912] {frankfurter,
##       whole milk}          => {rolls/buns}            0.005998983 0.2920792 0.020538892
## [913] {rolls/buns,
##       whole milk}          => {frankfurter}           0.005998983 0.1059246 0.056634469
## [914] {frankfurter,
##       other vegetables}    => {whole milk}             0.007625826 0.4629630 0.016471784
## [915] {frankfurter,
##       whole milk}          => {other vegetables}  0.007625826 0.3712871 0.020538892
## [916] {other vegetables,
##       whole milk}          => {frankfurter}           0.007625826 0.1019022 0.074834774
## [917] {bottled beer,
##       bottled water}        => {soda}                 0.005083884 0.3225806 0.015760041
## [918] {bottled beer,
##       soda}                 => {bottled water}         0.005083884 0.2994012 0.016980173
## [919] {bottled water,
##       soda}                 => {bottled beer}           0.005083884 0.1754386 0.028978139
## [920] {bottled beer,
##       bottled water}        => {whole milk}            0.006100661 0.3870968 0.015760041
## [921] {bottled beer,
##       whole milk}          => {bottled water}         0.006100661 0.2985075 0.020437214
## [922] {bottled water,
##       whole milk}          => {bottled beer}           0.006100661 0.1775148 0.034367056
## [923] {bottled beer,
##       yogurt}               => {whole milk}            0.005185562 0.5604396 0.009252669
## [924] {bottled beer,
##       whole milk}          => {yogurt}                0.005185562 0.2537313 0.020437214
## [925] {bottled beer,
##       rolls/buns}          => {whole milk}            0.005388917 0.3955224 0.013624809
## [926] {bottled beer,
##       whole milk}          => {rolls/buns}            0.005388917 0.2636816 0.020437214
## [927] {bottled beer,
##       other vegetables}    => {whole milk}            0.007625826 0.4716981 0.016166751
## [928] {bottled beer,
##       whole milk}          => {other vegetables}  0.007625826 0.3731343 0.020437214
## [929] {other vegetables,
##       whole milk}          => {bottled beer}           0.007625826 0.1019022 0.074834774
## [930] {brown bread,
##       tropical fruit}       => {whole milk}            0.005693950 0.5333333 0.010676157

```

## [931]	{brown bread, ## whole milk}	=> {tropical fruit}	0.005693950	0.2258065	0.025216065
## [932]	{tropical fruit, ## whole milk}	=> {brown bread}	0.005693950	0.1346154	0.042297916
## [933]	{brown bread, ## root vegetables}	=> {whole milk}	0.005693950	0.5600000	0.010167768
## [934]	{brown bread, ## whole milk}	=> {root vegetables}	0.005693950	0.2258065	0.025216065
## [935]	{root vegetables, ## whole milk}	=> {brown bread}	0.005693950	0.1164241	0.048906965
## [936]	{brown bread, ## soda}	=> {whole milk}	0.005083884	0.4032258	0.012608033
## [937]	{brown bread, ## whole milk}	=> {soda}	0.005083884	0.2016129	0.025216065
## [938]	{soda, ## whole milk}	=> {brown bread}	0.005083884	0.1269036	0.040061007
## [939]	{brown bread, ## yogurt}	=> {other vegetables}	0.005185562	0.3566434	0.014539908
## [940]	{brown bread, ## other vegetables}	=> {yogurt}	0.005185562	0.2771739	0.018708693
## [941]	{other vegetables, ## yogurt}	=> {brown bread}	0.005185562	0.1194379	0.043416370
## [942]	{brown bread, ## yogurt}	=> {whole milk}	0.007117438	0.4895105	0.014539908
## [943]	{brown bread, ## whole milk}	=> {yogurt}	0.007117438	0.2822581	0.025216065
## [944]	{whole milk, ## yogurt}	=> {brown bread}	0.007117438	0.1270417	0.056024403
## [945]	{brown bread, ## rolls/buns}	=> {whole milk}	0.005287239	0.4193548	0.012608033
## [946]	{brown bread, ## whole milk}	=> {rolls/buns}	0.005287239	0.2096774	0.025216065
## [947]	{brown bread, ## other vegetables}	=> {whole milk}	0.009354347	0.5000000	0.018708693
## [948]	{brown bread, ## whole milk}	=> {other vegetables}	0.009354347	0.3709677	0.025216065
## [949]	{other vegetables, ## whole milk}	=> {brown bread}	0.009354347	0.1250000	0.074834774
## [950]	{domestic eggs, ## margarine}	=> {whole milk}	0.005185562	0.6219512	0.008337570
## [951]	{margarine, ## whole milk}	=> {domestic eggs}	0.005185562	0.2142857	0.024199288
## [952]	{domestic eggs, ## whole milk}	=> {margarine}	0.005185562	0.1728814	0.029994916
## [953]	{margarine, ## root vegetables}	=> {other vegetables}	0.005897306	0.5321101	0.011082867
## [954]	{margarine, ## other vegetables}	=> {root vegetables}	0.005897306	0.2989691	0.019725470
## [955]	{other vegetables, ## root vegetables}	=> {margarine}	0.005897306	0.1244635	0.047381800
## [956]	{margarine, ## yogurt}	=> {other vegetables}	0.005693950	0.4000000	0.014234875
## [957]	{margarine, ## other vegetables}	=> {yogurt}	0.005693950	0.2886598	0.019725470

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## [958] {other vegetables,
##       yogurt}                => {margarine}           0.005693950 0.1311475 0.043416370
## [959] {margarine,
##       yogurt}                => {whole milk}          0.007015760 0.4928571 0.014234875
## [960] {margarine,
##       whole milk}             => {yogurt}              0.007015760 0.2899160 0.024199288
## [961] {whole milk,
##       yogurt}                => {margarine}           0.007015760 0.1252269 0.056024403
## [962] {margarine,
##       rolls/buns}             => {other vegetables} 0.005185562 0.3517241 0.014743264
## [963] {margarine,
##       other vegetables}       => {rolls/buns}          0.005185562 0.2628866 0.019725470
## [964] {other vegetables,
##       rolls/buns}             => {margarine}           0.005185562 0.1217184 0.042602949
## [965] {margarine,
##       rolls/buns}             => {whole milk}          0.007930859 0.5379310 0.014743264
## [966] {margarine,
##       whole milk}              => {rolls/buns}          0.007930859 0.3277311 0.024199288
## [967] {rolls/buns,
##       whole milk}              => {margarine}           0.007930859 0.1400359 0.056634469
## [968] {margarine,
##       other vegetables}       => {whole milk}          0.009252669 0.4690722 0.019725470
## [969] {margarine,
##       whole milk}              => {other vegetables} 0.009252669 0.3823529 0.024199288
## [970] {other vegetables,
##       whole milk}              => {margarine}           0.009252669 0.1236413 0.074834774
## [971] {butter,
##       domestic eggs}          => {whole milk}          0.005998983 0.6210526 0.009659380
## [972] {butter,
##       whole milk}              => {domestic eggs}        0.005998983 0.2177122 0.027554652
## [973] {domestic eggs,
##       whole milk}              => {butter}              0.005998983 0.2000000 0.029994916
## [974] {butter,
##       whipped/sour cream}     => {other vegetables} 0.005795628 0.5700000 0.010167768
## [975] {butter,
##       other vegetables}        => {whipped/sour cream} 0.005795628 0.2893401 0.020030503
## [976] {other vegetables,
##       whipped/sour cream}     => {butter}              0.005795628 0.2007042 0.028876462
## [977] {butter,
##       whipped/sour cream}     => {whole milk}          0.006710727 0.6600000 0.010167768
## [978] {butter,
##       whole milk}              => {whipped/sour cream} 0.006710727 0.2435424 0.027554652
## [979] {whipped/sour cream,
##       whole milk}              => {butter}              0.006710727 0.2082019 0.032231825
## [980] {butter,
##       citrus fruit}           => {whole milk}          0.005083884 0.5555556 0.009150991
## [981] {butter,
##       whole milk}              => {citrus fruit}         0.005083884 0.1845018 0.027554652
## [982] {citrus fruit,
##       whole milk}              => {butter}              0.005083884 0.1666667 0.030503305
## [983] {bottled water,
##       butter}                 => {whole milk}          0.005388917 0.6022727 0.008947636
## [984] {butter,
##       whole milk}              => {bottled water}        0.005388917 0.1955720 0.027554652

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## [985] {bottled water, ## whole milk}	=> {butter}	0.005388917	0.1568047	0.034367056
## [986] {butter, ## tropical fruit}	=> {other vegetables}	0.005490595	0.5510204	0.009964413
## [987] {butter, ## other vegetables}	=> {tropical fruit}	0.005490595	0.2741117	0.020030503
## [988] {other vegetables, ## tropical fruit}	=> {butter}	0.005490595	0.1529745	0.035892222
## [989] {butter, ## tropical fruit}	=> {whole milk}	0.006202339	0.6224490	0.009964413
## [990] {butter, ## whole milk}	=> {tropical fruit}	0.006202339	0.2250923	0.027554652
## [991] {tropical fruit, ## whole milk}	=> {butter}	0.006202339	0.1466346	0.042297916
## [992] {butter, ## root vegetables}	=> {other vegetables}	0.006609049	0.5118110	0.012913066
## [993] {butter, ## other vegetables}	=> {root vegetables}	0.006609049	0.3299492	0.020030503
## [994] {other vegetables, ## root vegetables}	=> {butter}	0.006609049	0.1394850	0.047381800
## [995] {butter, ## root vegetables}	=> {whole milk}	0.008235892	0.6377953	0.012913066
## [996] {butter, ## whole milk}	=> {root vegetables}	0.008235892	0.2988930	0.027554652
## [997] {root vegetables, ## whole milk}	=> {butter}	0.008235892	0.1683992	0.048906965
## [998] {butter, ## yogurt}	=> {other vegetables}	0.006405694	0.4375000	0.014641586
## [999] {butter, ## other vegetables}	=> {yogurt}	0.006405694	0.3197970	0.020030503
## [1000] {other vegetables, ## yogurt}	=> {butter}	0.006405694	0.1475410	0.043416370
## [1001] {butter, ## yogurt}	=> {whole milk}	0.009354347	0.6388889	0.014641586
## [1002] {butter, ## whole milk}	=> {yogurt}	0.009354347	0.3394834	0.027554652
## [1003] {whole milk, ## yogurt}	=> {butter}	0.009354347	0.1669691	0.056024403
## [1004] {butter, ## rolls/buns}	=> {other vegetables}	0.005693950	0.4242424	0.013421454
## [1005] {butter, ## other vegetables}	=> {rolls/buns}	0.005693950	0.2842640	0.020030503
## [1006] {other vegetables, ## rolls/buns}	=> {butter}	0.005693950	0.1336516	0.042602949
## [1007] {butter, ## rolls/buns}	=> {whole milk}	0.006609049	0.4924242	0.013421454
## [1008] {butter, ## whole milk}	=> {rolls/buns}	0.006609049	0.2398524	0.027554652
## [1009] {rolls/buns, ## whole milk}	=> {butter}	0.006609049	0.1166966	0.056634469
## [1010] {butter, ## other vegetables}	=> {whole milk}	0.011489578	0.5736041	0.020030503
## [1011] {butter, ## whole milk}	=> {other vegetables}	0.011489578	0.4169742	0.027554652

```

## [1012] {other vegetables,
##          whole milk}           => {butter}           0.011489578 0.1535326 0.074834774
## [1013] {newspapers,
##          tropical fruit}       => {whole milk}        0.005083884 0.4310345 0.011794611
## [1014] {newspapers,
##          whole milk}           => {tropical fruit}  0.005083884 0.1858736 0.027351296
## [1015] {tropical fruit,
##          whole milk}           => {newspapers}        0.005083884 0.1201923 0.042297916
## [1016] {newspapers,
##          root vegetables}      => {other vegetables} 0.005998983 0.5221239 0.011489578
## [1017] {newspapers,
##          other vegetables}     => {root vegetables} 0.005998983 0.3105263 0.019318760
## [1018] {other vegetables,
##          root vegetables}      => {newspapers}        0.005998983 0.1266094 0.047381800
## [1019] {newspapers,
##          root vegetables}      => {whole milk}         0.005795628 0.5044248 0.011489578
## [1020] {newspapers,
##          whole milk}            => {root vegetables}  0.005795628 0.2118959 0.027351296
## [1021] {root vegetables,
##          whole milk}            => {newspapers}        0.005795628 0.1185031 0.048906965
## [1022] {newspapers,
##          yogurt}                => {rolls/buns}       0.005083884 0.3311258 0.015353330
## [1023] {newspapers,
##          rolls/buns}             => {yogurt}           0.005083884 0.2577320 0.019725470
## [1024] {rolls/buns,
##          yogurt}                => {newspapers}        0.005083884 0.1479290 0.034367056
## [1025] {newspapers,
##          yogurt}                => {other vegetables} 0.005592272 0.3642384 0.015353330
## [1026] {newspapers,
##          other vegetables}      => {yogurt}           0.005592272 0.2894737 0.019318760
## [1027] {other vegetables,
##          yogurt}                => {newspapers}        0.005592272 0.1288056 0.043416370
## [1028] {newspapers,
##          yogurt}                => {whole milk}        0.006609049 0.4304636 0.015353330
## [1029] {newspapers,
##          whole milk}             => {yogurt}           0.006609049 0.2416357 0.027351296
## [1030] {whole milk,
##          yogurt}                => {newspapers}        0.006609049 0.1179673 0.056024403
## [1031] {newspapers,
##          rolls/buns}             => {other vegetables} 0.005490595 0.2783505 0.019725470
## [1032] {newspapers,
##          other vegetables}      => {rolls/buns}       0.005490595 0.2842105 0.019318760
## [1033] {other vegetables,
##          rolls/buns}             => {newspapers}        0.005490595 0.1288783 0.042602949
## [1034] {newspapers,
##          rolls/buns}             => {whole milk}        0.007625826 0.3865979 0.019725470
## [1035] {newspapers,
##          whole milk}              => {rolls/buns}       0.007625826 0.2788104 0.027351296
## [1036] {rolls/buns,
##          whole milk}              => {newspapers}        0.007625826 0.1346499 0.056634469
## [1037] {newspapers,
##          other vegetables}      => {whole milk}         0.008337570 0.4315789 0.019318760
## [1038] {newspapers,
##          whole milk}              => {other vegetables} 0.008337570 0.3048327 0.027351296

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## [1039] {other vegetables,
##         whole milk}          => {newspapers}           0.008337570 0.1114130 0.074834774
## [1040] {domestic eggs,
##         whipped/sour cream}   => {other vegetables}  0.005083884 0.5102041 0.009964413
## [1041] {domestic eggs,
##         other vegetables}    => {whipped/sour cream} 0.005083884 0.2283105 0.022267412
## [1042] {other vegetables,
##         whipped/sour cream}   => {domestic eggs}        0.005083884 0.1760563 0.028876462
## [1043] {domestic eggs,
##         whipped/sour cream}   => {whole milk}          0.005693950 0.5714286 0.009964413
## [1044] {domestic eggs,
##         whole milk}          => {whipped/sour cream} 0.005693950 0.1898305 0.029994916
## [1045] {whipped/sour cream,
##         whole milk}          => {domestic eggs}        0.005693950 0.1766562 0.032231825
## [1046] {domestic eggs,
##         pip fruit}            => {whole milk}          0.005388917 0.6235294 0.008642603
## [1047] {domestic eggs,
##         whole milk}          => {pip fruit}           0.005388917 0.1796610 0.029994916
## [1048] {pip fruit,
##         whole milk}          => {domestic eggs}        0.005388917 0.1790541 0.030096594
## [1049] {citrus fruit,
##         domestic eggs}        => {whole milk}          0.005693950 0.5490196 0.010371124
## [1050] {domestic eggs,
##         whole milk}          => {citrus fruit}         0.005693950 0.1898305 0.029994916
## [1051] {citrus fruit,
##         whole milk}          => {domestic eggs}        0.005693950 0.1866667 0.030503305
## [1052] {domestic eggs,
##         tropical fruit}       => {whole milk}          0.006914082 0.6071429 0.011387900
## [1053] {domestic eggs,
##         whole milk}          => {tropical fruit}      0.006914082 0.2305085 0.029994916
## [1054] {tropical fruit,
##         whole milk}          => {domestic eggs}        0.006914082 0.1634615 0.042297916
## [1055] {domestic eggs,
##         root vegetables}     => {other vegetables}  0.007320793 0.5106383 0.014336553
## [1056] {domestic eggs,
##         other vegetables}    => {root vegetables}    0.007320793 0.3287671 0.022267412
## [1057] {other vegetables,
##         root vegetables}     => {domestic eggs}        0.007320793 0.1545064 0.047381800
## [1058] {domestic eggs,
##         root vegetables}     => {whole milk}          0.008540925 0.5957447 0.014336553
## [1059] {domestic eggs,
##         whole milk}          => {root vegetables}    0.008540925 0.2847458 0.029994916
## [1060] {root vegetables,
##         whole milk}          => {domestic eggs}        0.008540925 0.1746362 0.048906965
## [1061] {domestic eggs,
##         soda}                 => {other vegetables}  0.005083884 0.4098361 0.012404677
## [1062] {domestic eggs,
##         other vegetables}    => {soda}                  0.005083884 0.2283105 0.022267412
## [1063] {other vegetables,
##         soda}                 => {domestic eggs}        0.005083884 0.1552795 0.032740214
## [1064] {domestic eggs,
##         soda}                 => {whole milk}          0.005185562 0.4180328 0.012404677
## [1065] {domestic eggs,
##         whole milk}          => {soda}                  0.005185562 0.1728814 0.029994916

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## [1066] {soda,
##         whole milk}          => {domestic eggs}           0.005185562  0.1294416  0.040061007
## [1067] {domestic eggs,
##         yogurt}              => {other vegetables}    0.005795628  0.4042553  0.014336553
## [1068] {domestic eggs,
##         other vegetables}   => {yogurt}                 0.005795628  0.2602740  0.022267412
## [1069] {other vegetables,
##         yogurt}              => {domestic eggs}           0.005795628  0.1334895  0.043416370
## [1070] {domestic eggs,
##         yogurt}              => {whole milk}             0.007727504  0.5390071  0.014336553
## [1071] {domestic eggs,
##         whole milk}           => {yogurt}                 0.007727504  0.2576271  0.029994916
## [1072] {whole milk,
##         yogurt}              => {domestic eggs}           0.007727504  0.1379310  0.056024403
## [1073] {domestic eggs,
##         rolls/buns}            => {other vegetables}    0.005897306  0.3766234  0.015658363
## [1074] {domestic eggs,
##         other vegetables}   => {rolls/buns}             0.005897306  0.2648402  0.022267412
## [1075] {other vegetables,
##         rolls/buns}            => {domestic eggs}           0.005897306  0.1384248  0.042602949
## [1076] {domestic eggs,
##         rolls/buns}            => {whole milk}             0.006609049  0.4220779  0.015658363
## [1077] {domestic eggs,
##         whole milk}             => {rolls/buns}             0.006609049  0.2203390  0.029994916
## [1078] {rolls/buns,
##         whole milk}             => {domestic eggs}           0.006609049  0.1166966  0.056634469
## [1079] {domestic eggs,
##         other vegetables}   => {whole milk}             0.012302999  0.5525114  0.022267412
## [1080] {domestic eggs,
##         whole milk}             => {other vegetables}    0.012302999  0.4101695  0.029994916
## [1081] {other vegetables,
##         whole milk}             => {domestic eggs}           0.012302999  0.1644022  0.074834774
## [1082] {bottled water,
##         fruit/vegetable juice} => {soda}                  0.005185562  0.3642857  0.014234875
## [1083] {fruit/vegetable juice,
##         soda}                  => {bottled water}          0.005185562  0.2817680  0.018403660
## [1084] {bottled water,
##         soda}                  => {fruit/vegetable juice} 0.005185562  0.1789474  0.028978139
## [1085] {bottled water,
##         fruit/vegetable juice}=> {whole milk}             0.005795628  0.4071429  0.014234875
## [1086] {fruit/vegetable juice,
##         whole milk}             => {bottled water}          0.005795628  0.2175573  0.026639553
## [1087] {bottled water,
##         whole milk}             => {fruit/vegetable juice} 0.005795628  0.1686391  0.034367056
## [1088] {fruit/vegetable juice,
##         tropical fruit}        => {other vegetables}    0.006609049  0.4814815  0.013726487
## [1089] {fruit/vegetable juice,
##         other vegetables}     => {tropical fruit}          0.006609049  0.3140097  0.021047280
## [1090] {other vegetables,
##         tropical fruit}        => {fruit/vegetable juice} 0.006609049  0.1841360  0.035892222
## [1091] {fruit/vegetable juice,
##         tropical fruit}        => {whole milk}             0.005998983  0.4370370  0.013726487
## [1092] {fruit/vegetable juice,
##         whole milk}             => {tropical fruit}          0.005998983  0.2251908  0.026639553

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## [1093] {tropical fruit,
##         whole milk}          => {fruit/vegetable juice}    0.005998983  0.1418269  0.042297916
## [1094] {fruit/vegetable juice,
##         root vegetables}     => {other vegetables}      0.006609049  0.5508475  0.011997966
## [1095] {fruit/vegetable juice,
##         other vegetables}    => {root vegetables}      0.006609049  0.3140097  0.021047280
## [1096] {other vegetables,
##         root vegetables}     => {fruit/vegetable juice}    0.006609049  0.1394850  0.047381800
## [1097] {fruit/vegetable juice,
##         root vegetables}     => {whole milk}           0.006507372  0.5423729  0.011997966
## [1098] {fruit/vegetable juice,
##         whole milk}          => {root vegetables}      0.006507372  0.2442748  0.026639553
## [1099] {root vegetables,
##         whole milk}          => {fruit/vegetable juice}    0.006507372  0.1330561  0.048906965
## [1100] {fruit/vegetable juice,
##         soda}                 => {yogurt}              0.005083884  0.2762431  0.018403660
## [1101] {fruit/vegetable juice,
##         yogurt}               => {soda}                0.005083884  0.2717391  0.018708693
## [1102] {soda,
##         yogurt}               => {fruit/vegetable juice}    0.005083884  0.1858736  0.027351296
## [1103] {fruit/vegetable juice,
##         soda}                 => {whole milk}           0.006100661  0.3314917  0.018403660
## [1104] {fruit/vegetable juice,
##         whole milk}          => {soda}                0.006100661  0.2290076  0.026639553
## [1105] {soda,
##         whole milk}          => {fruit/vegetable juice}    0.006100661  0.1522843  0.040061007
## [1106] {fruit/vegetable juice,
##         yogurt}               => {other vegetables}    0.008235892  0.4402174  0.018708693
## [1107] {fruit/vegetable juice,
##         other vegetables}    => {yogurt}              0.008235892  0.3913043  0.021047280
## [1108] {other vegetables,
##         yogurt}               => {fruit/vegetable juice}    0.008235892  0.1896956  0.043416370
## [1109] {fruit/vegetable juice,
##         yogurt}               => {whole milk}           0.009456024  0.5054348  0.018708693
## [1110] {fruit/vegetable juice,
##         whole milk}          => {yogurt}              0.009456024  0.3549618  0.026639553
## [1111] {whole milk,
##         yogurt}               => {fruit/vegetable juice}    0.009456024  0.1687840  0.056024403
## [1112] {fruit/vegetable juice,
##         rolls/buns}          => {whole milk}           0.005592272  0.3846154  0.014539908
## [1113] {fruit/vegetable juice,
##         whole milk}          => {rolls/buns}          0.005592272  0.2099237  0.026639553
## [1114] {fruit/vegetable juice,
##         other vegetables}    => {whole milk}           0.010472801  0.4975845  0.021047280
## [1115] {fruit/vegetable juice,
##         whole milk}          => {other vegetables}    0.010472801  0.3931298  0.026639553
## [1116] {other vegetables,
##         whole milk}          => {fruit/vegetable juice}    0.010472801  0.1399457  0.074834774
## [1117] {pip fruit,
##         whipped/sour cream}   => {other vegetables}    0.005592272  0.6043956  0.009252669
## [1118] {other vegetables,
##         whipped/sour cream}   => {pip fruit}            0.005592272  0.1936620  0.028876462
## [1119] {other vegetables,
##         pip fruit}            => {whipped/sour cream}  0.005592272  0.2140078  0.026131164

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## [1120] {pip fruit,
##          whipped/sour cream}      => {whole milk}           0.005998983  0.6483516  0.009252669 :
## [1121] {whipped/sour cream,
##          whole milk}            => {pip fruit}            0.005998983  0.1861199  0.032231825 :
## [1122] {pip fruit,
##          whole milk}            => {whipped/sour cream}  0.005998983  0.1993243  0.030096594 :
## [1123] {citrus fruit,
##          whipped/sour cream}     => {other vegetables}   0.005693950  0.5233645  0.010879512 :
## [1124] {other vegetables,
##          whipped/sour cream}     => {citrus fruit}        0.005693950  0.1971831  0.028876462 :
## [1125] {citrus fruit,
##          other vegetables}      => {whipped/sour cream}  0.005693950  0.1971831  0.028876462 :
## [1126] {citrus fruit,
##          whipped/sour cream}     => {whole milk}          0.006304016  0.5794393  0.010879512 :
## [1127] {whipped/sour cream,
##          whole milk}            => {citrus fruit}        0.006304016  0.1955836  0.032231825 :
## [1128] {citrus fruit,
##          whole milk}            => {whipped/sour cream}  0.006304016  0.2066667  0.030503305 :
## [1129] {sausage,
##          whipped/sour cream}     => {whole milk}          0.005083884  0.5617978  0.009049314 :
## [1130] {whipped/sour cream,
##          whole milk}            => {sausage}             0.005083884  0.1577287  0.032231825 :
## [1131] {sausage,
##          whole milk}            => {whipped/sour cream}  0.005083884  0.1700680  0.029893238 :
## [1132] {tropical fruit,
##          whipped/sour cream}    => {yogurt}              0.006202339  0.4485294  0.013828165 :
## [1133] {whipped/sour cream,
##          yogurt}               => {tropical fruit}    0.006202339  0.2990196  0.020742247 :
## [1134] {tropical fruit,
##          yogurt}               => {whipped/sour cream}  0.006202339  0.2118056  0.029283172 :
## [1135] {tropical fruit,
##          whipped/sour cream}    => {other vegetables}   0.007829181  0.5661765  0.013828165 :
## [1136] {other vegetables,
##          whipped/sour cream}    => {tropical fruit}    0.007829181  0.2711268  0.028876462 :
## [1137] {other vegetables,
##          tropical fruit}       => {whipped/sour cream}  0.007829181  0.2181303  0.035892222 :
## [1138] {tropical fruit,
##          whipped/sour cream}    => {whole milk}          0.007930859  0.5735294  0.013828165 :
## [1139] {whipped/sour cream,
##          whole milk}            => {tropical fruit}    0.007930859  0.2460568  0.032231825 :
## [1140] {tropical fruit,
##          whole milk}            => {whipped/sour cream}  0.007930859  0.1875000  0.042297916 :
## [1141] {root vegetables,
##          whipped/sour cream}    => {yogurt}              0.006405694  0.3750000  0.017081851 :
## [1142] {whipped/sour cream,
##          yogurt}               => {root vegetables}   0.006405694  0.3088235  0.020742247 :
## [1143] {root vegetables,
##          yogurt}               => {whipped/sour cream}  0.006405694  0.2480315  0.025826131 :
## [1144] {root vegetables,
##          whipped/sour cream}    => {other vegetables}   0.008540925  0.5000000  0.017081851 :
## [1145] {other vegetables,
##          whipped/sour cream}    => {root vegetables}   0.008540925  0.2957746  0.028876462 :
## [1146] {other vegetables,
##          root vegetables}      => {whipped/sour cream}  0.008540925  0.1802575  0.047381800 :

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## [1147] {root vegetables,
##          whipped/sour cream} => {whole milk} 0.009456024 0.5535714 0.017081851
## [1148] {whipped/sour cream,
##          whole milk} => {root vegetables} 0.009456024 0.2933754 0.032231825
## [1149] {root vegetables,
##          whole milk} => {whipped/sour cream} 0.009456024 0.1933472 0.048906965
## [1150] {soda,
##          whipped/sour cream} => {whole milk} 0.005490595 0.4736842 0.011591256
## [1151] {whipped/sour cream,
##          whole milk} => {soda} 0.005490595 0.1703470 0.032231825
## [1152] {soda,
##          whole milk} => {whipped/sour cream} 0.005490595 0.1370558 0.040061007
## [1153] {whipped/sour cream,
##          yogurt} => {other vegetables} 0.010167768 0.4901961 0.020742247
## [1154] {other vegetables,
##          whipped/sour cream} => {yogurt} 0.010167768 0.3521127 0.028876462
## [1155] {other vegetables,
##          yogurt} => {whipped/sour cream} 0.010167768 0.2341920 0.043416370
## [1156] {whipped/sour cream,
##          yogurt} => {whole milk} 0.010879512 0.5245098 0.020742247
## [1157] {whipped/sour cream,
##          whole milk} => {yogurt} 0.010879512 0.3375394 0.032231825
## [1158] {whole milk,
##          yogurt} => {whipped/sour cream} 0.010879512 0.1941924 0.056024403
## [1159] {rolls/buns,
##          whipped/sour cream} => {other vegetables} 0.006710727 0.4583333 0.014641586
## [1160] {other vegetables,
##          whipped/sour cream} => {rolls/buns} 0.006710727 0.2323944 0.028876462
## [1161] {other vegetables,
##          rolls/buns} => {whipped/sour cream} 0.006710727 0.1575179 0.042602949
## [1162] {rolls/buns,
##          whipped/sour cream} => {whole milk} 0.007829181 0.5347222 0.014641586
## [1163] {whipped/sour cream,
##          whole milk} => {rolls/buns} 0.007829181 0.2429022 0.032231825
## [1164] {rolls/buns,
##          whole milk} => {whipped/sour cream} 0.007829181 0.1382406 0.056634469
## [1165] {other vegetables,
##          whipped/sour cream} => {whole milk} 0.014641586 0.5070423 0.028876462
## [1166] {whipped/sour cream,
##          whole milk} => {other vegetables} 0.014641586 0.4542587 0.032231825
## [1167] {other vegetables,
##          whole milk} => {whipped/sour cream} 0.014641586 0.1956522 0.074834774
## [1168] {pastry,
##          pip fruit} => {whole milk} 0.005083884 0.4761905 0.010676157
## [1169] {pip fruit,
##          whole milk} => {pastry} 0.005083884 0.1689189 0.030096594
## [1170] {pastry,
##          whole milk} => {pip fruit} 0.005083884 0.1529052 0.033248602
## [1171] {citrus fruit,
##          pip fruit} => {tropical fruit} 0.005592272 0.4044118 0.013828165
## [1172] {pip fruit,
##          tropical fruit} => {citrus fruit} 0.005592272 0.2736318 0.020437214
## [1173] {citrus fruit,
##          tropical fruit} => {pip fruit} 0.005592272 0.2806122 0.019928826

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## [1174] {citrus fruit,
##          pip fruit}          => {other vegetables}      0.005897306  0.4264706  0.013828165 :
## [1175] {other vegetables,
##          pip fruit}          => {citrus fruit}        0.005897306  0.2256809  0.026131164 :
## [1176] {citrus fruit,
##          other vegetables}   => {pip fruit}         0.005897306  0.2042254  0.028876462 :
## [1177] {citrus fruit,
##          pip fruit}          => {whole milk}        0.005185562  0.3750000  0.013828165 :
## [1178] {pip fruit,
##          whole milk}         => {citrus fruit}      0.005185562  0.1722973  0.030096594 :
## [1179] {citrus fruit,
##          whole milk}         => {pip fruit}        0.005185562  0.1700000  0.030503305 :
## [1180] {pip fruit,
##          sausage}            => {whole milk}        0.005592272  0.5188679  0.010777834 :
## [1181] {pip fruit,
##          whole milk}         => {sausage}          0.005592272  0.1858108  0.030096594 :
## [1182] {sausage,
##          whole milk}         => {pip fruit}        0.005592272  0.1870748  0.029893238 :
## [1183] {pip fruit,
##          tropical fruit}    => {root vegetables}  0.005287239  0.2587065  0.020437214 :
## [1184] {pip fruit,
##          root vegetables}   => {tropical fruit}   0.005287239  0.3398693  0.015556685 :
## [1185] {root vegetables,
##          tropical fruit}   => {pip fruit}        0.005287239  0.2512077  0.021047280 :
## [1186] {pip fruit,
##          tropical fruit}   => {yogurt}           0.006405694  0.3134328  0.020437214 :
## [1187] {pip fruit,
##          yogurt}             => {tropical fruit}  0.006405694  0.3559322  0.017996950 :
## [1188] {tropical fruit,
##          yogurt}             => {pip fruit}        0.006405694  0.2187500  0.029283172 :
## [1189] {pip fruit,
##          tropical fruit}   => {other vegetables} 0.009456024  0.4626866  0.020437214 :
## [1190] {other vegetables,
##          pip fruit}          => {tropical fruit}   0.009456024  0.3618677  0.026131164 :
## [1191] {other vegetables,
##          tropical fruit}   => {pip fruit}        0.009456024  0.2634561  0.035892222 :
## [1192] {pip fruit,
##          tropical fruit}   => {whole milk}        0.008439248  0.4129353  0.020437214 :
## [1193] {pip fruit,
##          whole milk}         => {tropical fruit}  0.008439248  0.2804054  0.030096594 :
## [1194] {tropical fruit,
##          whole milk}         => {pip fruit}        0.008439248  0.1995192  0.042297916 :
## [1195] {pip fruit,
##          root vegetables}   => {yogurt}           0.005287239  0.3398693  0.015556685 :
## [1196] {pip fruit,
##          yogurt}             => {root vegetables} 0.005287239  0.2937853  0.017996950 :
## [1197] {root vegetables,
##          yogurt}             => {pip fruit}        0.005287239  0.2047244  0.025826131 :
## [1198] {pip fruit,
##          root vegetables}   => {other vegetables} 0.008134215  0.5228758  0.015556685 :
## [1199] {other vegetables,
##          pip fruit}          => {root vegetables} 0.008134215  0.3112840  0.026131164 :
## [1200] {other vegetables,
##          root vegetables}   => {pip fruit}        0.008134215  0.1716738  0.047381800 :

```

## [1201] {pip fruit, ## root vegetables}	=> {whole milk}	0.008947636	0.5751634	0.015556685
## [1202] {pip fruit, ## whole milk}	=> {root vegetables}	0.008947636	0.2972973	0.030096594
## [1203] {root vegetables, ## whole milk}	=> {pip fruit}	0.008947636	0.1829522	0.048906965
## [1204] {pip fruit, ## yogurt}	=> {other vegetables}	0.008134215	0.4519774	0.017996950
## [1205] {other vegetables, ## pip fruit}	=> {yogurt}	0.008134215	0.3112840	0.026131164
## [1206] {other vegetables, ## yogurt}	=> {pip fruit}	0.008134215	0.1873536	0.043416370
## [1207] {pip fruit, ## yogurt}	=> {whole milk}	0.009557702	0.5310734	0.017996950
## [1208] {pip fruit, ## whole milk}	=> {yogurt}	0.009557702	0.3175676	0.030096594
## [1209] {whole milk, ## yogurt}	=> {pip fruit}	0.009557702	0.1705989	0.056024403
## [1210] {pip fruit, ## rolls/buns}	=> {other vegetables}	0.005083884	0.3649635	0.013929842
## [1211] {other vegetables, ## pip fruit}	=> {rolls/buns}	0.005083884	0.1945525	0.026131164
## [1212] {other vegetables, ## rolls/buns}	=> {pip fruit}	0.005083884	0.1193317	0.042602949
## [1213] {pip fruit, ## rolls/buns}	=> {whole milk}	0.006202339	0.4452555	0.013929842
## [1214] {pip fruit, ## whole milk}	=> {rolls/buns}	0.006202339	0.2060811	0.030096594
## [1215] {rolls/buns, ## whole milk}	=> {pip fruit}	0.006202339	0.1095153	0.056634469
## [1216] {other vegetables, ## pip fruit}	=> {whole milk}	0.013523132	0.5175097	0.026131164
## [1217] {pip fruit, ## whole milk}	=> {other vegetables}	0.013523132	0.4493243	0.030096594
## [1218] {other vegetables, ## whole milk}	=> {pip fruit}	0.013523132	0.1807065	0.074834774
## [1219] {pastry, ## sausage}	=> {whole milk}	0.005693950	0.4552846	0.012506355
## [1220] {pastry, ## whole milk}	=> {sausage}	0.005693950	0.1712538	0.033248602
## [1221] {sausage, ## whole milk}	=> {pastry}	0.005693950	0.1904762	0.029893238
## [1222] {pastry, ## tropical fruit}	=> {other vegetables}	0.005083884	0.3846154	0.013218099
## [1223] {other vegetables, ## pastry}	=> {tropical fruit}	0.005083884	0.2252252	0.022572445
## [1224] {other vegetables, ## tropical fruit}	=> {pastry}	0.005083884	0.1416431	0.035892222
## [1225] {pastry, ## tropical fruit}	=> {whole milk}	0.006710727	0.5076923	0.013218099
## [1226] {pastry, ## whole milk}	=> {tropical fruit}	0.006710727	0.2018349	0.033248602
## [1227] {tropical fruit, ## whole milk}	=> {pastry}	0.006710727	0.1586538	0.042297916

## [1228] {pastry,	=> {other vegetables}	0.005897306	0.5370370	0.010981190
## root vegetables}				
## [1229] {other vegetables,	=> {root vegetables}	0.005897306	0.2612613	0.022572445
## pastry}				
## [1230] {other vegetables,	=> {pastry}	0.005897306	0.1244635	0.047381800
## root vegetables}				
## [1231] {pastry,	=> {whole milk}	0.005693950	0.5185185	0.010981190
## root vegetables}				
## [1232] {pastry,	=> {root vegetables}	0.005693950	0.1712538	0.033248602
## whole milk}				
## [1233] {root vegetables,	=> {pastry}	0.005693950	0.1164241	0.048906965
## whole milk}				
## [1234] {pastry,	=> {rolls/buns}	0.005388917	0.2560386	0.021047280
## soda}				
## [1235] {pastry,	=> {soda}	0.005388917	0.2572816	0.020945602
## rolls/buns}				
## [1236] {rolls/buns,	=> {pastry}	0.005388917	0.1405836	0.038332486
## soda}				
## [1237] {pastry,	=> {other vegetables}	0.005490595	0.2608696	0.021047280
## soda}				
## [1238] {other vegetables,	=> {soda}	0.005490595	0.2432432	0.022572445
## pastry}				
## [1239] {other vegetables,	=> {pastry}	0.005490595	0.1677019	0.032740214
## soda}				
## [1240] {pastry,	=> {whole milk}	0.008235892	0.3913043	0.021047280
## soda}				
## [1241] {pastry,	=> {soda}	0.008235892	0.2477064	0.033248602
## whole milk}				
## [1242] {soda,	=> {pastry}	0.008235892	0.2055838	0.040061007
## whole milk}				
## [1243] {pastry,	=> {rolls/buns}	0.005795628	0.3275862	0.017691917
## yogurt}				
## [1244] {pastry,	=> {yogurt}	0.005795628	0.2766990	0.020945602
## rolls/buns}				
## [1245] {rolls/buns,	=> {pastry}	0.005795628	0.1686391	0.034367056
## yogurt}				
## [1246] {pastry,	=> {other vegetables}	0.006609049	0.3735632	0.017691917
## yogurt}				
## [1247] {other vegetables,	=> {yogurt}	0.006609049	0.2927928	0.022572445
## pastry}				
## [1248] {other vegetables,	=> {pastry}	0.006609049	0.1522248	0.043416370
## yogurt}				
## [1249] {pastry,	=> {whole milk}	0.009150991	0.5172414	0.017691917
## yogurt}				
## [1250] {pastry,	=> {yogurt}	0.009150991	0.2752294	0.033248602
## whole milk}				
## [1251] {whole milk,	=> {pastry}	0.009150991	0.1633394	0.056024403
## yogurt}				
## [1252] {pastry,	=> {other vegetables}	0.006100661	0.2912621	0.020945602
## rolls/buns}				
## [1253] {other vegetables,	=> {rolls/buns}	0.006100661	0.2702703	0.022572445
## pastry}				
## [1254] {other vegetables,	=> {pastry}	0.006100661	0.1431981	0.042602949
## rolls/buns}				

```

## [1255] {pastry,
##         rolls/buns} => {whole milk} 0.008540925 0.4077670 0.020945602
## [1256] {pastry,
##         whole milk} => {rolls/buns} 0.008540925 0.2568807 0.033248602
## [1257] {rolls/buns,
##         whole milk} => {pastry} 0.008540925 0.1508079 0.056634469
## [1258] {other vegetables,
##         pastry} => {whole milk} 0.010574479 0.4684685 0.022572445
## [1259] {pastry,
##         whole milk} => {other vegetables} 0.010574479 0.3180428 0.033248602
## [1260] {other vegetables,
##         whole milk} => {pastry} 0.010574479 0.1413043 0.074834774
## [1261] {bottled water,
##         citrus fruit} => {other vegetables} 0.005083884 0.3759398 0.013523132
## [1262] {citrus fruit,
##         other vegetables} => {bottled water} 0.005083884 0.1760563 0.028876462
## [1263] {bottled water,
##         other vegetables} => {citrus fruit} 0.005083884 0.2049180 0.024809354
## [1264] {bottled water,
##         citrus fruit} => {whole milk} 0.005897306 0.4360902 0.013523132
## [1265] {citrus fruit,
##         whole milk} => {bottled water} 0.005897306 0.1933333 0.030503305
## [1266] {bottled water,
##         whole milk} => {citrus fruit} 0.005897306 0.1715976 0.034367056
## [1267] {citrus fruit,
##         tropical fruit} => {root vegetables} 0.005693950 0.2857143 0.019928826
## [1268] {citrus fruit,
##         root vegetables} => {tropical fruit} 0.005693950 0.3218391 0.017691917
## [1269] {root vegetables,
##         tropical fruit} => {citrus fruit} 0.005693950 0.2705314 0.021047280
## [1270] {citrus fruit,
##         tropical fruit} => {yogurt} 0.006304016 0.3163265 0.019928826
## [1271] {citrus fruit,
##         yogurt} => {tropical fruit} 0.006304016 0.2910798 0.021657346
## [1272] {tropical fruit,
##         yogurt} => {citrus fruit} 0.006304016 0.2152778 0.029283172
## [1273] {citrus fruit,
##         tropical fruit} => {other vegetables} 0.009049314 0.4540816 0.019928826
## [1274] {citrus fruit,
##         other vegetables} => {tropical fruit} 0.009049314 0.3133803 0.028876462
## [1275] {other vegetables,
##         tropical fruit} => {citrus fruit} 0.009049314 0.2521246 0.035892222
## [1276] {citrus fruit,
##         tropical fruit} => {whole milk} 0.009049314 0.4540816 0.019928826
## [1277] {citrus fruit,
##         whole milk} => {tropical fruit} 0.009049314 0.2966667 0.030503305
## [1278] {tropical fruit,
##         whole milk} => {citrus fruit} 0.009049314 0.2139423 0.042297916
## [1279] {citrus fruit,
##         root vegetables} => {other vegetables} 0.010371124 0.5862069 0.017691917
## [1280] {citrus fruit,
##         other vegetables} => {root vegetables} 0.010371124 0.3591549 0.028876462
## [1281] {other vegetables,
##         root vegetables} => {citrus fruit} 0.010371124 0.2188841 0.047381800

```

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## [1282] {citrus fruit,
##          root vegetables} => {whole milk} 0.009150991 0.5172414 0.017691917
## [1283] {citrus fruit,
##          whole milk} => {root vegetables} 0.009150991 0.3000000 0.030503305
## [1284] {root vegetables,
##          whole milk} => {citrus fruit} 0.009150991 0.1871102 0.048906965
## [1285] {citrus fruit,
##          yogurt} => {rolls/buns} 0.005795628 0.2676056 0.021657346
## [1286] {citrus fruit,
##          rolls/buns} => {yogurt} 0.005795628 0.3454545 0.016776817
## [1287] {rolls/buns,
##          yogurt} => {citrus fruit} 0.005795628 0.1686391 0.034367056
## [1288] {citrus fruit,
##          yogurt} => {other vegetables} 0.007625826 0.3521127 0.021657346
## [1289] {citrus fruit,
##          other vegetables} => {yogurt} 0.007625826 0.2640845 0.028876462
## [1290] {other vegetables,
##          yogurt} => {citrus fruit} 0.007625826 0.1756440 0.043416370
## [1291] {citrus fruit,
##          yogurt} => {whole milk} 0.010269446 0.4741784 0.021657346
## [1292] {citrus fruit,
##          whole milk} => {yogurt} 0.010269446 0.3366667 0.030503305
## [1293] {whole milk,
##          yogurt} => {citrus fruit} 0.010269446 0.1833031 0.056024403
## [1294] {citrus fruit,
##          rolls/buns} => {other vegetables} 0.005998983 0.3575758 0.016776817
## [1295] {citrus fruit,
##          other vegetables} => {rolls/buns} 0.005998983 0.2077465 0.028876462
## [1296] {other vegetables,
##          rolls/buns} => {citrus fruit} 0.005998983 0.1408115 0.042602949
## [1297] {citrus fruit,
##          rolls/buns} => {whole milk} 0.007219115 0.4303030 0.016776817
## [1298] {citrus fruit,
##          whole milk} => {rolls/buns} 0.007219115 0.2366667 0.030503305
## [1299] {rolls/buns,
##          whole milk} => {citrus fruit} 0.007219115 0.1274686 0.056634469
## [1300] {citrus fruit,
##          other vegetables} => {whole milk} 0.013014743 0.4507042 0.028876462
## [1301] {citrus fruit,
##          whole milk} => {other vegetables} 0.013014743 0.4266667 0.030503305
## [1302] {other vegetables,
##          whole milk} => {citrus fruit} 0.013014743 0.1739130 0.074834774
## [1303] {sausage,
##          shopping bags} => {soda} 0.005693950 0.3636364 0.015658363
## [1304] {shopping bags,
##          soda} => {sausage} 0.005693950 0.2314050 0.024605999
## [1305] {sausage,
##          soda} => {shopping bags} 0.005693950 0.2343096 0.024300966
## [1306] {sausage,
##          shopping bags} => {rolls/buns} 0.005998983 0.3831169 0.015658363
## [1307] {rolls/buns,
##          shopping bags} => {sausage} 0.005998983 0.3072917 0.019522115
## [1308] {rolls/buns,
##          sausage} => {shopping bags} 0.005998983 0.1960133 0.030604982

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## [1309] {sausage,	=> {other vegetables}	0.005388917	0.3441558	0.015658363
## shopping bags}				
## [1310] {other vegetables,	=> {sausage}	0.005388917	0.2324561	0.023182511
## shopping bags}				
## [1311] {other vegetables,	=> {shopping bags}	0.005388917	0.2000000	0.026944586
## sausage}				
## [1312] {root vegetables,	=> {other vegetables}	0.006609049	0.5158730	0.012811388
## shopping bags}				
## [1313] {other vegetables,	=> {root vegetables}	0.006609049	0.2850877	0.023182511
## shopping bags}				
## [1314] {other vegetables,	=> {shopping bags}	0.006609049	0.1394850	0.047381800
## root vegetables}				
## [1315] {root vegetables,	=> {whole milk}	0.005287239	0.4126984	0.012811388
## shopping bags}				
## [1316] {shopping bags,	=> {root vegetables}	0.005287239	0.2157676	0.024504321
## whole milk}				
## [1317] {root vegetables,	=> {shopping bags}	0.005287239	0.1081081	0.048906965
## whole milk}				
## [1318] {shopping bags,	=> {rolls/buns}	0.006304016	0.2561983	0.024605999
## soda}				
## [1319] {rolls/buns,	=> {soda}	0.006304016	0.3229167	0.019522115
## shopping bags}				
## [1320] {rolls/buns,	=> {shopping bags}	0.006304016	0.1644562	0.038332486
## soda}				
## [1321] {shopping bags,	=> {other vegetables}	0.005388917	0.2190083	0.024605999
## soda}				
## [1322] {other vegetables,	=> {soda}	0.005388917	0.2324561	0.023182511
## shopping bags}				
## [1323] {other vegetables,	=> {shopping bags}	0.005388917	0.1645963	0.032740214
## soda}				
## [1324] {shopping bags,	=> {whole milk}	0.006812405	0.2768595	0.024605999
## soda}				
## [1325] {shopping bags,	=> {soda}	0.006812405	0.2780083	0.024504321
## whole milk}				
## [1326] {soda,	=> {shopping bags}	0.006812405	0.1700508	0.040061007
## whole milk}				
## [1327] {shopping bags,	=> {other vegetables}	0.005388917	0.3533333	0.015251652
## yogurt}				
## [1328] {other vegetables,	=> {yogurt}	0.005388917	0.2324561	0.023182511
## shopping bags}				
## [1329] {other vegetables,	=> {shopping bags}	0.005388917	0.1241218	0.043416370
## yogurt}				
## [1330] {shopping bags,	=> {whole milk}	0.005287239	0.3466667	0.015251652
## yogurt}				
## [1331] {shopping bags,	=> {yogurt}	0.005287239	0.2157676	0.024504321
## whole milk}				
## [1332] {rolls/buns,	=> {other vegetables}	0.005287239	0.2708333	0.019522115
## shopping bags}				
## [1333] {other vegetables,	=> {rolls/buns}	0.005287239	0.2280702	0.023182511
## shopping bags}				
## [1334] {other vegetables,	=> {shopping bags}	0.005287239	0.1241050	0.042602949
## rolls/buns}				
## [1335] {rolls/buns,	=> {whole milk}	0.005287239	0.2708333	0.019522115
## shopping bags}				

## [1336] {shopping bags, ## whole milk}	=> {rolls/buns}	0.005287239	0.2157676	0.024504321
## [1337] {other vegetables, ## shopping bags}	=> {whole milk}	0.007625826	0.3289474	0.023182511
## [1338] {shopping bags, ## whole milk}	=> {other vegetables}	0.007625826	0.3112033	0.024504321
## [1339] {other vegetables, ## whole milk}	=> {shopping bags}	0.007625826	0.1019022	0.074834774
## [1340] {bottled water, ## sausage}	=> {other vegetables}	0.005083884	0.4237288	0.011997966
## [1341] {other vegetables, ## sausage}	=> {bottled water}	0.005083884	0.1886792	0.026944586
## [1342] {bottled water, ## other vegetables}	=> {sausage}	0.005083884	0.2049180	0.024809354
## [1343] {sausage, ## tropical fruit}	=> {other vegetables}	0.005998983	0.4306569	0.013929842
## [1344] {other vegetables, ## sausage}	=> {tropical fruit}	0.005998983	0.2226415	0.026944586
## [1345] {other vegetables, ## tropical fruit}	=> {sausage}	0.005998983	0.1671388	0.035892222
## [1346] {sausage, ## tropical fruit}	=> {whole milk}	0.007219115	0.5182482	0.013929842
## [1347] {sausage, ## whole milk}	=> {tropical fruit}	0.007219115	0.2414966	0.029893238
## [1348] {tropical fruit, ## whole milk}	=> {sausage}	0.007219115	0.1706731	0.042297916
## [1349] {root vegetables, ## sausage}	=> {yogurt}	0.005185562	0.3469388	0.014946619
## [1350] {sausage, ## yogurt}	=> {root vegetables}	0.005185562	0.2642487	0.019623793
## [1351] {root vegetables, ## yogurt}	=> {sausage}	0.005185562	0.2007874	0.025826131
## [1352] {root vegetables, ## sausage}	=> {other vegetables}	0.006812405	0.4557823	0.014946619
## [1353] {other vegetables, ## sausage}	=> {root vegetables}	0.006812405	0.2528302	0.026944586
## [1354] {other vegetables, ## root vegetables}	=> {sausage}	0.006812405	0.1437768	0.047381800
## [1355] {root vegetables, ## sausage}	=> {whole milk}	0.007727504	0.5170068	0.014946619
## [1356] {sausage, ## whole milk}	=> {root vegetables}	0.007727504	0.2585034	0.029893238
## [1357] {root vegetables, ## whole milk}	=> {sausage}	0.007727504	0.1580042	0.048906965
## [1358] {sausage, ## soda}	=> {yogurt}	0.005592272	0.2301255	0.024300966
## [1359] {sausage, ## yogurt}	=> {soda}	0.005592272	0.2849741	0.019623793
## [1360] {soda, ## yogurt}	=> {sausage}	0.005592272	0.2044610	0.027351296
## [1361] {sausage, ## soda}	=> {rolls/buns}	0.009659380	0.3974895	0.024300966
## [1362] {rolls/buns, ## sausage}	=> {soda}	0.009659380	0.3156146	0.030604982

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## [1363] {rolls/buns,
##          soda}                => {sausage}           0.009659380  0.2519894  0.038332486
## [1364] {sausage,
##          soda}                => {other vegetables} 0.007219115  0.2970711  0.024300966
## [1365] {other vegetables,
##          sausage}              => {soda}               0.007219115  0.2679245  0.026944586
## [1366] {other vegetables,
##          soda}                => {sausage}            0.007219115  0.2204969  0.032740214
## [1367] {sausage,
##          soda}                => {whole milk}         0.006710727  0.2761506  0.024300966
## [1368] {sausage,
##          whole milk}           => {soda}               0.006710727  0.2244898  0.029893238
## [1369] {soda,
##          whole milk}           => {sausage}            0.006710727  0.1675127  0.040061007
## [1370] {sausage,
##          yogurt}               => {rolls/buns}        0.005998983  0.3056995  0.019623793
## [1371] {rolls/buns,
##          sausage}              => {yogurt}              0.005998983  0.1960133  0.030604982
## [1372] {rolls/buns,
##          yogurt}               => {sausage}             0.005998983  0.1745562  0.034367056
## [1373] {sausage,
##          yogurt}               => {other vegetables} 0.008134215  0.4145078  0.019623793
## [1374] {other vegetables,
##          sausage}              => {yogurt}              0.008134215  0.3018868  0.026944586
## [1375] {other vegetables,
##          yogurt}               => {sausage}             0.008134215  0.1873536  0.043416370
## [1376] {sausage,
##          yogurt}               => {whole milk}          0.008744281  0.4455959  0.019623793
## [1377] {sausage,
##          whole milk}            => {yogurt}              0.008744281  0.2925170  0.029893238
## [1378] {whole milk,
##          yogurt}               => {sausage}             0.008744281  0.1560799  0.056024403
## [1379] {rolls/buns,
##          sausage}              => {other vegetables} 0.008845958  0.2890365  0.030604982
## [1380] {other vegetables,
##          sausage}              => {rolls/buns}          0.008845958  0.3283019  0.026944586
## [1381] {other vegetables,
##          rolls/buns}            => {sausage}             0.008845958  0.2076372  0.042602949
## [1382] {rolls/buns,
##          sausage}              => {whole milk}          0.009354347  0.3056478  0.030604982
## [1383] {sausage,
##          whole milk}            => {rolls/buns}          0.009354347  0.3129252  0.029893238
## [1384] {rolls/buns,
##          whole milk}            => {sausage}             0.009354347  0.1651706  0.056634469
## [1385] {other vegetables,
##          sausage}              => {whole milk}          0.010167768  0.3773585  0.026944586
## [1386] {sausage,
##          whole milk}            => {other vegetables} 0.010167768  0.3401361  0.029893238
## [1387] {other vegetables,
##          whole milk}            => {sausage}             0.010167768  0.1358696  0.074834774
## [1388] {bottled water,
##          tropical fruit}       => {soda}                0.005185562  0.2802198  0.018505338
## [1389] {bottled water,
##          soda}                 => {tropical fruit}    0.005185562  0.1789474  0.028978139

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## [1390] {soda,
##         tropical fruit} => {bottled water} 0.005185562 0.2487805 0.020843925
## [1391] {bottled water,
##         tropical fruit} => {yogurt} 0.007117438 0.3846154 0.018505338
## [1392] {bottled water,
##         yogurt} => {tropical fruit} 0.007117438 0.3097345 0.022979156
## [1393] {tropical fruit,
##         yogurt} => {bottled water} 0.007117438 0.2430556 0.029283172
## [1394] {bottled water,
##         tropical fruit} => {rolls/buns} 0.005388917 0.2912088 0.018505338
## [1395] {bottled water,
##         rolls/buns} => {tropical fruit} 0.005388917 0.2226891 0.024199288
## [1396] {rolls/buns,
##         tropical fruit} => {bottled water} 0.005388917 0.2190083 0.024605999
## [1397] {bottled water,
##         tropical fruit} => {other vegetables} 0.006202339 0.3351648 0.018505338
## [1398] {bottled water,
##         other vegetables} => {tropical fruit} 0.006202339 0.2500000 0.024809354
## [1399] {other vegetables,
##         tropical fruit} => {bottled water} 0.006202339 0.1728045 0.035892222
## [1400] {bottled water,
##         tropical fruit} => {whole milk} 0.008032537 0.4340659 0.018505338
## [1401] {bottled water,
##         whole milk} => {tropical fruit} 0.008032537 0.2337278 0.034367056
## [1402] {tropical fruit,
##         whole milk} => {bottled water} 0.008032537 0.1899038 0.042297916
## [1403] {bottled water,
##         root vegetables} => {other vegetables} 0.007015760 0.4480519 0.015658363
## [1404] {bottled water,
##         other vegetables} => {root vegetables} 0.007015760 0.2827869 0.024809354
## [1405] {other vegetables,
##         root vegetables} => {bottled water} 0.007015760 0.1480687 0.047381800
## [1406] {bottled water,
##         root vegetables} => {whole milk} 0.007320793 0.4675325 0.015658363
## [1407] {bottled water,
##         whole milk} => {root vegetables} 0.007320793 0.2130178 0.034367056
## [1408] {root vegetables,
##         whole milk} => {bottled water} 0.007320793 0.1496881 0.048906965
## [1409] {bottled water,
##         soda} => {yogurt} 0.007422471 0.2561404 0.028978139
## [1410] {bottled water,
##         yogurt} => {soda} 0.007422471 0.3230088 0.022979156
## [1411] {soda,
##         yogurt} => {bottled water} 0.007422471 0.2713755 0.027351296
## [1412] {bottled water,
##         soda} => {rolls/buns} 0.006812405 0.2350877 0.028978139
## [1413] {bottled water,
##         rolls/buns} => {soda} 0.006812405 0.2815126 0.024199288
## [1414] {rolls/buns,
##         soda} => {bottled water} 0.006812405 0.1777188 0.038332486
## [1415] {bottled water,
##         soda} => {other vegetables} 0.005693950 0.1964912 0.028978139
## [1416] {bottled water,
##         other vegetables} => {soda} 0.005693950 0.2295082 0.024809354

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## [1417] {other vegetables,
##         soda}                      => {bottled water}          0.005693950 0.1739130 0.032740214
## [1418] {bottled water,
##         soda}                      => {whole milk}           0.007524148 0.2596491 0.028978139
## [1419] {bottled water,
##         whole milk}                => {soda}                  0.007524148 0.2189349 0.034367056
## [1420] {soda,
##         whole milk}                => {bottled water}          0.007524148 0.1878173 0.040061007
## [1421] {bottled water,
##         yogurt}                   => {rolls/buns}            0.007117438 0.3097345 0.022979156
## [1422] {bottled water,
##         rolls/buns}                => {yogurt}                 0.007117438 0.2941176 0.024199288
## [1423] {rolls/buns,
##         yogurt}                   => {bottled water}          0.007117438 0.2071006 0.034367056
## [1424] {bottled water,
##         yogurt}                   => {other vegetables}      0.008134215 0.3539823 0.022979156
## [1425] {bottled water,
##         other vegetables}        => {yogurt}                 0.008134215 0.3278689 0.024809354
## [1426] {other vegetables,
##         yogurt}                   => {bottled water}          0.008134215 0.1873536 0.043416370
## [1427] {bottled water,
##         yogurt}                   => {whole milk}             0.009659380 0.4203540 0.022979156
## [1428] {bottled water,
##         whole milk}               => {yogurt}                 0.009659380 0.2810651 0.034367056
## [1429] {whole milk,
##         yogurt}                   => {bottled water}          0.009659380 0.1724138 0.056024403
## [1430] {bottled water,
##         rolls/buns}                => {other vegetables}      0.007320793 0.3025210 0.024199288
## [1431] {bottled water,
##         other vegetables}        => {rolls/buns}              0.007320793 0.2950820 0.024809354
## [1432] {other vegetables,
##         rolls/buns}                => {bottled water}          0.007320793 0.1718377 0.042602949
## [1433] {bottled water,
##         rolls/buns}                => {whole milk}             0.008744281 0.3613445 0.024199288
## [1434] {bottled water,
##         whole milk}               => {rolls/buns}              0.008744281 0.2544379 0.034367056
## [1435] {rolls/buns,
##         whole milk}               => {bottled water}          0.008744281 0.1543986 0.056634469
## [1436] {bottled water,
##         other vegetables}        => {whole milk}             0.010777834 0.4344262 0.024809354
## [1437] {bottled water,
##         whole milk}               => {other vegetables}      0.010777834 0.3136095 0.034367056
## [1438] {other vegetables,
##         whole milk}               => {bottled water}          0.010777834 0.1440217 0.074834774
## [1439] {root vegetables,
##         tropical fruit}          => {yogurt}                 0.008134215 0.3864734 0.021047280
## [1440] {tropical fruit,
##         yogurt}                   => {root vegetables}       0.008134215 0.2777778 0.029283172
## [1441] {root vegetables,
##         yogurt}                   => {tropical fruit}         0.008134215 0.3149606 0.025826131
## [1442] {root vegetables,
##         tropical fruit}          => {rolls/buns}              0.005897306 0.2801932 0.021047280
## [1443] {rolls/buns,
##         tropical fruit}          => {root vegetables}       0.005897306 0.2396694 0.024605999

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## [1444] {rolls/buns,
##          root vegetables}      => {tropical fruit}           0.005897306  0.2426778  0.024300966
## [1445] {root vegetables,
##          tropical fruit}       => {other vegetables}        0.012302999  0.5845411  0.021047280
## [1446] {other vegetables,
##          tropical fruit}       => {root vegetables}        0.012302999  0.3427762  0.035892222
## [1447] {other vegetables,
##          root vegetables}      => {tropical fruit}           0.012302999  0.2596567  0.047381800
## [1448] {root vegetables,
##          tropical fruit}       => {whole milk}              0.011997966  0.5700483  0.021047280
## [1449] {tropical fruit,
##          whole milk}           => {root vegetables}        0.011997966  0.2836538  0.042297916
## [1450] {root vegetables,
##          whole milk}            => {tropical fruit}           0.011997966  0.2453222  0.048906965
## [1451] {soda,
##          tropical fruit}        => {yogurt}                 0.006609049  0.3170732  0.020843925
## [1452] {tropical fruit,
##          yogurt}                => {soda}                  0.006609049  0.2256944  0.029283172
## [1453] {soda,
##          yogurt}                => {tropical fruit}         0.006609049  0.2416357  0.027351296
## [1454] {soda,
##          tropical fruit}        => {rolls/buns}             0.005388917  0.2585366  0.020843925
## [1455] {rolls/buns,
##          tropical fruit}        => {soda}                  0.005388917  0.2190083  0.024605999
## [1456] {rolls/buns,
##          soda}                  => {tropical fruit}         0.005388917  0.1405836  0.038332486
## [1457] {soda,
##          tropical fruit}        => {other vegetables}       0.007219115  0.3463415  0.020843925
## [1458] {other vegetables,
##          tropical fruit}        => {soda}                  0.007219115  0.2011331  0.035892222
## [1459] {other vegetables,
##          soda}                  => {tropical fruit}         0.007219115  0.2204969  0.032740214
## [1460] {soda,
##          tropical fruit}        => {whole milk}             0.007829181  0.3756098  0.020843925
## [1461] {tropical fruit,
##          whole milk}             => {soda}                  0.007829181  0.1850962  0.042297916
## [1462] {soda,
##          whole milk}             => {tropical fruit}         0.007829181  0.1954315  0.040061007
## [1463] {tropical fruit,
##          yogurt}                => {rolls/buns}             0.008744281  0.2986111  0.029283172
## [1464] {rolls/buns,
##          tropical fruit}        => {yogurt}                 0.008744281  0.3553719  0.024605999
## [1465] {rolls/buns,
##          yogurt}                => {tropical fruit}         0.008744281  0.2544379  0.034367056
## [1466] {tropical fruit,
##          yogurt}                => {other vegetables}       0.012302999  0.4201389  0.029283172
## [1467] {other vegetables,
##          tropical fruit}        => {yogurt}                 0.012302999  0.3427762  0.035892222
## [1468] {other vegetables,
##          yogurt}                => {tropical fruit}         0.012302999  0.2833724  0.043416370
## [1469] {tropical fruit,
##          yogurt}                => {whole milk}             0.015149975  0.5173611  0.029283172
## [1470] {tropical fruit,
##          whole milk}             => {yogurt}                 0.015149975  0.3581731  0.042297916

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## [1471] {whole milk, ## yogurt}	=> {tropical fruit}	0.015149975	0.2704174	0.056024403
## [1472] {rolls/buns, ## tropical fruit}	=> {other vegetables}	0.007829181	0.3181818	0.024605999
## [1473] {other vegetables, ## tropical fruit}	=> {rolls/buns}	0.007829181	0.2181303	0.035892222
## [1474] {other vegetables, ## rolls/buns}	=> {tropical fruit}	0.007829181	0.1837709	0.042602949
## [1475] {rolls/buns, ## tropical fruit}	=> {whole milk}	0.010981190	0.4462810	0.024605999
## [1476] {tropical fruit, ## whole milk}	=> {rolls/buns}	0.010981190	0.2596154	0.042297916
## [1477] {rolls/buns, ## whole milk}	=> {tropical fruit}	0.010981190	0.1938959	0.056634469
## [1478] {other vegetables, ## tropical fruit}	=> {whole milk}	0.017081851	0.4759207	0.035892222
## [1479] {tropical fruit, ## whole milk}	=> {other vegetables}	0.017081851	0.4038462	0.042297916
## [1480] {other vegetables, ## whole milk}	=> {tropical fruit}	0.017081851	0.2282609	0.074834774
## [1481] {root vegetables, ## soda}	=> {other vegetables}	0.008235892	0.4426230	0.018607016
## [1482] {other vegetables, ## root vegetables}	=> {soda}	0.008235892	0.1738197	0.047381800
## [1483] {other vegetables, ## soda}	=> {root vegetables}	0.008235892	0.2515528	0.032740214
## [1484] {root vegetables, ## soda}	=> {whole milk}	0.008134215	0.4371585	0.018607016
## [1485] {root vegetables, ## whole milk}	=> {soda}	0.008134215	0.1663202	0.048906965
## [1486] {soda, ## whole milk}	=> {root vegetables}	0.008134215	0.2030457	0.040061007
## [1487] {root vegetables, ## yogurt}	=> {rolls/buns}	0.007219115	0.2795276	0.025826131
## [1488] {rolls/buns, ## root vegetables}	=> {yogurt}	0.007219115	0.2970711	0.024300966
## [1489] {rolls/buns, ## yogurt}	=> {root vegetables}	0.007219115	0.2100592	0.034367056
## [1490] {root vegetables, ## yogurt}	=> {other vegetables}	0.012913066	0.5000000	0.025826131
## [1491] {other vegetables, ## root vegetables}	=> {yogurt}	0.012913066	0.2725322	0.047381800
## [1492] {other vegetables, ## yogurt}	=> {root vegetables}	0.012913066	0.2974239	0.043416370
## [1493] {root vegetables, ## yogurt}	=> {whole milk}	0.014539908	0.5629921	0.025826131
## [1494] {root vegetables, ## whole milk}	=> {yogurt}	0.014539908	0.2972973	0.048906965
## [1495] {whole milk, ## yogurt}	=> {root vegetables}	0.014539908	0.2595281	0.056024403
## [1496] {rolls/buns, ## root vegetables}	=> {other vegetables}	0.012201322	0.5020921	0.024300966
## [1497] {other vegetables, ## root vegetables}	=> {rolls/buns}	0.012201322	0.2575107	0.047381800

```

## [1498] {other vegetables,
##          rolls/buns}           => {root vegetables}      0.012201322 0.2863962 0.042602949
## [1499] {rolls/buns,
##          root vegetables}     => {whole milk}        0.012709710 0.5230126 0.024300966
## [1500] {root vegetables,
##          whole milk}          => {rolls/buns}        0.012709710 0.2598753 0.048906965
## [1501] {rolls/buns,
##          whole milk}          => {root vegetables}    0.012709710 0.2244165 0.056634469
## [1502] {other vegetables,
##          root vegetables}     => {whole milk}        0.023182511 0.4892704 0.047381800
## [1503] {root vegetables,
##          whole milk}          => {other vegetables}   0.023182511 0.4740125 0.048906965
## [1504] {other vegetables,
##          whole milk}          => {root vegetables}    0.023182511 0.3097826 0.074834774
## [1505] {soda,
##          yogurt}              => {rolls/buns}        0.008642603 0.3159851 0.027351296
## [1506] {rolls/buns,
##          soda}                => {yogurt}            0.008642603 0.2254642 0.038332486
## [1507] {rolls/buns,
##          yogurt}              => {soda}              0.008642603 0.2514793 0.034367056
## [1508] {soda,
##          yogurt}              => {other vegetables}  0.008337570 0.3048327 0.027351296
## [1509] {other vegetables,
##          soda}                => {yogurt}            0.008337570 0.2546584 0.032740214
## [1510] {other vegetables,
##          yogurt}              => {soda}              0.008337570 0.1920375 0.043416370
## [1511] {soda,
##          yogurt}              => {whole milk}       0.010472801 0.3828996 0.027351296
## [1512] {soda,
##          whole milk}          => {yogurt}            0.010472801 0.2614213 0.040061007
## [1513] {whole milk,
##          yogurt}              => {soda}              0.010472801 0.1869328 0.056024403
## [1514] {rolls/buns,
##          soda}                => {other vegetables} 0.009862735 0.2572944 0.038332486
## [1515] {other vegetables,
##          soda}                => {rolls/buns}       0.009862735 0.3012422 0.032740214
## [1516] {other vegetables,
##          rolls/buns}          => {soda}              0.009862735 0.2315036 0.042602949
## [1517] {rolls/buns,
##          soda}                => {whole milk}       0.008845958 0.2307692 0.038332486
## [1518] {soda,
##          whole milk}          => {rolls/buns}       0.008845958 0.2208122 0.040061007
## [1519] {rolls/buns,
##          whole milk}          => {soda}              0.008845958 0.1561939 0.056634469
## [1520] {other vegetables,
##          soda}                => {whole milk}       0.013929842 0.4254658 0.032740214
## [1521] {soda,
##          whole milk}          => {other vegetables} 0.013929842 0.3477157 0.040061007
## [1522] {other vegetables,
##          whole milk}          => {soda}              0.013929842 0.1861413 0.074834774
## [1523] {rolls/buns,
##          yogurt}              => {other vegetables} 0.011489578 0.3343195 0.034367056
## [1524] {other vegetables,
##          yogurt}              => {rolls/buns}       0.011489578 0.2646370 0.043416370

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## [1525] {other vegetables, ## rolls/buns}	=> {yogurt}	0.011489578	0.2696897	0.042602949
## [1526] {rolls/buns, ## yogurt}	=> {whole milk}	0.015556685	0.4526627	0.034367056
## [1527] {whole milk, ## yogurt}	=> {rolls/buns}	0.015556685	0.2776770	0.056024403
## [1528] {rolls/buns, ## whole milk}	=> {yogurt}	0.015556685	0.2746858	0.056634469
## [1529] {other vegetables, ## yogurt}	=> {whole milk}	0.022267412	0.5128806	0.043416370
## [1530] {whole milk, ## yogurt}	=> {other vegetables}	0.022267412	0.3974592	0.056024403
## [1531] {other vegetables, ## whole milk}	=> {yogurt}	0.022267412	0.2975543	0.074834774
## [1532] {other vegetables, ## rolls/buns}	=> {whole milk}	0.017895272	0.4200477	0.042602949
## [1533] {rolls/buns, ## whole milk}	=> {other vegetables}	0.017895272	0.3159785	0.056634469
## [1534] {other vegetables, ## whole milk}	=> {rolls/buns}	0.017895272	0.2391304	0.074834774
## [1535] {fruit/vegetable juice, ## other vegetables, ## yogurt}	=> {whole milk}	0.005083884	0.6172840	0.008235892
## [1536] {fruit/vegetable juice, ## whole milk, ## yogurt}	=> {other vegetables}	0.005083884	0.5376344	0.009456024
## [1537] {fruit/vegetable juice, ## other vegetables, ## whole milk}	=> {yogurt}	0.005083884	0.4854369	0.010472801
## [1538] {other vegetables, ## whole milk, ## yogurt}	=> {fruit/vegetable juice}	0.005083884	0.2283105	0.022267412
## [1539] {other vegetables, ## root vegetables, ## whipped/sour cream}	=> {whole milk}	0.005185562	0.6071429	0.008540925
## [1540] {root vegetables, ## whipped/sour cream, ## whole milk}	=> {other vegetables}	0.005185562	0.5483871	0.009456024
## [1541] {other vegetables, ## whipped/sour cream, ## whole milk}	=> {root vegetables}	0.005185562	0.3541667	0.014641586
## [1542] {other vegetables, ## root vegetables, ## whole milk}	=> {whipped/sour cream}	0.005185562	0.2236842	0.023182511
## [1543] {other vegetables, ## whipped/sour cream, ## yogurt}	=> {whole milk}	0.005592272	0.5500000	0.010167768
## [1544] {whipped/sour cream, ## whole milk, ## yogurt}	=> {other vegetables}	0.005592272	0.5140187	0.010879512
## [1545] {other vegetables, ## whipped/sour cream, ## whole milk}	=> {yogurt}	0.005592272	0.3819444	0.014641586
## [1546] {other vegetables,				

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##      whole milk,
##      yogurt}          => {whipped/sour cream}    0.005592272  0.2511416  0.022267412 0
## [1547] {other vegetables,
##          pip fruit,
##          root vegetables} => {whole milk}        0.005490595  0.6750000  0.008134215 0
## [1548] {pip fruit,
##          root vegetables,
##          whole milk}       => {other vegetables} 0.005490595  0.6136364  0.008947636 0
## [1549] {other vegetables,
##          pip fruit,
##          whole milk}       => {root vegetables} 0.005490595  0.4060150  0.013523132 0
## [1550] {other vegetables,
##          root vegetables,
##          whole milk}       => {pip fruit}        0.005490595  0.2368421  0.023182511 0
## [1551] {other vegetables,
##          pip fruit,
##          yogurt}          => {whole milk}        0.005083884  0.6250000  0.008134215 0
## [1552] {pip fruit,
##          whole milk,
##          yogurt}          => {other vegetables} 0.005083884  0.5319149  0.009557702 0
## [1553] {other vegetables,
##          pip fruit,
##          whole milk}       => {yogurt}           0.005083884  0.3759398  0.013523132 0
## [1554] {other vegetables,
##          whole milk,
##          yogurt}          => {pip fruit}        0.005083884  0.2283105  0.022267412 0
## [1555] {citrus fruit,
##          other vegetables,
##          root vegetables} => {whole milk}        0.005795628  0.5588235  0.010371124 0
## [1556] {citrus fruit,
##          root vegetables,
##          whole milk}       => {other vegetables} 0.005795628  0.6333333  0.009150991 0
## [1557] {citrus fruit,
##          other vegetables,
##          whole milk}       => {root vegetables} 0.005795628  0.4453125  0.013014743 0
## [1558] {other vegetables,
##          root vegetables,
##          whole milk}       => {citrus fruit}      0.005795628  0.2500000  0.023182511 0
## [1559] {root vegetables,
##          tropical fruit,
##          yogurt}          => {whole milk}        0.005693950  0.7000000  0.008134215 0
## [1560] {root vegetables,
##          tropical fruit,
##          whole milk}       => {yogurt}           0.005693950  0.4745763  0.011997966 0
## [1561] {tropical fruit,
##          whole milk,
##          yogurt}          => {root vegetables} 0.005693950  0.3758389  0.015149975 0
## [1562] {root vegetables,
##          whole milk,
##          yogurt}          => {tropical fruit}   0.005693950  0.3916084  0.014539908 0
## [1563] {other vegetables,
##          root vegetables,
##          tropical fruit}   => {whole milk}        0.007015760  0.5702479  0.012302999 0
## [1564] {root vegetables,

```

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##      tropical fruit,
##      whole milk}          => {other vegetables}    0.007015760  0.5847458  0.011997966 3
## [1565] {other vegetables,
##      tropical fruit,
##      whole milk}          => {root vegetables}   0.007015760  0.4107143  0.017081851 3
## [1566] {other vegetables,
##      root vegetables,
##      whole milk}          => {tropical fruit}    0.007015760  0.3026316  0.023182511 3
## [1567] {other vegetables,
##      tropical fruit,
##      yogurt}              => {whole milk}        0.007625826  0.6198347  0.012302999 3
## [1568] {tropical fruit,
##      whole milk,
##      yogurt}              => {other vegetables}  0.007625826  0.5033557  0.015149975 3
## [1569] {other vegetables,
##      tropical fruit,
##      whole milk}          => {yogurt}           0.007625826  0.4464286  0.017081851 3
## [1570] {other vegetables,
##      whole milk,
##      yogurt}              => {tropical fruit}    0.007625826  0.3424658  0.022267412 3
## [1571] {other vegetables,
##      root vegetables,
##      yogurt}              => {whole milk}        0.007829181  0.6062992  0.012913066 3
## [1572] {root vegetables,
##      whole milk,
##      yogurt}              => {other vegetables}  0.007829181  0.5384615  0.014539908 3
## [1573] {other vegetables,
##      root vegetables,
##      whole milk}          => {yogurt}            0.007829181  0.3377193  0.023182511 3
## [1574] {other vegetables,
##      whole milk,
##      yogurt}              => {root vegetables}   0.007829181  0.3515982  0.022267412 3
## [1575] {other vegetables,
##      rolls/buns,
##      root vegetables}     => {whole milk}        0.006202339  0.5083333  0.012201322 3
## [1576] {rolls/buns,
##      root vegetables,
##      whole milk}          => {other vegetables}  0.006202339  0.4880000  0.012709710 3
## [1577] {other vegetables,
##      root vegetables,
##      whole milk}          => {rolls/buns}        0.006202339  0.2675439  0.023182511 3
## [1578] {other vegetables,
##      rolls/buns,
##      whole milk}          => {root vegetables}   0.006202339  0.3465909  0.017895272 3
## [1579] {other vegetables,
##      rolls/buns,
##      yogurt}              => {whole milk}        0.005998983  0.5221239  0.011489578 3
## [1580] {rolls/buns,
##      whole milk,
##      yogurt}              => {other vegetables}  0.005998983  0.3856209  0.015556685 3
## [1581] {other vegetables,
##      whole milk,
##      yogurt}              => {rolls/buns}        0.005998983  0.2694064  0.022267412 3
## [1582] {other vegetables,

```

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##          rolls/buns,
##          whole milk}      => {yogurt}           0.005998983  0.3352273  0.017895272 50

# Choose a subset with higher lift and confidence
inspect(subset(grocery_rules, subset = lift > 5))
inspect(subset(grocery_rules, subset = confidence > 0.6))

##   lhs                      rhs          support  confidence  coverage    lift count
## [1] {onions,                => {other vegetables} 0.005693950  0.6021505  0.009456024 3.112008 50
## [2] {curd,                  => {whole milk}        0.006507372  0.6336634  0.010269446 2.479936 60
## [3] {domestic eggs,         => {whole milk}        0.005185562  0.6219512  0.008337570 2.434099 50
## [4] {butter,                => {whole milk}        0.005998983  0.6210526  0.009659380 2.430582 50
## [5] {butter,                => {whole milk}        0.006710727  0.6600000  0.010167768 2.583008 60
## [6] {bottled water,          => {whole milk}        0.005388917  0.6022727  0.008947636 2.357084 50
## [7] {butter,                => {whole milk}        0.006202339  0.6224490  0.009964413 2.436047 60
## [8] {butter,                => {whole milk}        0.008235892  0.6377953  0.012913066 2.496107 80
## [9] {butter,                => {whole milk}        0.009354347  0.6388889  0.014641586 2.500387 90
## [10] {domestic eggs,         => {whole milk}       0.005388917  0.6235294  0.008642603 2.440275 50
## [11] {domestic eggs,         => {whole milk}       0.006914082  0.6071429  0.011387900 2.376144 60
## [12] {pip fruit,             => {other vegetables} 0.005592272  0.6043956  0.009252669 3.123610 50
## [13] {pip fruit,             => {whole milk}        0.005998983  0.6483516  0.009252669 2.537421 50
## [14] {fruit/vegetable juice, => {whole milk}        0.005083884  0.6172840  0.008235892 2.415833 50
## [15] {other vegetables,      => {whole milk}        0.005185562  0.6071429  0.008540925 2.376144 50
## [16] {other vegetables,      => {whole milk}        0.005490595  0.6750000  0.008134215 2.641713 50
## [17] {pip fruit,              => {whole milk}        0.005083884  0.6250000  0.008134215 2.446031 50
## [18] {other vegetables,      => {other vegetables} 0.005490595  0.6136364  0.008947636 3.171368 50
## [19] {citrus fruit,            => {whole milk}        0.005083884  0.6250000  0.008134215 2.446031 50
## [20] {root vegetables,         => {other vegetables} 0.005795628  0.6333333  0.009150991 3.273165 50

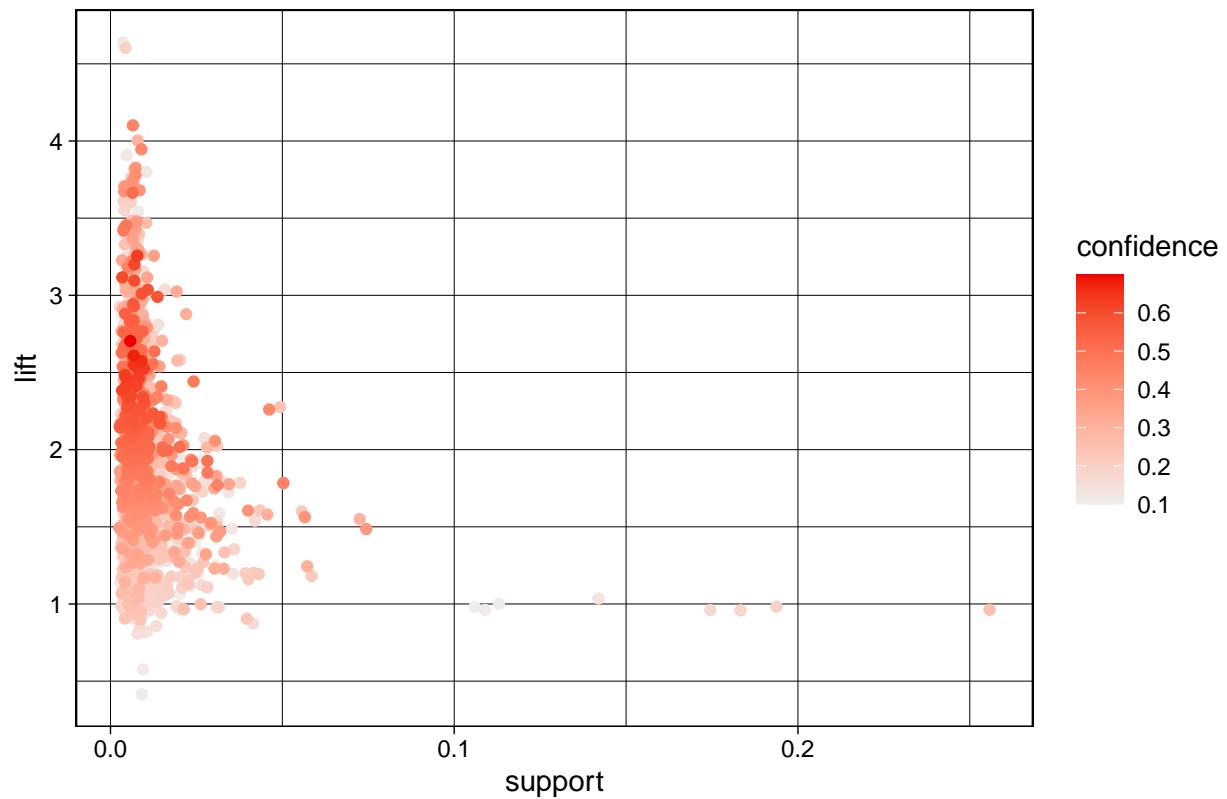
```

```

##      yogurt}                  => {whole milk}      0.005693950  0.7000000 0.008134215 2.739554
## [21] {other vegetables,
##       tropical fruit,
##       yogurt}                  => {whole milk}      0.007625826  0.6198347 0.012302999 2.425816
## [22] {other vegetables,
##       root vegetables,
##       yogurt}                  => {whole milk}      0.007829181  0.6062992 0.012913066 2.372842
## [23] {yogurt}                  => {whole milk}      0.008032550  0.5932000 0.013421530 2.321550
## [24] {yogurt}                  => {whole milk}      0.008245826  0.5806000 0.013928570 2.270850
## [25] {yogurt}                  => {whole milk}      0.008459101  0.5680000 0.014435610 2.219850
## [26] {yogurt}                  => {whole milk}      0.008672376  0.5554000 0.014942650 2.168850
## [27] {yogurt}                  => {whole milk}      0.008885651  0.5428000 0.015449690 2.117850
## [28] {yogurt}                  => {whole milk}      0.009098926  0.5302000 0.015956730 2.066850
## [29] {yogurt}                  => {whole milk}      0.009312199  0.5176000 0.016463770 2.015850
## [30] {yogurt}                  => {whole milk}      0.009525474  0.5050000 0.016970810 1.964850
## [31] {yogurt}                  => {whole milk}      0.009738749  0.4924000 0.017477850 1.913850
## [32] {yogurt}                  => {whole milk}      0.009952024  0.4798000 0.017984890 1.862850
## [33] {yogurt}                  => {whole milk}      0.010165298  0.4672000 0.018491930 1.811850
## [34] {yogurt}                  => {whole milk}      0.010378573  0.4546000 0.018998970 1.760850
## [35] {yogurt}                  => {whole milk}      0.010591848  0.4420000 0.019506010 1.709850
## [36] {yogurt}                  => {whole milk}      0.010805123  0.4294000 0.020013050 1.658850
## [37] {yogurt}                  => {whole milk}      0.011018397  0.4168000 0.020520090 1.607850
## [38] {yogurt}                  => {whole milk}      0.011231672  0.4042000 0.021027130 1.556850
## [39] {yogurt}                  => {whole milk}      0.011444946  0.3916000 0.021534170 1.505850
## [40] {yogurt}                  => {whole milk}      0.011658221  0.3790000 0.022041210 1.454850
## [41] {yogurt}                  => {whole milk}      0.011871495  0.3664000 0.022548250 1.403850
## [42] {yogurt}                  => {whole milk}      0.012084770  0.3538000 0.023055290 1.352850
## [43] {yogurt}                  => {whole milk}      0.012298044  0.3412000 0.023562330 1.301850
## [44] {yogurt}                  => {whole milk}      0.012511319  0.3286000 0.024069370 1.250850
## [45] {yogurt}                  => {whole milk}      0.012724593  0.3160000 0.024576410 1.199850
## [46] {yogurt}                  => {whole milk}      0.012937868  0.3034000 0.025083450 1.148850
## [47] {yogurt}                  => {whole milk}      0.013151142  0.2908000 0.025590490 1.097850
## [48] {yogurt}                  => {whole milk}      0.013364417  0.2782000 0.026097530 1.046850
## [49] {yogurt}                  => {whole milk}      0.013577691  0.2656000 0.026604570 0.995850
## [50] {yogurt}                  => {whole milk}      0.013790965  0.2530000 0.027111610 0.944850
## [51] {yogurt}                  => {whole milk}      0.014004239  0.2404000 0.027618650 0.893850
## [52] {yogurt}                  => {whole milk}      0.014217513  0.2278000 0.028125690 0.842850
## [53] {yogurt}                  => {whole milk}      0.014430787  0.2152000 0.028632730 0.791850
## [54] {yogurt}                  => {whole milk}      0.014644061  0.2026000 0.029139770 0.740850
## [55] {yogurt}                  => {whole milk}      0.014857335  0.1900000 0.029646810 0.689850
## [56] {yogurt}                  => {whole milk}      0.015070609  0.1774000 0.030153850 0.638850
## [57] {yogurt}                  => {whole milk}      0.015283883  0.1648000 0.030660890 0.587850
## [58] {yogurt}                  => {whole milk}      0.015497157  0.1522000 0.031167930 0.536850
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## [61] {yogurt}                  => {whole milk}      0.016136979  0.1144000 0.032689050 0.383850
## [62] {yogurt}                  => {whole milk}      0.016350253  0.1018000 0.033196090 0.332850
## [63] {yogurt}                  => {whole milk}      0.016563527  0.0892000 0.033703130 0.281850
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## [65] {yogurt}                  => {whole milk}      0.017100075  0.0640000 0.034717210 0.179850
## [66] {yogurt}                  => {whole milk}      0.017313349  0.0514000 0.035224250 0.128850
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## [128] {yogurt}                  => {whole milk}      0.030544124  0.0000000 0.066759730 0.0000000
## [129] {yogurt}                  => {whole milk}      0.030757398  0.0000000 0.067266770 0.0000000
## [130] {yogurt}                  => {whole milk}      0.030970672  0.0000000 0.067773810 0.0000000
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## [135] {yogurt}                  => {whole milk}      0.032037042  0.0000000 0.070308910 0.0000000
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## [139] {yogurt}                  => {whole milk}      0.032890138  0.0000000 0.072336970 0.0000000
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## [169] {yogurt}                  => {whole milk}      0.039189658  0.0000000 0.087646870 0.0000000
## [170] {yogurt}                  => {whole milk}      0.039402932  0.0000000 0.088153810 0.0000000
## [171] {yogurt}                  => {whole milk}      0.039616206  0.0000000 0.088660750 0.0000000
## [172] {yogurt}                  => {whole milk}      0.039829480  0.0000000 0.089167690 0.0000000
## [173] {yogurt}                  => {whole milk}      0.040042754  0.0000000 0.089674630 0.0000000
## [174] {yogurt}                  => {whole milk}      0.040256028  0.0000000 0.090181570 0.0000000
## [175] {yogurt}                  => {whole milk}      0.040469302  0.0000000 0.090688510 0.0000000
## [176] {yogurt}                  => {whole milk}      0.040682576  0.0000000 0.091195450 0.0000000
## [177] {yogurt}                  => {whole milk}      0.040895850  0.0000000 0.091602390 0.0000000
## [178] {yogurt}                  => {whole milk}      0.041109124  0.0000000 0.092109330 0.0000000
## [179] {yogurt}                  => {whole milk}      0.041322398  0.0000000 0.092616270 0.0000000
## [180] {yogurt}                  => {whole milk}      0.041535672  0.0000000 0.093123210 0.0000000
## [181] {yogurt}                  => {whole milk}      0.041748946  0.0000000 0.093630150 0.0000000
## [182] {yogurt}                  => {whole milk}      0.041962220  0.0000000 0.094137090 0.0000000
## [183] {yogurt}                  => {whole milk}      0.042175494  0.0000000 0.094644030 0.0000000
## [184] {yogurt}                  => {whole milk}      0.042388768  0.0000000 0.095150970 0.0000000
## [185] {yogurt}                  => {whole milk}      0.042602042  0.0000000 0.095657910 0.0000000
## [186] {yogurt}                  => {whole milk}      0.042815316  0.0000000 0.096164850 0.0000000
## [187] {yogurt}                  => {whole milk}      0.043028590  0.0000000 0.096671790 0.0000000
## [188] {yogurt}                  => {whole milk}      0.043241864  0.0000000 0.097178730 0.0000000
## [189] {yogurt}                  => {whole milk}      0.043455138  0.0000000 0.097685670 0.0000000
## [190] {yogurt}                  => {whole milk}      0.043668412  0.0000000 0.098192610 0.0000000
## [191] {yogurt}                  => {whole milk}      0.043881686  0.0000000 0.098699550 0.0000000
## [192] {yogurt}                  => {whole milk}      0.044095060  0.0000000 0.099206490 0.0000000
## [193] {yogurt}                  => {whole milk}      0.044308334  0.0000000 0.099713430 0.0000000

```

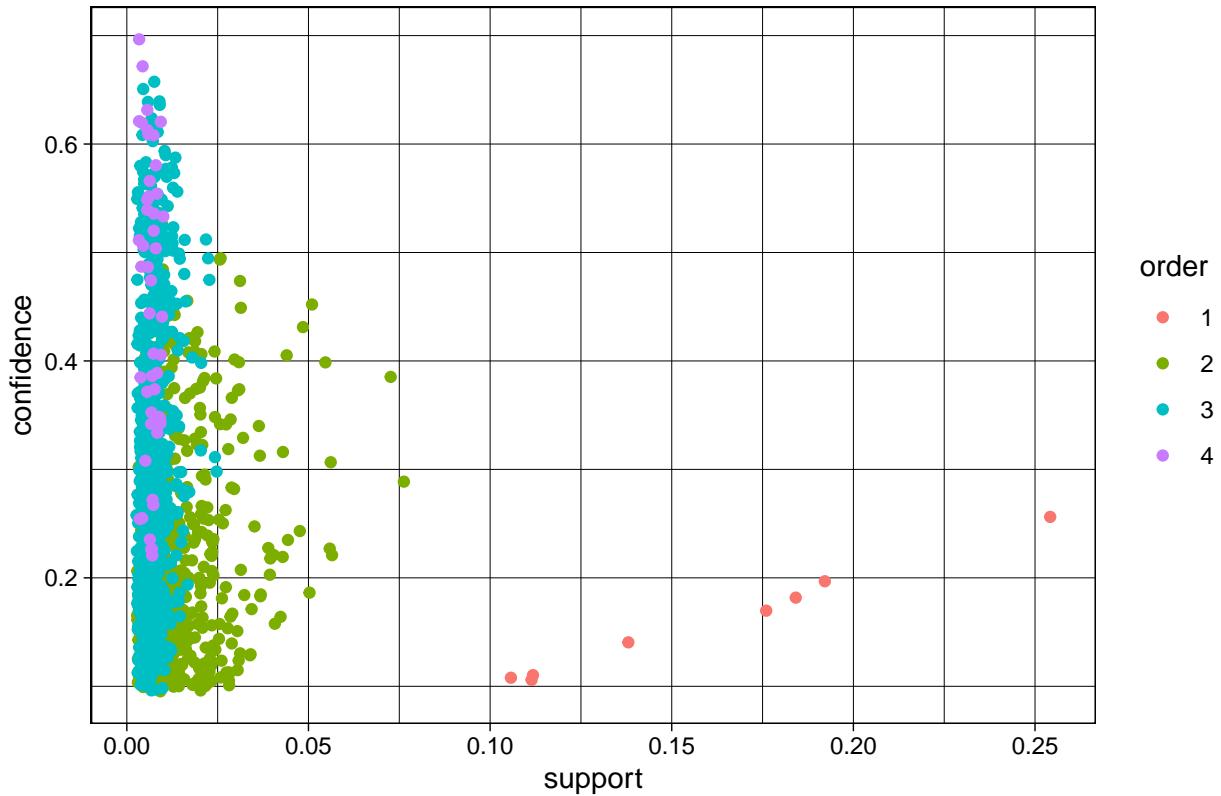
Scatter plot for 1582 rules



```
# "Two-key" plot: coloring is by size (order) of item set
plot(grocery_rules, method = 'two-key plot')
```

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

Scatter plot for 1582 rules



Summary of Association Rules Analysis:

- Support vs. Confidence: Most rules have low support and varying confidence, reflecting the choice of items.
- Lift Insights: High-lift rules, though rare, highlight strong associations that are more predictive.
- Order and Complexity: Simpler rules (fewer items) are more common and have higher support, while more complex rules are less common.
- Practical Focus: By targeting rules with balanced support, confidence, and lift, particularly those with lift > 4.

```
# Graph-based visualization
# Associations are represented as edges; for rules, each item in the LHS is connected
# with a directed edge to the item in the RHS.
grocery_graph <- associations2igraph(subset(grocery_rules, lift > 4), associationsAsNodes = FALSE)
igraph::write_graph(grocery_graph, file = 'grocery_baskets.graphml', format = "graphml")

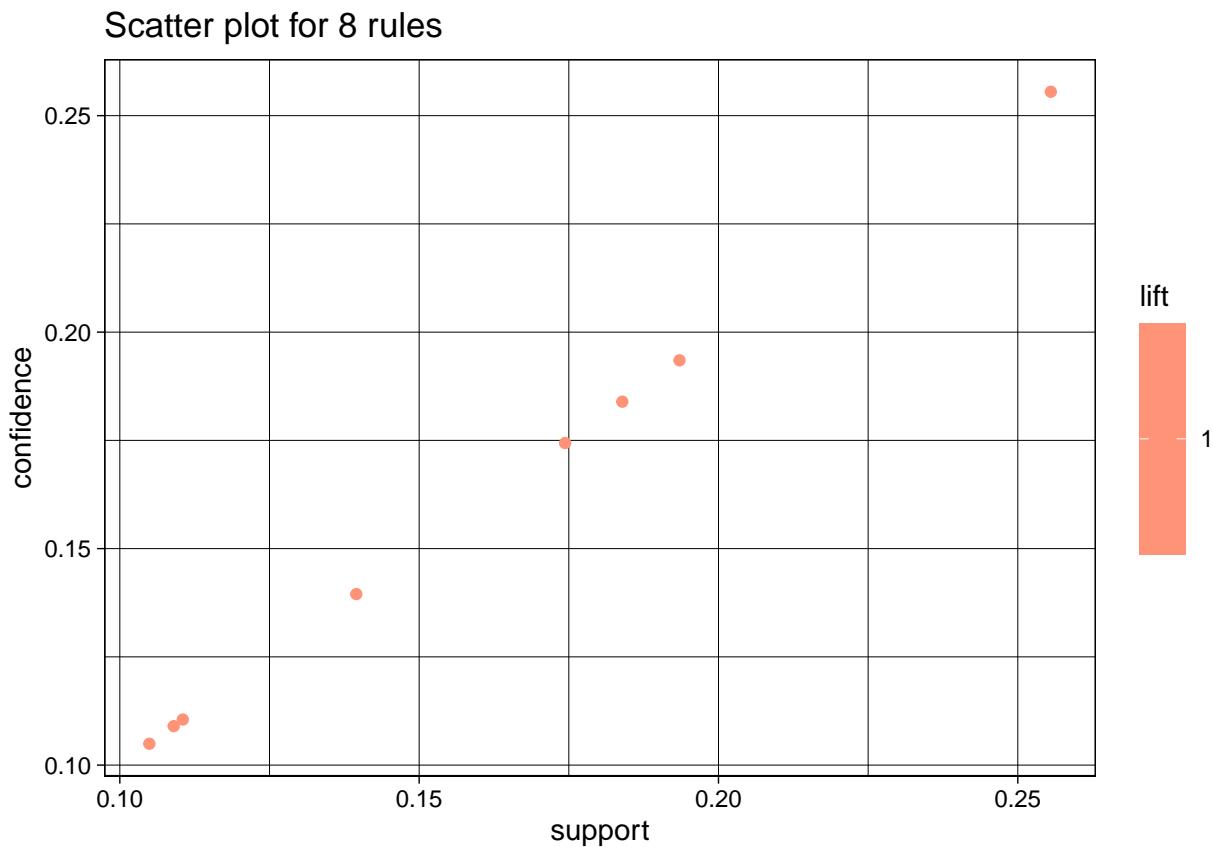
# Filter the rules where support is greater than 0.1
rules_high_support <- subset(grocery_rules, subset = support > 0.1)

# Inspect the filtered rules
inspect(rules_high_support)
```

	lhs	rhs	support	confidence	coverage	lift	count
## [1]	{}	=> {bottled water}	0.1105236	0.1105236	1	1	1087
## [2]	{}	=> {tropical fruit}	0.1049314	0.1049314	1	1	1032
## [3]	{}	=> {root vegetables}	0.1089985	0.1089985	1	1	1072
## [4]	{}	=> {soda}	0.1743772	0.1743772	1	1	1715
## [5]	{}	=> {yogurt}	0.1395018	0.1395018	1	1	1372
## [6]	{}	=> {rolls/buns}	0.1839349	0.1839349	1	1	1809

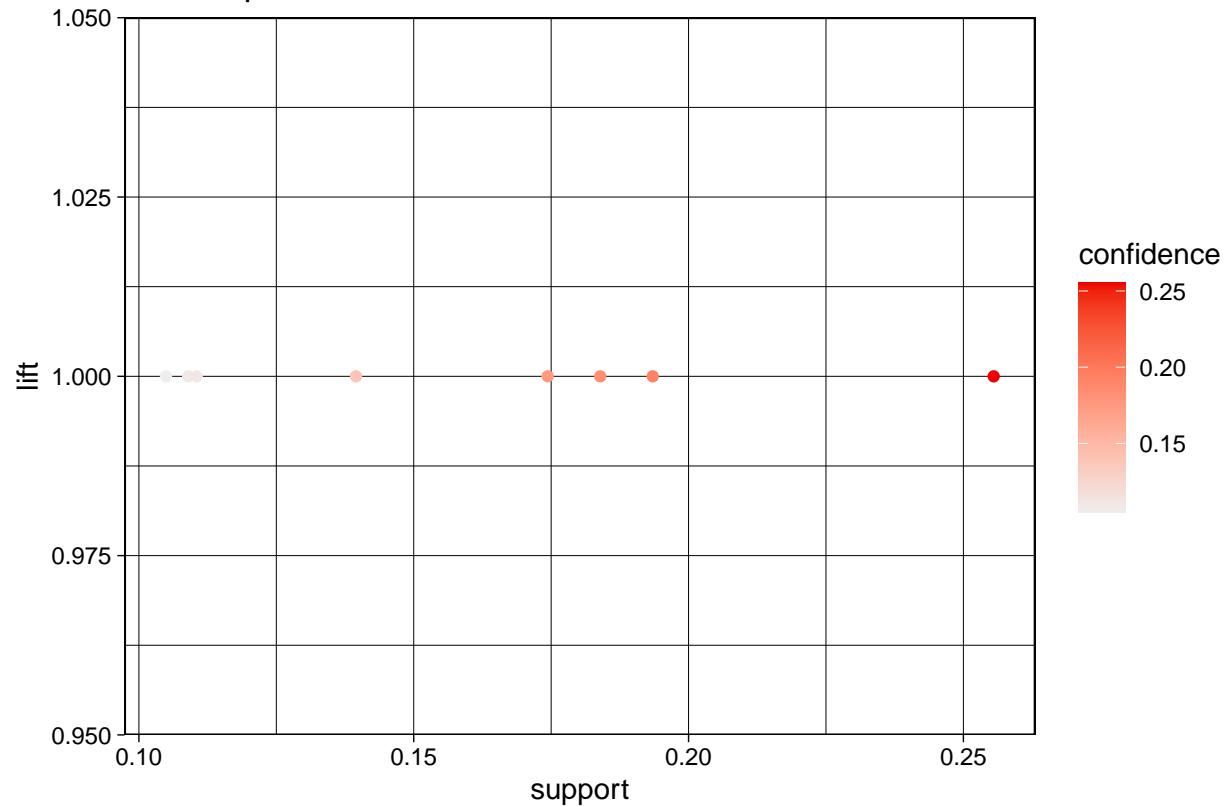
```
## [7] {}  => {other vegetables} 0.1934926 0.1934926 1      1    1903
## [8] {}  => {whole milk}       0.2555160 0.2555160 1      1    2513
```

```
# Plot the filtered rules
plot(rules_high_support)
```



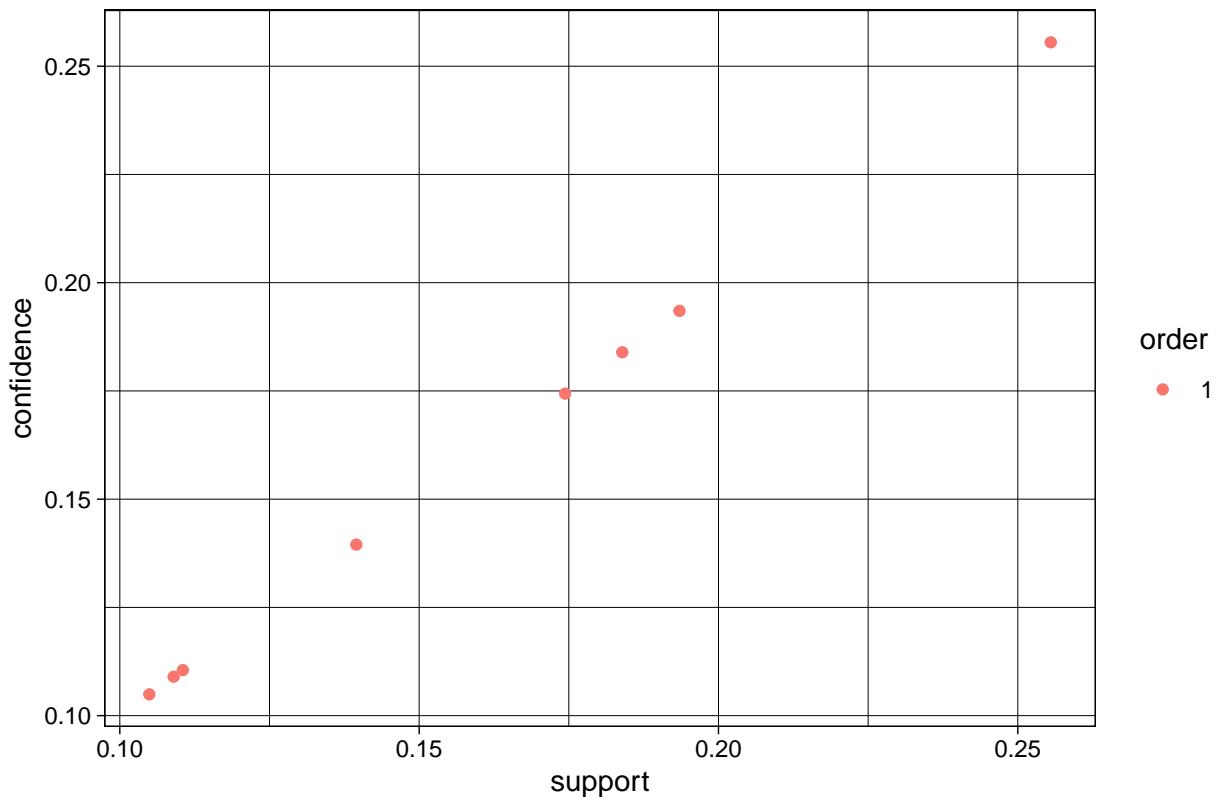
```
# Swap the axes and color scales to see different relationships
plot(rules_high_support, measure = c("support", "lift"), shading = "confidence")
```

Scatter plot for 8 rules



```
# "Two-key" plot: coloring is by size (order) of item set
plot(rules_high_support, method = 'two-key plot')
```

Scatter plot for 8 rules



Filtering Process:

The final rules were filtered based on:

1. Support > 0.1: Focused on itemsets appearing in at least 10% of transactions to ensure relevance.
2. No explicit confidence filtering: Confidence was not directly filtered but is analyzed in the context of lift.

Summary of the Final Filtered Plots:

- Support vs. Confidence: The rules have moderate support (0.10-0.25) and a range of confidence values (0.10-0.25).
- Lift: All rules show lift values near 1, indicating these associations occur together by chance rather than being strong predictors.
- Order: All are single-item rules, ensuring simplicity and interpretability.

Insight: The filtering identified common itemsets that frequently co-occur, but the near-neutral lift suggests these are routine patterns with limited predictive value. Further refinement may be necessary to find stronger, more actionable associations.