

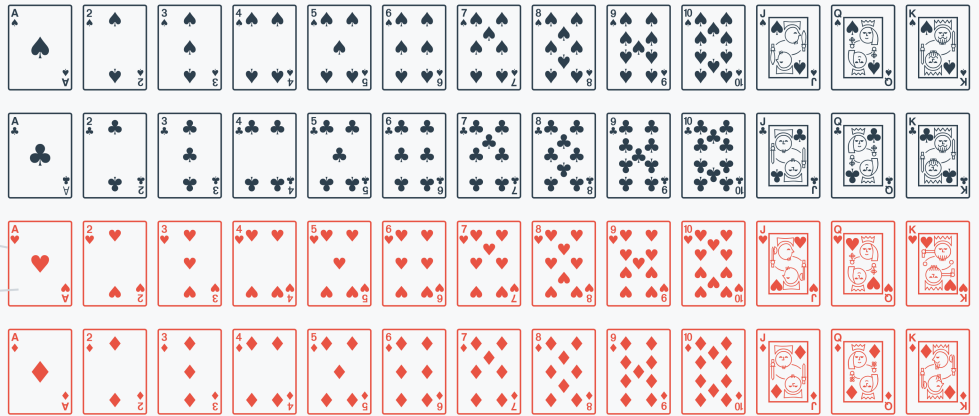
Let's start with the standard deck of 52 card.
Each card has some properties (attributes):

Value (e.g. A)

Symbol (e.g. ♥)

Color (e.g. red)

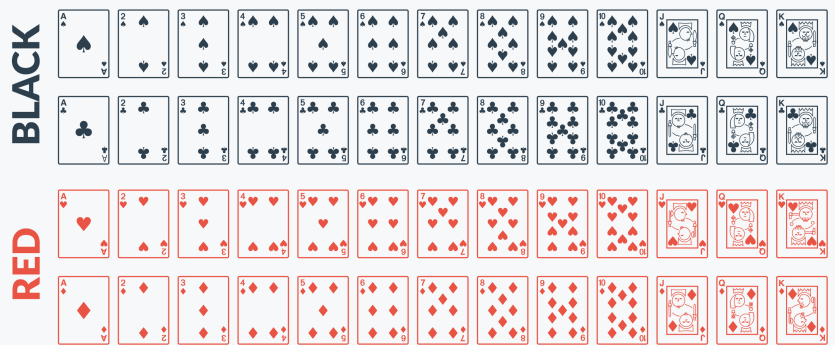
The Standard Deck of 52 Cards



GROUPING THE DECK by the card color

We split the deck into two. We could also split the cards by any other attribute - value or symbol.

How many cards are there in each color group/category?



OUR FIRST PIVOT TABLE

We have just counted the black and red cards

BLACK 26
RED 26

Labels in a row or column are just about our preference; what tells our story better.

BLACK 26
RED 26

ROTATE

FINAL TOUCH

We add headers so that the readers know what they are looking at.

Color	Count of Card
BLACK	26
RED	26

HOW DO WE...

...put the cards in the computer?

Computers need tabular data, so we describe each card as a row in a table

Value	Symbol	Color
A	♥	RED
2	♥	RED
3	♥	RED
...	...	...

Employee	Date and Time	Pizza	Total
Melissa	2019/05/26 01:17PM	Margherita	\$6.03
Sylvia	2019/05/27 01:19PM	Quattro Stagioni	\$6.74
Juliette	2019/05/28 02:23PM	Salami	\$6.38
Melissa	2019/05/29 02:36PM	Tuna	\$6.91
Sylvia	2019/06/01 02:41PM	Margherita	\$6.03
Juliette	2019/06/10 02:49PM	Quattro Stagioni	\$6.74
Melissa	2019/06/11 02:57PM	Salami	\$6.38
Sylvia	2019/06/12 03:01PM	Tuna	\$6.91
Juliette	2019/06/26 03:02PM	Margherita	\$6.03
Sylvia	2019/07/16 03:11PM	Quattro Stagioni	\$6.74
Juliette	2019/07/17 03:26PM	Salami	\$6.38
Melissa	2019/07/18 03:28PM	Tuna	\$6.91
Sylvia	2019/07/19 03:31PM	Quattro Stagioni	\$6.74

LUMEER FAMILY RESTAURANT 2038 MAIN STREET MORGANTOWN, PA 19543 (610)286-598		
EMPL: MELISSA	CHK#:00000108	
DATE: MAY 26, 2019 01:17 PM		
STATION: 3	GUEST: 2	TABLE: 51
=====		
QTY	DESCRIPTION	PRICE AMOUNT
=====		
1	MARGHERITA	5.69 5.69

SUB TOTAL		5.69
SALES TAX		0.34

TOTAL		6.03

This is how real world objects are transformed into tables so that computers understand it.

Filter is already applied on the source table:
Date and Time is between 2019/05/26 and 2019/07/19

Employee is used as **ROWS** (row labels)

Pizza is used as **COLUMNS** (column labels)

For all rows with same value for *Employee* and *Pizza*, *Total* is summarized (+)
We could also just count the rows with the same values, compute average, minimum, maximum etc.

Employee / Pizza	Margherita	QuattroStagioni	Salami	Tuna	Grand Total
Melissa	\$6.03	\$0	\$6.38	\$13.82	\$26.23
Sylvia	\$6.03	\$20.22	\$0	\$6.91	\$33.16
Juliette	\$6.03	\$6.74	\$12.76	\$0	\$25.53
GrandTotal	\$18.09	\$26.96	\$19.14	\$20.73	\$84.92

Grand Total summarizes the columns and the rows.

ROW (or Row Label) determines the table column used to group individual table rows by the unique values in that specific column. It is called a Row Label as the unique values are listed at the beginning of each row (in the first column) of the resulting Pivot Table. For example, selecting a Sales Person Name as a Row Label will list all Sales Persons in the first column and next we can group their total sales.

Sales Person Name	Month of Sale	Region	Sale Amount
John Doyle	03/19	APAC	\$230,980
John Doyle	04/19	EMEA	\$198,230
Joe Denver	02/19	LATAM	\$68,880
Joe Denver	03/19	LATAM	\$89,120

	Sale Amount
John Doyle	\$429,210
Joe Denver	\$158,000

COLUMN (or Column Label) determines the table column used to group individual table rows by the unique values in that specific column.

It is called a Column Label as the unique values are listed at the beginning of each column (in the first row) of the resulting Pivot Table.

For example, selecting a Month of Sale as a Column Label will list all Months in the first row and next we can group the total sales.

Sales Person Name	Month of Sale	Region	Sale Amount
John Doyle	03/2019	APAC	\$230,980
John Doyle	04/2019	EMEA	\$198,230
Joe Denver	02/2019	LATAM	\$68,880
Joe Denver	03/2019	LATAM	\$89,120

	02/2019	03/2019	04/2019
Sale Amount	\$68,880	\$320,100	\$198,230

VALUES (or Summation Values) are the values from the original table used to calculate the resulting value in the Pivot Table.

In addition to the table column that is used to calculate the summation, we must specify a summation function that can combine the values together. It can be a sum, average, minimum, maximum, etc.

For example, selecting a Sale Amount and sum function will calculate the overall sales for the given Sales Person.

Sales Person Name	Month of Sale	Region	Sale Amount
John Doyle	03/19	APAC	\$230,980
John Doyle	04/19	EMEA	\$198,230
Joe Denver	02/19	LATAM	\$68,880
Joe Denver	03/19	LATAM	\$89,120

	Sale Amount
John Doyle	\$429,210
Joe Denver	\$158,000

SETTINGS OF PIVOT TABLES

IN MICROSOFT EXCEL

IN GOOGLE SHEETS

Follow the lines to see how individual settings influence the resulting table.

PivotTable Fields ×

Choose fields:

- ☒ Employee
- ☐ Date and Time
- ☒ Month
- ☒ Pizza
- ☐ Total

Drag fields between areas below:

FILTERS

COLUMNS

ROWS

VALUES

Month

Employee

Pizza

Count of Pizza

Rows Add ×

Employee

Order: Ascending

Sort by: Employee

☒ Show totals

☐ Repeat row labels

Pizza ×

Order: Ascending

Sort by: Pizza

☐ Show totals

Columns Add ×

Month

Order: Ascending

Sort by: Month

☒ Show totals

Values Add ×

Pizza

Summarize by: COUNT

Show as: Default

Employee	Pizza / Month	May	June	July	Grand Total
Juliette	Margherita	0	1	0	1
	Quattro Stagioni	0	1	0	1
	Salami	1	0	1	2
	Tuna	0	0	0	0
	Total	1	2	1	4
Melissa	Margherita	1	0	0	1
	Quattro Stagioni	0	0	0	0
	Salami	0	1	0	1
	Tuna	1	0	1	2
	Total	2	1	1	4
Sylvia	Margherita	0	1	0	1
	Quattro Stagioni	1	0	2	3
	Salami	0	0	0	0
	Tuna	0	1	0	1
	Total	1	2	2	5
Grand Total		4	5	4	13

Note the use of the **COUNT** function to accumulate the number of pizzas sold.