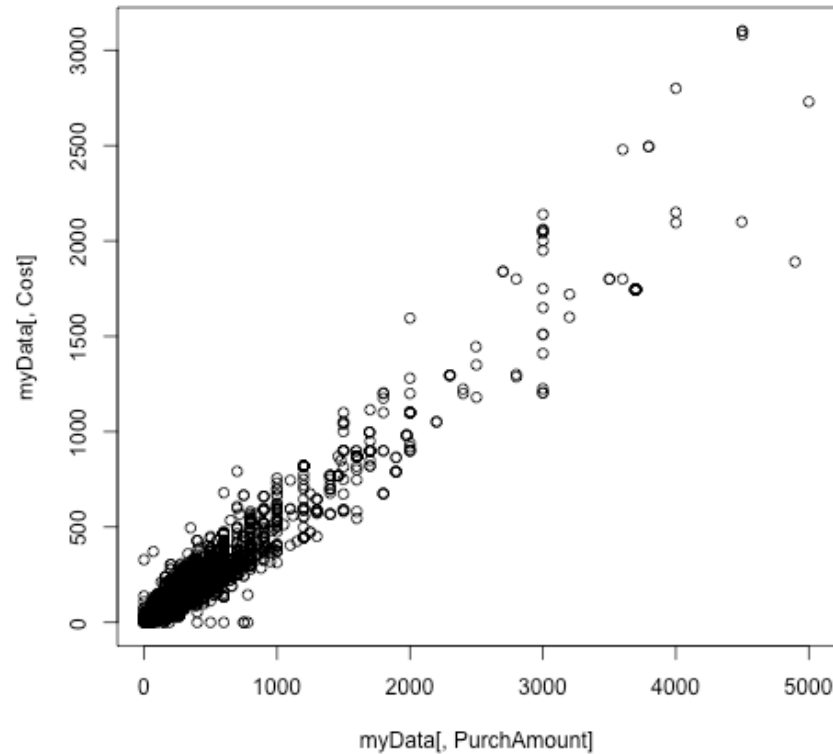


Formatting plots

Step 5: Improve aesthetic features of the plot

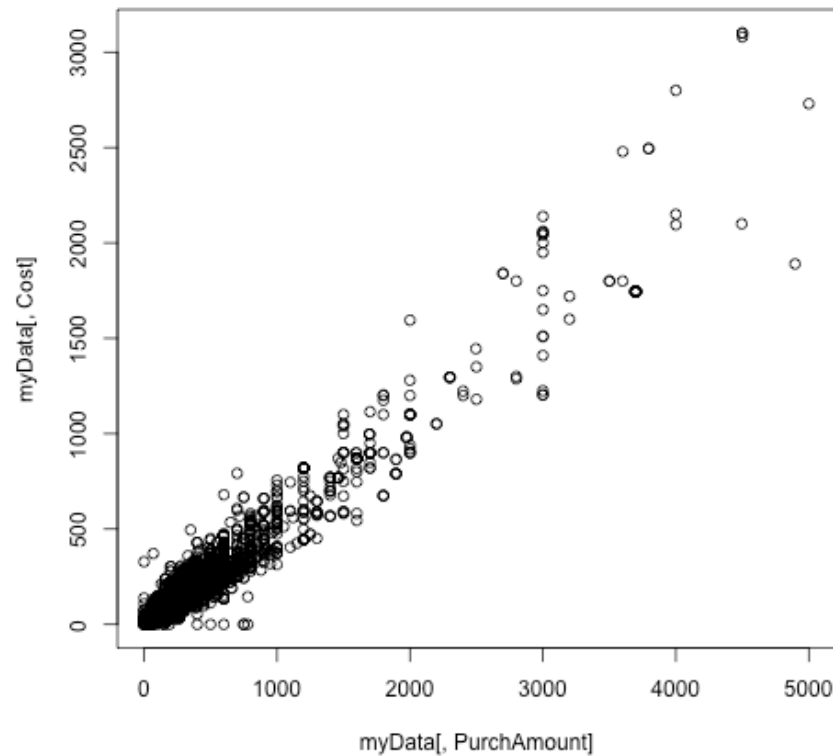
The standard plot output



```
plot(x=myData[, PurchAmount], y=myData[, Cost])
```

Step 5: Improve aesthetic features of the plot

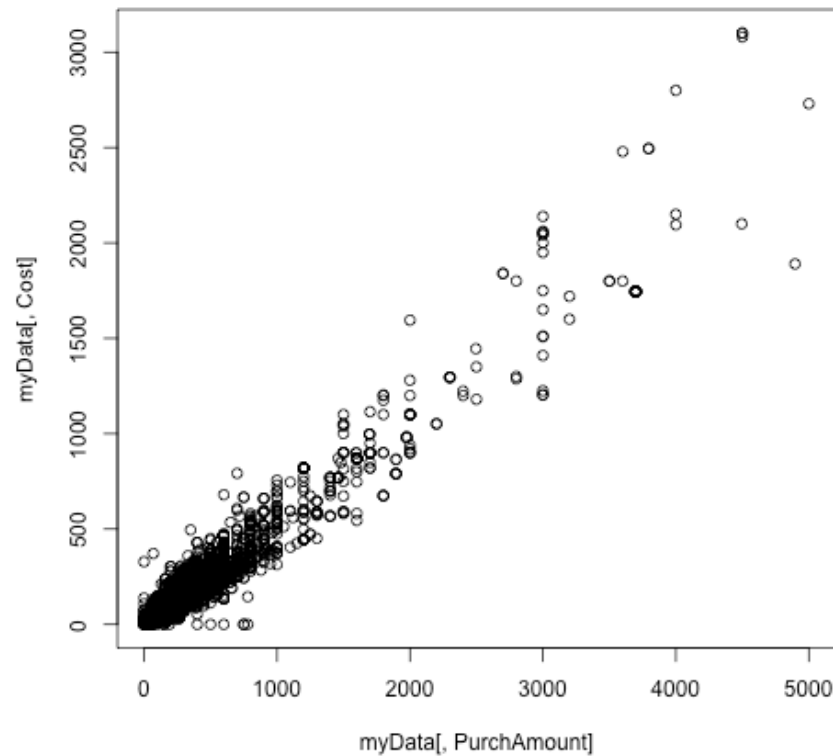
The standard plot output



```
plot(x=myData[, PurchAmount], y=myData[, Cost])
```

Step 5: Improve aesthetic features of the plot

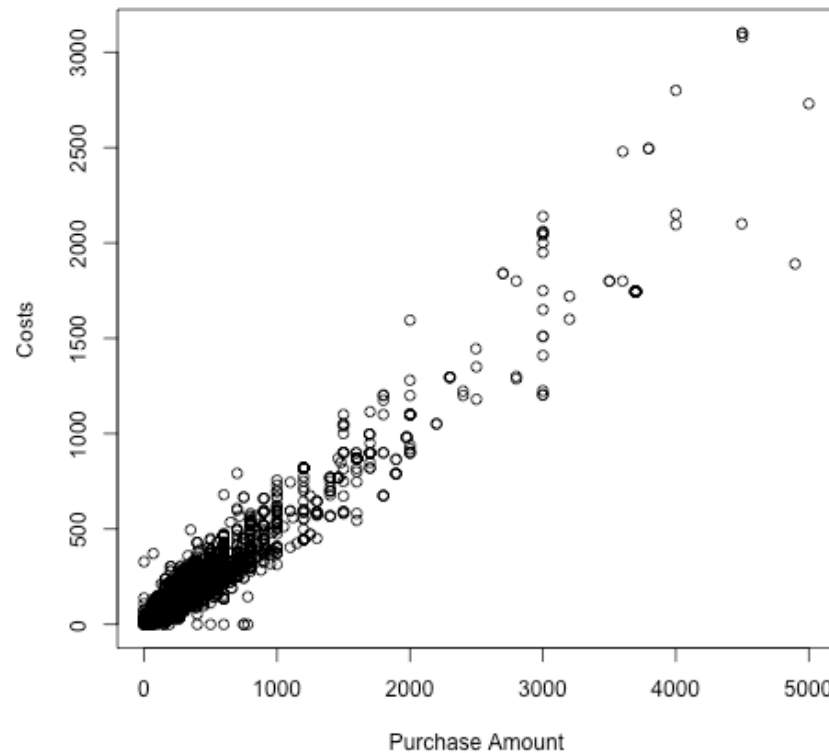
The standard plot output



```
plot(x=myData[, PurchAmount], y=myData[, Cost])
```

Step 5: Improve aesthetic features of the plot

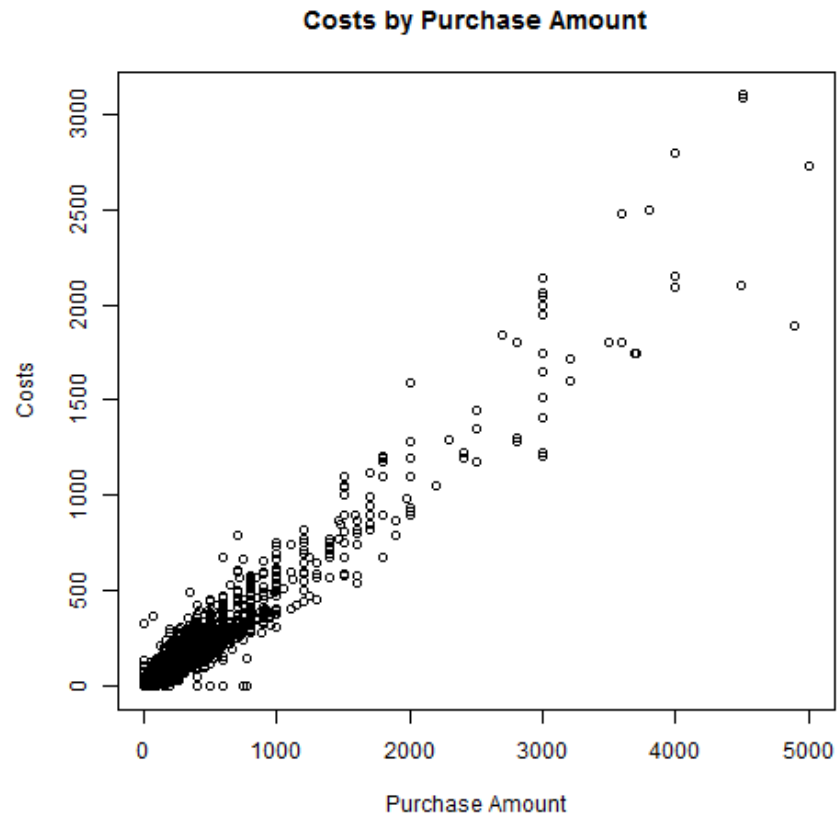
Change the axis labels



```
plot(x=myData[, PurchAmount], y=myData[, Cost],  
     xlab="Purchase amount", ylab="Costs")
```

Step 5: Improve aesthetic features of the plot

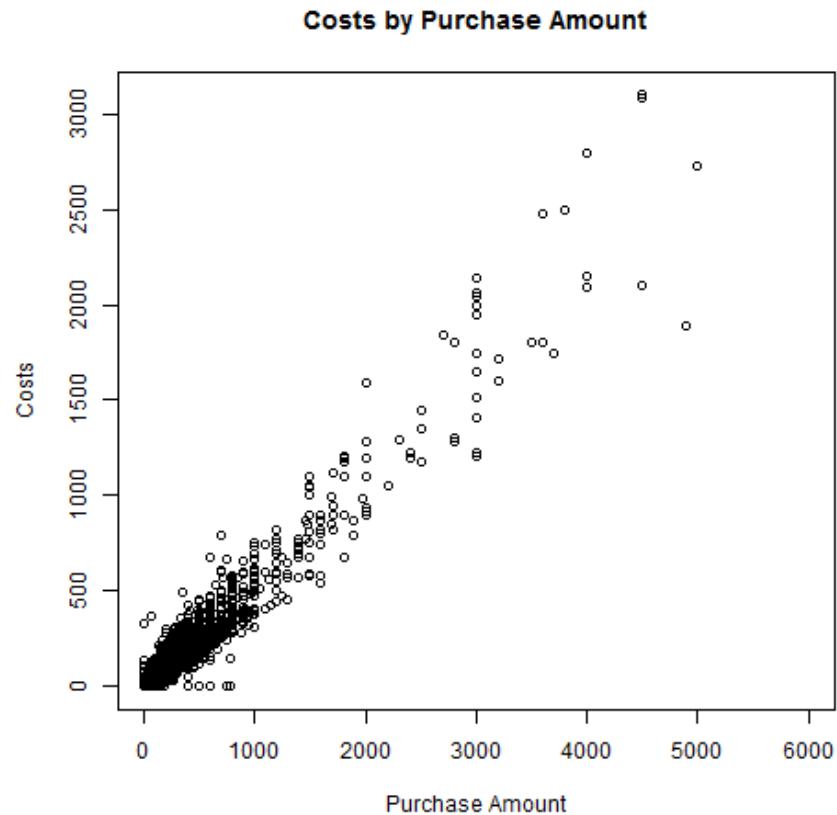
Add a fitting and descriptive title



```
plot(x=myData[, PurchAmount], y=myData[, Cost],.....,  
     main="Costs by Purchase Amount")
```

Step 5: Improve aesthetic features of the plot

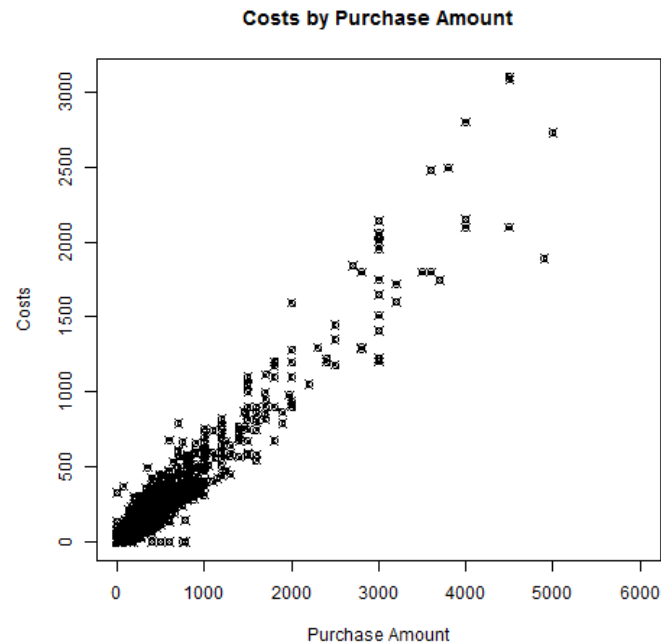
Adjust the axes limits



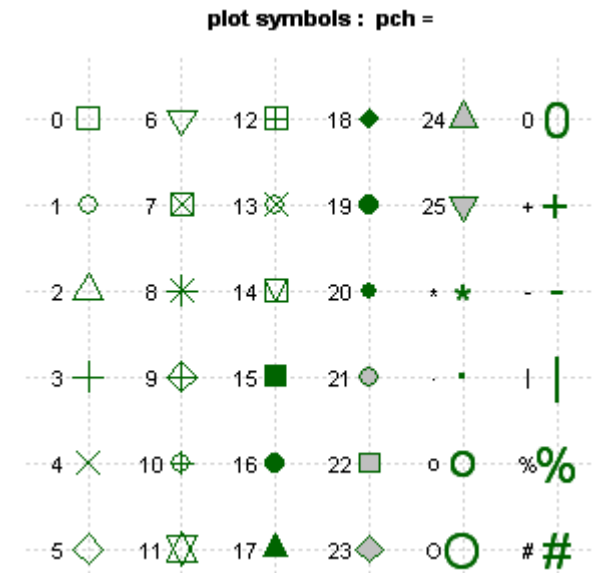
```
plot(x=myData[, PurchaseAmount], y=myData[, Cost],.....,  
      xlim=c(0, 6000))
```

Step 5: Improve aesthetic features of the plot

Change the marker type to a crossed out circle



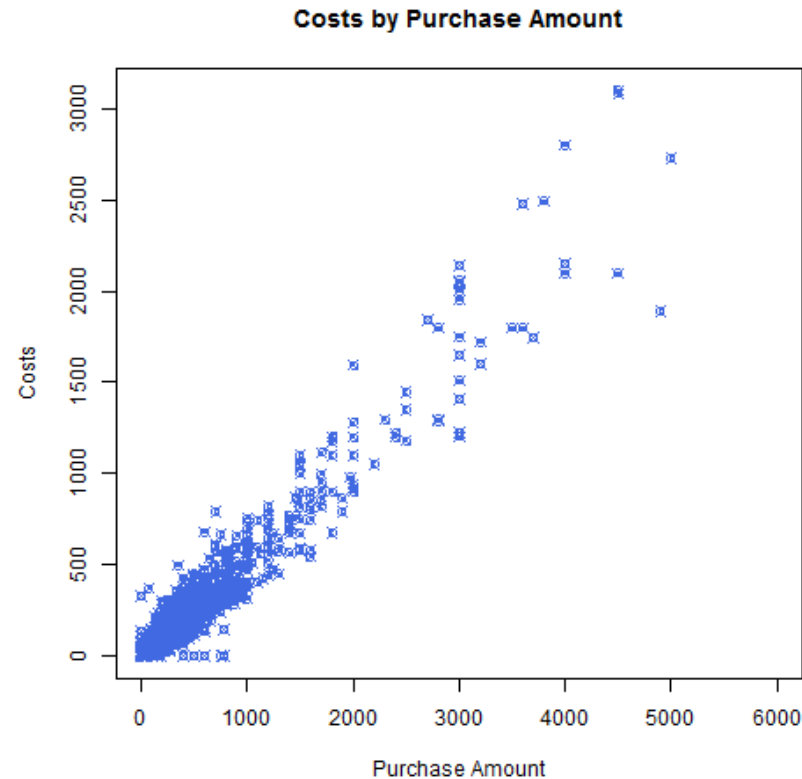
Overview to control the marker:



```
plot(x=myData[, PurchAmount], y=myData[, Cost], .....,  
     pch=13)
```


Step 5: Improve aesthetic features of the plot

Choose a nice color





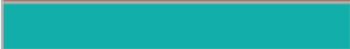


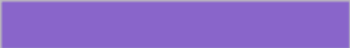














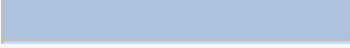

```
plot(x=myData[, PurchAmount], y=myData[, Cost],.....,  
     col="Royalblue")
```

Sidenote: R has a huge repertoire of colors

- R colors can be referenced as strings in certain functions:

```
plot(x, y, col="red", ...)
```

- See <http://www.stat.columbia.edu/~tzheng/files/Rcolor.pdf>

	lightsalmon4		mediumpurple1
	lightseagreen		mediumpurple2
	lightskyblue		mediumpurple3
	lightskyblue1		mediumpurple4
	lightskyblue2		mediumseagreen
	lightskyblue3		mediumslateblue
	lightskyblue4		mediumspringgreen
	lightslateblue		mediumturquoise
	lightslategray		mediumvioletred
	lightslategrey		midnightblue
	lightsteelblue		mintcream

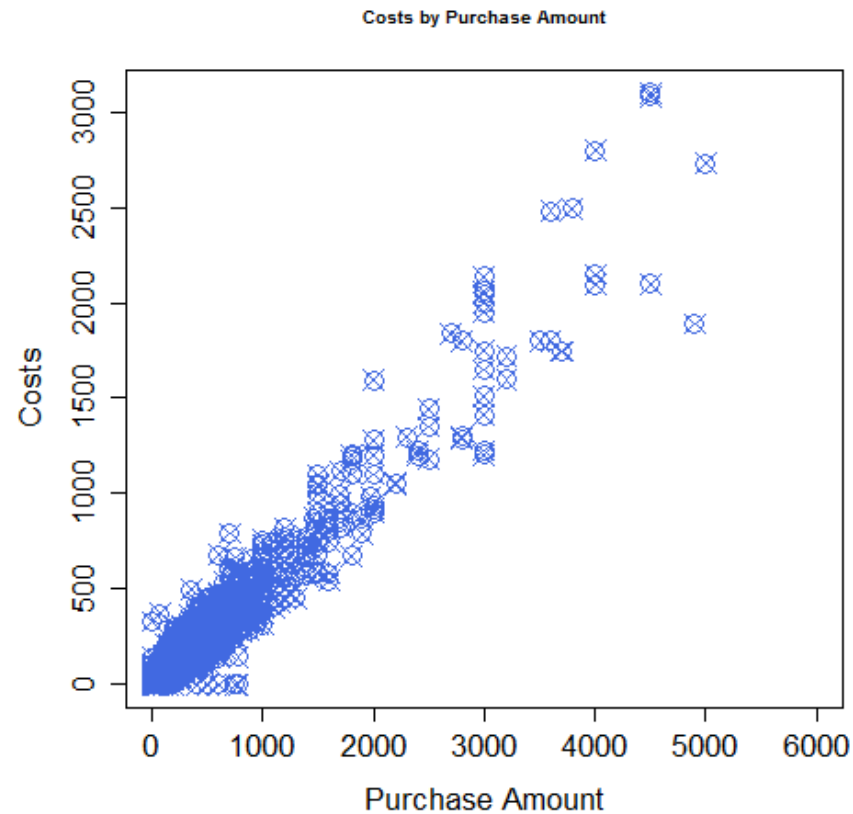
Step 5: Improve aesthetic features of the plot

Change the size of the points



```
plot(x=myData[, PurchAmount], y=myData[, Cost],.....,  
     cex=2)
```

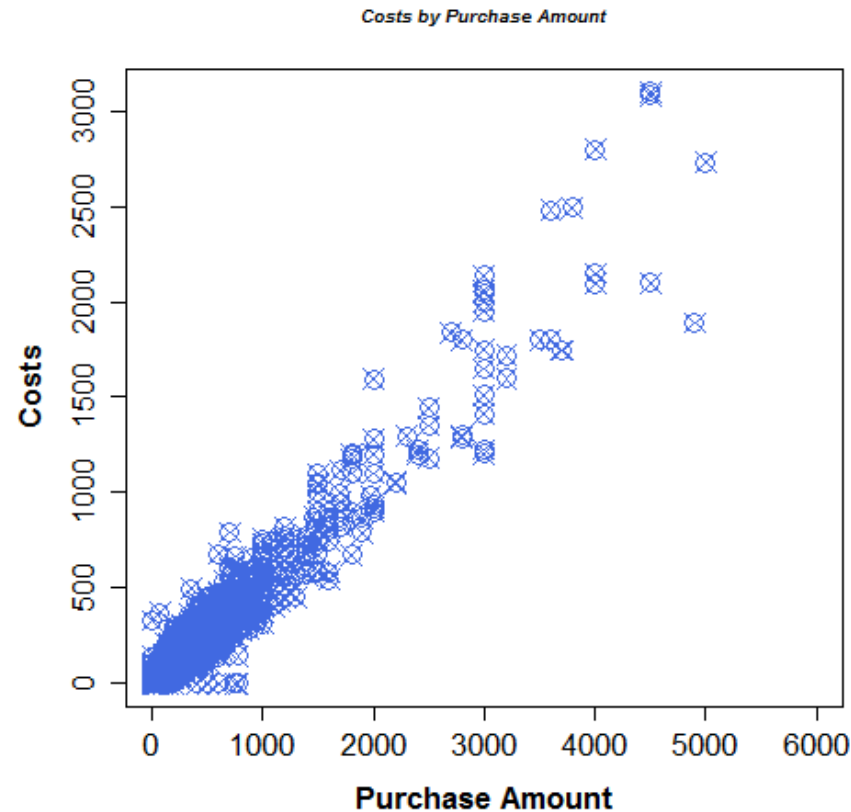
... and the text size



```
plot(x=myData[, PurchAmount], y=myData[, Cost],.....,  
     cex.main=0.8, cex.lab=1.5, cex.axis=1.5)
```

Step 5: Improve aesthetic features of the plot

Make the title italic and the axis labels bold

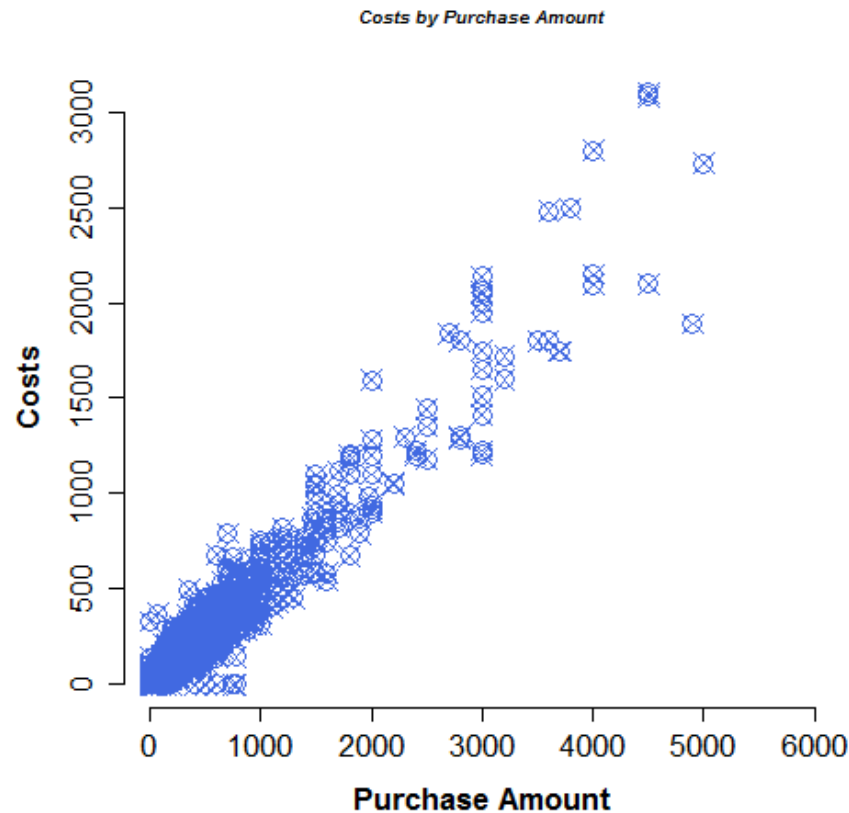


1= plain
2= bold
3= italic
4= bold italic
5= symbol

```
plot(x=myData[, PurchAmount], y=myData[, Cost], .....,  
     font.main=4, font.lab=2)
```

Step 5: Improve aesthetic features of the plot

Remove the box

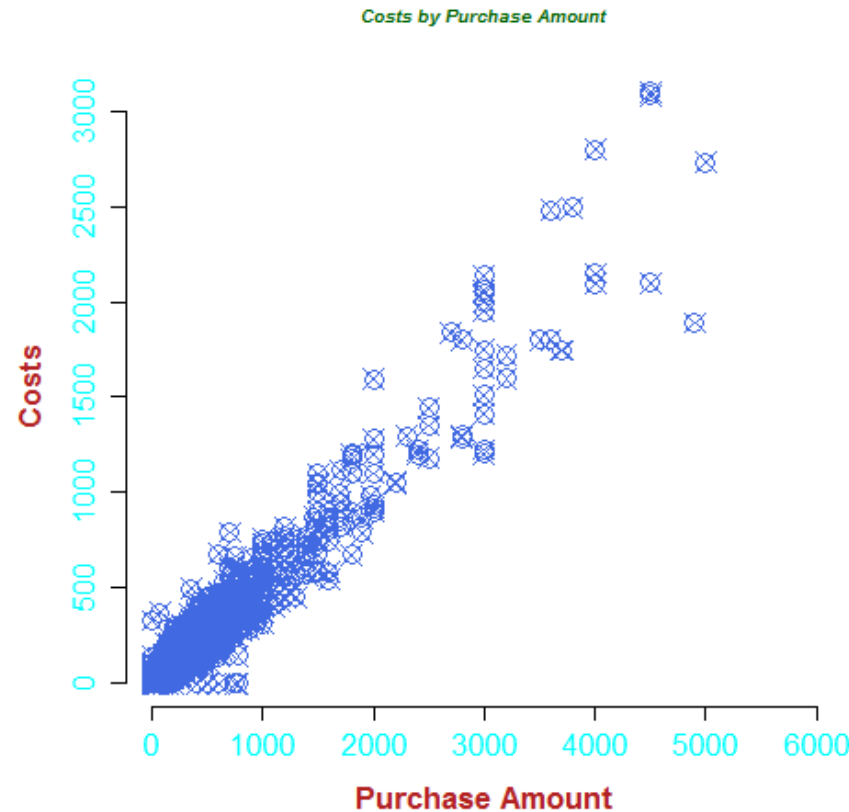


```
plot(x=myData[, PurchAmount], y=myData[, Cost], .....,  
     bty="n")
```

n stands for "no
plotting"

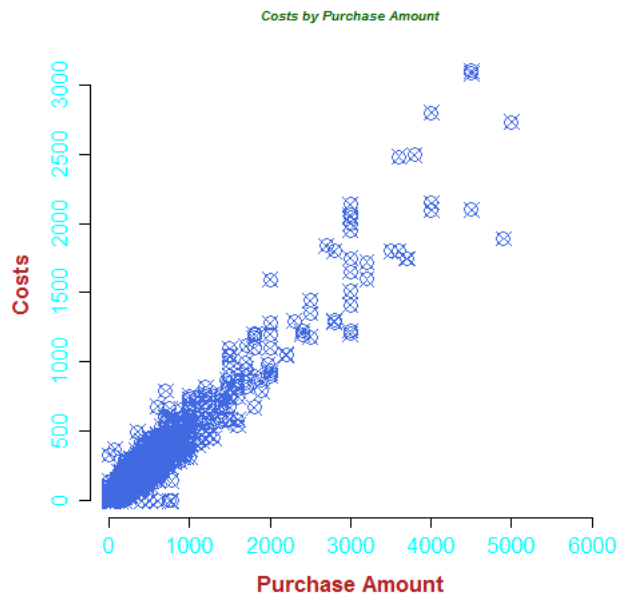
Step 5: Improve aesthetic features of the plot

Change text color



```
plot(x=myData[, PurchAmount], y=myData[, Cost],.....,  
col.main="darkgreen", col.lab="firebrick", col.axis="cyan")
```

Why not include everything?



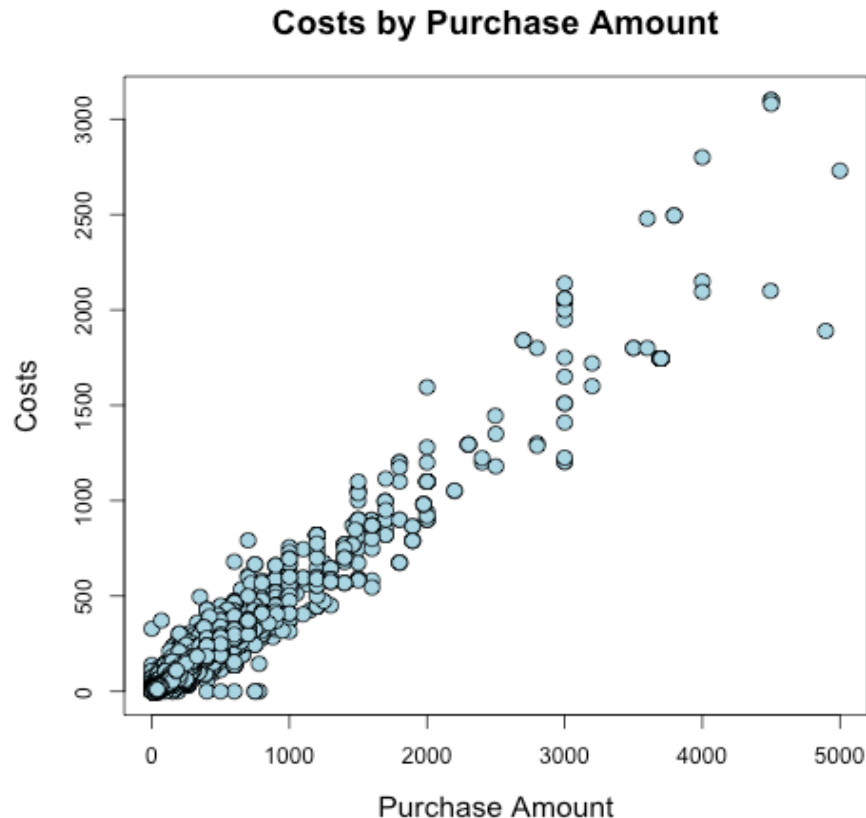
```
plot(
  x=myData[, PurchAmount],
  y=myData[, Cost],
  xlab="Purchase Amount",
  ylab="Costs",
  main="Costs by Purchase Amount",
  xlim=c(0,6000),
  pch=13,
  col="royalblue",
  cex=2,
  cex.lab=1.4,
  cex.main=0.8,
  cex.axis=1.5,
  font.main=4,
  font.lab=2,
  bty="n",
  col.main="darkgreen",
  col.lab="firebrick",
  col.axis="cyan")
```


But simple, coordinated plots are nicer!

Less is sometimes more.

Even if you **can** change everything, that does not mean that you **should**. Less is sometimes more.

```
plot(
  x=myData[, PurchAmount],
  y=myData[, Cost],
  xlab="Purchase Amount",
  ylab="Profit",
  main="Profit by Purchase Amount",
  pch= 21, bg="lightblue",
  cex=1.5,
  cex.lab=1.3,
  cex.main=1.5,
  cex.axis=1,
  font.main=2)
```



Sidenote: Checklist for good graphics

This list is not exhaustive. Check the original source for the complete list.

- ☐ Does the chart clearly convey the intended message?
- ☐ Are both coordinate axes shown and labelled? Are they self-explanatory and concise?
- ☐ Is there a title for the chart? Is the title self-explanatory and concise?
- ☐ Are the scales and divisions clearly shown on both axes?
- ☐ Are the minimum and maximum of the ranges shown on the axes as appropriate to present the maximum information?
- ☐ Are the curves on a line chart individually labelled? The cells of a bar chart?
- ☐ Are all symbols properly explained? Are the units of measurement indicated?
- ☐ If the curves cross, are the line patterns different to avoid confusion?

Formatting plots