Scatter Plot

Base R

```
plot(mtcars$wt, mtcars$mpg,
    xlab = "Weight", ylab = "Miles per Gallon",
    main = "Scatter Plot of Weight vs MPG")
```

ggplot2

```
library(ggplot2)
ggplot(mtcars, aes(x = hp, y = mpg)) +
  geom_point(color = "blue") +
  labs(title = "HP vs MPG", x = "Horsepower", y = "Miles per Gallon")
```

Bar Chart

Base R

```
barplot(table(mtcars$cyl),
       main = "Cylinders Count", xlab="Cylinders", ylab="Count")
```

ggplot2

```
library(ggplot2)
ggplot(mtcars, aes(x = factor(cyl))) +
  geom_bar()
```

Histogram

Base R

```
hist(mtcars$mpg, main = "MPG Frequency",
    xlab="Miles per Gallon", ylab="Frequency")
```

ggplot2

```
library(ggplot2)
ggplot(mtcars, aes(x = mpg)) +
  geom_histogram(binwidth = 1)
```

Box Plot

Base R

```
boxplot(mpg ~ cyl, data = mtcars)
```

ggplot2

```
library(ggplot2)
ggplot(mtcars, aes(x = factor(cyl), y = mpg)) +
  geom_boxplot()
```

Line Chart

Base R

```
plot(mtcars$mpg, type = "l", col = "blue",
    xlab = "Index", ylab = "Miles Per Gallon (MPG)",
    main = "Line Chart of MPG - Base R")
```

ggplot2

```
library(ggplot2)
mtcars$model <- rownames(mtcars)
mtcars$model <- factor(mtcars$model, levels = rownames(mtcars))
ggplot(mtcars, aes(x = model, y = mpg, group = 1)) +
  geom_line(color = "steelblue") +
  labs(title = "MPG Across Car Models", x = "Car Model", y = "Miles Per Gallon (MPG)") +
  theme(axis.text.x = element_text(angle = 45, hjust = 1))
```

2) Create Reports in Tableau (short exam steps)

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