

# Exam 1

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```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.2 --
## v ggplot2 3.3.6      v purrr  0.3.5
## v tibble  3.1.8      v dplyr  1.0.10
## v tidyr   1.2.1      v stringr 1.4.1
## v readr   2.1.3      v forcats 0.5.2
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

1.

```
combination <- c(1,2,3,4,5)

# This is taking the sample mean of the combination
mean(combination)
```

```
## [1] 3

# This is taking the sample standard deviation of the combination
sd(combination)
```

```
## [1] 1.581139
```

**Solution:** The mean of the combination lock is 3 with a standard deviation of 1.58.

2.

Use the mtcars data set:

```
mydata <- mtcars %>%
  # remove all rows where the number of carburetors are
  # less than 2
  filter(carb > 1) %>%
  group_by(cyl) %>% # group by the number of cylinders
  summarise(Avg_mpg = mean(mpg)) %>% # find the average (mean) of the
  # remaining cars by miles per gallon
  arrange(desc(Avg_mpg)) # arrange the results in descending order dependent on the mean
# mpg

mydata # Observe the outcome

## # A tibble: 3 x 2
##   cyl Avg_mpg
##   <dbl> <dbl>
```

## 1	4	25.9
## 2	6	19.7
## 3	8	15.1

**Solution:** A four cycle engine has the highest average miles per gallon.

**3.**

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