

Exam 1

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```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.1 --
## v ggplot2 3.3.5    v purrr  0.3.4
## v tibble  3.1.5    v dplyr  1.0.7
## v tidyr   1.1.4    v stringr 1.4.0
## v readr   2.0.2    v forcats 0.5.1

## -- 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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