**Quiz #11**

penguins2 <- penguins %>%

drop\_na() %>%

filter(species %in% c("Adelie", "Chinstrap"))

penguins2 %>%

group\_by(species) %>%

mutate(sex = sample(sex,

size = length(sex),

replace = TRUE))

penguins2 %>%

group\_by(species) %>%

summarize(prop\_male = sum(sex == "male") / n())

penguins2 %>%

mutate(species = sample(species,

size = length(species),

replace = FALSE))

There are four code chunks above. Which of the code chunks are steps in the following three operations?

* **Calculating a test statistic**
* **Permuting a data set for hypothesis testing**
* **Bootstrapping a data set for estimating confidence intervals**