## function-syntax

```r
round(14.725, digits=1)
```

## variable-syntax

```r
fruit <- c("apples", "oranges", "bananas")
primes <- c(1, 2, 3, 5, 7, 11)
numbers <- 1:10
age <- 22
age <- age + 1
```

## load-tidyverse

```r
install.packages("tidyverse")
library(tidyverse)
```

## load-flights

```r
install.packages("nycflights13")
library(nycflights13)
View(flights)
```

## filter

```r
filter(flights, dest=="DTW" & month==6)
```

## filter-poll

```r
filter(flights,  dest="   ")
```

## select-1

```r
select(flights, dep_time, arr_time, carrier)
select(flights, -year, -tailnum)
select(flights, month:dep_delay)
```

## select-2

```r
select(flights, starts_with("d"))
select(flights, ends_with("time"))
select(flights, contains("arr"))
select(flights, -starts_with("d"))
select(flights, flight, everything())
```

## pipe

```r
flights %>>%
    filter(dest == "DTW") %>>%
```
select(carrier)

## pipe-poll
round(exp(sin(.5)),2)

## sort
flights %>% arrange(sched_dep_time)

flights %>%
  arrange(month, desc(day))

flights %>%
  arrange(desc(dep_time - sched_dep_time))

## sort-poll
flights %>%
  filter( ) %>%
  arrange( ) %>%
  select( )

## mutate-1
flights %>%
  mutate(speed = distance/(air_time/60)) %>%
  arrange(desc(speed)) %>%
  select(flight, speed)

## mutate-2
flights %>%
  mutate(
    dist_km = distance * 1.61,
    hours = air_time / 60,
    kph = dist_km/hours
  ) %>%
  select(flight, kph)

## mutate-3
flights %>%
  filter(!is.na(arr_delay)) %>%
  summarize(avg_arr_delay = mean(arr_delay))

## mutate-poll
flights %>%
  filter( ) %>%
  mutate( , )
flights %>%
  filter(!is.na(arr_delay)) %>%
  group_by(carrier) %>%
  summarize(avg_arr_delay = mean(arr_delay))

flights %>%
  filter(!is.na(arr_delay)) %>%
  group_by(carrier) %>%
  mutate(avg_arr_delay = mean(arr_delay)) %>%
  select(carrier, arr_delay, avg_arr_delay)

counts <- flights %>%
  count(carrier)

flights %>%
  summarize_at(vars(ends_with("time")),
               mean, na.rm=T)

flights %>%
  filter(!is.na(arr_delay)) %>%
  group_by(carrier) %>%
  summarize(avg_arr_delay = mean(arr_delay)) %>%
  left_join(airlines)

flights %>%
  inner_join(planes)
flights %>%
  inner_join(planes, by = "tailnum")

flights %>%
  top_n(3, air_time)
flights %>%
  sample_n(3)
flights %>%
  distinct(year, month)
## counting

flights %>%
group_by(tailnum) %>%
summarize(
    routes = n_distinct(flight),
    flights = n())

## counting-poll

flights %>%
    filter(!is.na(tailnum)) %>%
    group_by(tailnum) %>%
    summarize(x=, y=)

## lead-lag

growth <- tibble(
    age = 2:9,
    height = c(33.7, 37.0, 39.4, 42.2,
               45.5, 47.7, 50.6, 52.7))

growth %>%
    mutate(
        prevh = lag(height),
        nexth = lead(height),
        growth = height - prevh)

## if_else

flights %>%
    mutate(
        real_delay = if_else(arr_delay < 0, 0, arr_delay))

## bad-function

# WORKS
flights %>%
group_by(carrier) %>%
summarize(delay = mean(arr_delay, na.rm = T))

# DOESN’T WORK
f <- function(x) {
    flights %>%
group_by(x) %>%
    summarize(delay = mean(arr_delay, na.rm = T))
}
f(carrier)
## quosures

f <- function(x) {
    flights %>% group_by(!!x) %>%
        summarize(delay = mean(arr_delay, na.rm=T))
}
f(quo(carrier))

g <- function(x) {
    x <- enquo(x)
    flights %>% group_by(!!x) %>%
        summarize(delay = mean(arr_delay, na.rm=T))
}
g(carrier)

## quo_name

h <- function(x) {
    x <- enquo(x)
    outname <- paste(quo_name(x), "delay", sep="_")
    flights %>% group_by(!!x) %>%
        summarize(!!outname := mean(arr_delay, na.rm=T))
}
h(carrier)