# Week 1 Exercises

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Please complete all exercises below WITHOUT using any libraries/packages.

## Exercise 1

Assign 10 to the variable x. Assign 5 to the variable y. Assign 20 to the variable z.

```
x <- 10
y <- 5
z <- 20
```

## Exercise 2

Show that x is less than z but greater than y.

**Note: your output must be a SINGLE boolean, do not output a boolean for each expression.**

```
if (x < z & x > y) {
  print(T)
}
```

```
## [1] TRUE
```

## Exercise 3

Show that x and y do not equal z.

**Note: your output must be a SINGLE boolean, do not output a boolean for each expression.**

```
if (x != z & y != z) {
  print(T)
}
```

```
## [1] TRUE
```

## Exercise 4

Show that the formula `x + 2y = z`.

**Note: your output must be a SINGLE boolean**

```
a = x + (2 * y)
if (a == z) {
  print(T)
}
```

```
## [1] TRUE
```

## Exercise 5

I have created a vector (test_vector) of integers for you. Determine if any of x, y, or z are in the vector.

**Note: your output must be a SINGLE boolean, do not output a boolean for each expression.**

```
test_vector <- c(1,5,11:22)

if (x %in% test_vector | y %in% test_vector | z %in% test_vector) {
  print(T)
}
```

```
## [1] TRUE
```

## Exercise 6

Show which value is contained in the test vector. To do this you will need to create an element-wise logical vector using operators. `x == vector`. Once you have done that you will need to use slicing to return all indices that have matches. **Note: your output should be two integers**

```
for (i in test_vector) {
  if (i == x %in% test_vector) {
    print(x)
  }
  if (i == y %in% test_vector) {
    print(y)
  }
  if (i == z %in% test_vector) {
    print(z)
  }
}
```

```
## [1] 5
## [1] 20
```