

# 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.

```
#your code below  
(x < z) & (x > y)
```

```
## [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.

```
#your code here  
(x != z) | (y != z)
```

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

## Exercise 4

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

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

```
#your code below
(x + (2*y)) == z
```

```
## [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)
#your code below
result <- any (c(x, y, z) %in% test_vector)
print(result)
```

```
## [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.  $x == \text{vector}$ . 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

```
#your code below
matches<- x == test_vector
matching_indices <- which(matches)
output_indices <- matching_indices[1:2]
print(output_indices)
```

```
## [1] NA NA
```