1)

```
sequence <- c()
for (i in 1:50) {
  if (i %% 2 == 0) {
    sequence <- c(sequence, 0)
  } else {
    sequence <- c(sequence, i)
  }
}
print(sequence)
```

2)

```
x <- c(9, 13, 21, 8, 36, 22, 12, 41, 31, 33, 19)

hist(x,
     xlim = c(0, 50),
     ylim = c(0, 5),
     xlab = "Weight",
     ylab = "Frequency",
     col = "yellow",
     border = "red",
     main = "Colored Histogram")
```

3)

```
x <- c(0, 1, 3, 6, 8)
y <- c(1, 3, 2, 5, 4)
x_mean <- mean(x)
y_mean <- mean(y)
x_diff <- x - x_mean
y_diff <- y - y_mean
b <- sum(x_diff * y_diff) / sum(x_diff^2)
a <- y_mean - b * x_mean
cat("Intercept (a):", a, "\n")
```

Intercept (a): 1.646018

cat("Slope (b):", b, "\n")

Slope (b): 0.3761062

4)

```
is_prime <- function(n) {
  if (n <= 1) {
    return(FALSE)
  }
  for (i in 2:sqrt(n)) {
    if (n %% i == 0) {
      return(FALSE)
    }
  }
  return(TRUE)
}

prime_numbers <- c()
num <- 2

while (length(prime_numbers) < 30) {
  if (is_prime(num)) {
    prime_numbers <- c(prime_numbers, num)
  }
  num <- num + 1
}

print(prime_numbers)
```