# Load necessary library

library(ggplot2)

# Create a synthetic "water" dataset

water <- data.frame(

mortality = c(1520, 1670, 1310, 1440, 1780, 1340, 1570, 1610, 1400, 1750,

1490, 1530, 1640, 1350, 1590, 1470, 1680, 1430, 1700, 1450),

hardness = c(40, 55, 20, 33, 75, 25, 50, 60, 28, 80,

38, 45, 58, 30, 53, 41, 67, 35, 70, 37)

)

# Display first few rows

head(water)

# Scatter plot to check linear relation

plot(water$hardness, water$mortality,

main = "Scatter Plot of Mortality vs Hardness",

xlab = "Hardness", ylab = "Mortality",

col = "blue", pch = 16)

# Fit Linear Regression Model

model <- lm(mortality ~ hardness, data = water)

# Add regression line to plot

abline(model, col = "red", lwd = 2)

# Display model summary

summary(model)

# Predict mortality for hardness = 88

new\_data <- data.frame(hardness = 88)

predicted\_mortality <- predict(model, new\_data)

# Print Prediction

print(paste("Predicted Mortality for Hardness 88:", round(predicted\_mortality, 2)))