# Compare the sample means of different pieces of the same pig and different pigs

## tidy the data and combine the data from the same pigs into the same columns

library(readxl)  
forcedata <- read\_excel("force data.xlsx")

## New names:  
## \* `` -> `..1`  
## \* `PIECE2(g)` -> `PIECE2(g)..3`  
## \* `PIECE 1(g)` -> `PIECE 1(g)..4`  
## \* `PIECE2(g)` -> `PIECE2(g)..5`  
## \* `PIECE 1(g)` -> `PIECE 1(g)..6`

colnames(forcedata) <- c( "force\_measurement","pig1\_piece1","pig1\_piece2",  
 "pig2\_piece1","pig2\_piece2",  
 "pig3\_piece1","pig3\_piece2")  
forcedata$force\_measurement <- 1:nrow(forcedata)  
df <- as.data.frame(sapply(forcedata, as.numeric))  
library(reshape2)  
cmbdata1 <-melt(df,id.vars = "force\_measurement",  
 measure.vars = c("pig1\_piece1","pig1\_piece2"),   
 variable.name = "pig1", na.rm = TRUE)  
cmbdata2 <-melt(df,id.vars = "force\_measurement",  
 measure.vars = c("pig2\_piece1","pig2\_piece2"),   
 variable.name = "pig2", na.rm = TRUE)  
cmbdata3 <-melt(df,id.vars = "force\_measurement",  
 measure.vars = c("pig3\_piece1","pig3\_piece2"),   
 variable.name = "pig1", na.rm = TRUE)

## Calculate the P values

P1 <-t.test(df$pig1\_piece1,df$pig1\_piece2,paired = FALSE,var.equal = FALSE,na.rm  
 =TRUE)  
P2 <-t.test(df$pig2\_piece1,df$pig2\_piece2,paired = FALSE,var.equal = FALSE,na.rm   
 =TRUE)  
P3 <-t.test(df$pig2\_piece1,df$pig3\_piece2,paired = FALSE,var.equal = FALSE,na.rm   
 =TRUE)  
P4 <-t.test(cmbdata1$value,cmbdata2$value,paired = FALSE,var.equal = FALSE)  
P5 <-t.test(cmbdata1$value,cmbdata3$value,paired = FALSE,var.equal = FALSE)  
P6 <-t.test(cmbdata3$value,cmbdata2$value,paired = FALSE,var.equal = FALSE)  
P.value <- c(P1$p.value,P2$p.value,P3$p.value,P4$p.value,P5$p.value,P6$p.value)  
  
P.value

## [1] 0.660290312 0.840406720 0.395741178 0.005429335 0.126715114 0.124301058