

5

a)

	DF	SUM SQ	Mean SQ	F
Group	(A) 2	167,059	83,530	10.45
residuals	(B) 27	(C) 215819	(D) 7993	

3 populations, $I = 3$

(A) $DF_{Group} = I - 1 = 2$

10 samples each, $J = 10$

(B) $DF_{Residuals} = I(J - 1) = 27$

(D) $F = \frac{MSTR}{MSE} \Rightarrow MSE = \frac{MSTR}{F} = \frac{83,530}{10.45} = 7993$

(C) $MSE = \frac{SSE}{I(J - 1)} \Rightarrow SSE = MSE(I)(J - 1) = 215819$

b) The P value of the F test is 0.000436.

This is lower than the stated significance level α which means we should reject the null hypothesis - The evidence is compelling that the level of mecumum in the infants is different for the populations of smokers.

c) I may have made a type I error which is to reject the null hypothesis when it is true

d) Passive Smokers & Non Smokers sample means are significantly different at $\alpha = 0.05$

```
#Active smokers:
xa <- c(490, 418, 405, 328, 700, 292, 295, 272, 240, 232)
#Passive smokers:
xp <- c(254, 219, 287, 257, 271, 282, 148, 273, 350, 293)
# Nonsmokers:
xn <- c(158, 163, 153, 207, 211, 159, 199, 187, 200, 213)
```

```
I <- 3
J <- length(xa)
```

```
A <- I-1
B <- I*(J-1)
```

```
MSTR <- 83530
F <- 10.45
```

```
D <- MSE <- MSTR/F
```

```
C <- MSE * I * (J-1)
```

↖ P5 calculations