## Output for KNNL 6.10 part (a)

```
> summary(linearMod)

Call:
lm(formula = Labor_Hours ~ Cases_Shipped + Indirect_Costs + Holiday,
     data = data)

Residuals:
     Min      1Q  Median      3Q     Max
-264.05 -110.73  -22.52   79.29  295.75

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)     4.150e+03  1.956e+02  21.220  < 2e-16 ***
Cases_Shipped   7.871e-04  3.646e-04   2.159   0.0359 *
Indirect_Costs -1.317e+01  2.309e+01  -0.570   0.5712
Holiday         6.236e+02  6.264e+01   9.954 2.94e-13 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 143.3 on 48 degrees of freedom
Multiple R-squared:  0.6883,    Adjusted R-squared:  0.6689
F-statistic: 35.34 on 3 and 48 DF,  p-value: 3.316e-12
```

## Output for KNNL 7.4 part (b)

Output for full model

```
> summary(mod1)

Call:
lm(formula = Labor_Hours ~ Cases_Shipped + Indirect_Costs + Holiday,
     data = data)

Residuals:
     Min      1Q  Median      3Q     Max
-264.05 -110.73  -22.52   79.29  295.75

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
(Intercept)     4.150e+03  1.956e+02  21.220  < 2e-16 ***
Cases_Shipped   7.871e-04  3.646e-04   2.159   0.0359 *
Indirect_Costs -1.317e+01  2.309e+01  -0.570   0.5712
Holiday         6.236e+02  6.264e+01   9.954 2.94e-13 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 143.3 on 48 degrees of freedom
Multiple R-squared:  0.6883,    Adjusted R-squared:  0.6689
F-statistic: 35.34 on 3 and 48 DF,  p-value: 3.316e-12
```

Output for reduced model

```
> summary(mod1_red)

Call:
lm(formula = Labor_Hours ~ Cases_Shipped + Holiday, data = data)

Residuals:
      Min       1Q   Median       3Q      Max
-286.249  -99.650   -9.251   70.746  292.311

Coefficients:
                 Estimate Std. Error t value Pr(>|t|)
(Intercept)   4.058e+03  1.109e+02  36.592  < 2e-16 ***
Cases_Shipped 7.704e-04  3.609e-04   2.135   0.0378 *
Holiday       6.196e+02  6.183e+01  10.021 1.88e-13 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 142.3 on 49 degrees of freedom
Multiple R-squared:  0.6862,    Adjusted R-squared:  0.6734
F-statistic: 53.58 on 2 and 49 DF,  p-value: 4.647e-13
```

Using ANOVA

```
> # Using an ANOVA table
> anova(mod1,mod1_red)
Analysis of Variance Table

Model 1: Labor_Hours ~ Cases_Shipped + Indirect_Costs + Holiday
Model 2: Labor_Hours ~ Cases_Shipped + Holiday
  Res.Df    RSS Df Sum of Sq      F Pr(>F)
1     48 985530
2     49 992204 -1   -6674.6 0.3251 0.5712
```

## Output for KNNL 6.16 part (a)

Output for full model

```
> summary(m1)

Call:
lm(formula = Satisfaction ~ Age + Severity_Illness + Anxiety_Level,
     data = data2)

Residuals:
      Min       1Q   Median       3Q      Max
-18.3524  -6.4230   0.5196   8.3715  17.1601

Coefficients:
                    Estimate Std. Error t value Pr(>|t|)
```

```
(Intercept)      158.4913    18.1259   8.744 5.26e-11 ***
Age               -1.1416     0.2148  -5.315 3.81e-06 ***
Severity_Illness  -0.4420     0.4920  -0.898   0.3741
Anxiety_Level    -13.4702     7.0997  -1.897   0.0647 .
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 10.06 on 42 degrees of freedom
Multiple R-squared:  0.6822,    Adjusted R-squared:  0.6595
F-statistic: 30.05 on 3 and 42 DF,  p-value: 1.542e-10
```

Output for reduced model

```
> summary(m1_reduced)

Call:
lm(formula = Satisfaction ~ 1, data = data2)

Residuals:
     Min      1Q  Median      3Q     Max
-35.565 -13.315  -1.565  15.185  30.435

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept)   61.565      2.541   24.23   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 17.24 on 45 degrees of freedom
```

Using ANOVA

```
> # Second way, using an ANOVA table
> anova(m1,m1_reduced)
Analysis of Variance Table

Model 1: Satisfaction ~ Age + Severity_Illness + Anxiety_Level
Model 2: Satisfaction ~ 1
  Res.Df     RSS Df Sum of Sq      F    Pr(>F)
1     42  4248.8
2     45 13369.3 -3   -9120.5 30.052 1.542e-10 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```