ME 488: Design of Experiments
Two Way Table Construction Practice

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Introduction

Purpose

This file contains a number of ANOVA table construction practice problems, the objective are to:

1. Understand the mechanics of an ANOVA table
2. Understand the relationship of the entries in ANOVA tables

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If you find these useful, (or if you discover errors) please let me know at **wde@pdx.edu** . Enjoy!

ANOVA Table

The Two Way Table

Source	df	SS	MS	F
Treatment 1	$df_{treatment_1}$	$SS_{treatment_1}$	$MS_{treatment_1}$	F_1
Treatment 2	$df_{treatment_2}$	$SS_{treatment_2}$	$MS_{treatment_2}$	F_2
Error	df_{error}	SS_{error}	MS_{error}	
Total	df_{total}	SS_{total}		

ANOVA Table: Problem 1

The Two Way Table

Source	df	SS	MS	F
Treatment 1	47	642	13.66	a
Treatment 2	59	316	5.36	b
Error	c	8398	88.4	
Total	201	9356		

1. $a =$
2. $b =$
3. $c =$

ANOVA Table: Problem 2

The Two Way Table

Source	df	SS	MS	F
Treatment 1	93	5565	59.84	0.83
Treatment 2	11	6328	575.27	a
Error	64	4622	b	
Total	168	16515		

1. $a =$
2. $b =$

ANOVA Table: Problem 3

The Two Way Table

Source	df	SS	MS	F
Treatment 1	a	8015	c	1.23
Treatment 2	b	3836	48.56	d
Error	33	5817	e	
Total	149	17668		

1. $a =$
2. $b =$
3. $c =$
4. $d =$
5. $e =$

ANOVA Table: Solution to Problem 1

The Two Way Table

Source	df	SS	MS	F
Treatment 1	47	642	13.66	$a = 0.15$
Treatment 2	59	316	5.36	$b = 0.06$
Error	$c = 95$	8398	88.4	
Total	201	9356		

1. $a = \frac{13.66}{88.4} = 0.15$
2. $b = \frac{5.36}{88.4} = 0.06$
3. $c = 201 - 47 - 59 = 95$

ANOVA Table: Problem 2

The Two Way Table

Source	df	SS	MS	F
Treatment 1	93	5565	59.84	0.83
Treatment 2	11	6328	575.27	$a = 7.97$
Error	64	4622	$b = 72.22$	
Total	168	16515		

1. $a = \frac{575.27}{b} = \frac{575.27}{72.22} = 7.97$
2. $b = \frac{59.84}{0.83} = 72.22$

ANOVA Table: Solution to Problem 3

The Two Way Table

Source	df	SS	MS	F
Treatment 1	$a = 37$	8015	$c = 216.62$	1.23
Treatment 2	$b = 79$	3836	48.56	$d = 0.28$
Error	33	5817	$e = 176.11$	
Total	149	17668		

1. $a = 149 - 33 - b = 149 - 33 - 79 = 37$
2. $b = \frac{3836}{48.56} = 79$
3. $c = \frac{8015}{a} = \frac{8015}{37} = 216.62$
4. $d = \frac{48.56}{e} = \frac{48.56}{176.11} = 0.28$
5. $e = \frac{c}{1.23} = \frac{216.62}{1.23} = 176.11$