P-101 P-102  P-103 P-104 P-105 P-106 P-107 P-108  P-109 P-110  P-111 P-112	12.079 16.791 9.564 8.63 14.669 12.238 14.692 8.987 9.401 14.48 22.328	19.278 18.741 21.214 15.687 22.803 20.878 24.572 17.394 20.762	7.199 1.95 11.65 7.057 8.134 8.64 9.88 8.407	number of samples  Degrees of Freedom  Standard Deviation of Samples Differences  Variance - Differences  Standard Error - Differences	# of samples - 1  ~ v1 = sample - sample mean  ~ v2 = v1 ^ 2  ~ V3 = sum of v2 for all samples  ~ v4 = v3 / degrees of freedom  ~ std = sqrt(v4)  average of the squared differences (v2)	24 23 4.86482691 22.680435	-0.765791667 -6.014791667 3.685208333 -0.907791667	0.5864368772 36.1777188 13.58076046 0.8240857107
P-102  P-103 P-104 P-105 P-106 P-107 P-108  P-110  P-111 P-112 P-113	9.564 8.63 14.669 12.238 14.692 8.987 9.401 14.48	15.687 22.803 20.878 24.572 17.394	7.057 8.134 8.64 9.88	Standard Deviation of Samples Differences  Variance - Differences	- v1 = sample - sample mean ~ v2 = v1 ^ 2 ~ V3 = sum of v2 for all samples ~ v4 = v3 / degrees of freedom ~ std = sqrt(v4)	4.86482691	3.685208333 -0.907791667	13.58076046
P-103 P-104 P-105 P-106 P-107 P-108 P-109 P-110 P-111 P-112 P-113	8.63 14.669 12.238 14.692 8.987 9.401 14.48	15.687 22.803 20.878 24.572 17.394	7.057 8.134 8.64 9.88	Variance - Differences	~ V3 = sum of v2 for all samples ~ v4 = v3 / degrees of freedom ~ std = sqrt(v4)		-0.907791667	
P-104 P-105 P-106 P-107 P-108 P-109 P-110 P-111 P-112 P-113	14.669 12.238 14.692 8.987 9.401 14.48	22.803 20.878 24.572 17.394	8.134 8.64 9.88		average of the squared differences (v2)	22.680435		0.8240857107
P-105 P-106 P-107 P-108 P-109 P-110 P-111 P-112 P-113	12.238 14.692 8.987 9.401 14.48	20.878 24.572 17.394	8.64 9.88		average of the squared differences (v2)	22.680435	0.160208333	
P-106 P-107 P-108 P-109 P-110 P-111 P-112 P-113	14.692 8.987 9.401 14.48	24.572 17.394	9.88	Standard Error Difference-			0.109200333	0.02863145996
P-106 P-107 P-108 P-109 P-110 P-111 P-112 P-113	14.692 8.987 9.401 14.48	17.394		Standard Error Difference-			0.675208333	0.455906293
P-107 P-108 P-109 P-110 P-111 P-112 P-113	8.987 9.401 14.48	17.394		Standard Enror - Differences	standard deviation/ square root of n	0.9930286348	1.915208333	3.668022959
P-109 P-110 P-111 P-112 P-113	9.401 14.48				·		0.442208333	0.1955482098
P-110 P-111 P-112 P-113			11.361	T critical value	Look up in table using degrees of freedom (23) and alpha level = 0.05	1.714	3.396208333	11.53423104
P-111 P-112 P-113	22.328	26.282	11.802				3.837208333	14.72416779
P-112 P-113		24.524	2.196	T test for paired sample	~ t1 = difference of means ~ t2 = standard deviation / sqrt(number of samples) ~ t3 = v1 / v2	8.020706944	-5.768791667	33.2789573
P-113	15.298	18.644	3.346				-4.618791667	21.33323646
	15.073	17.51	2.437	Cohen's D	mean difference / standard deviation	1.637219949	-5.527791667	30.55648071
P-114	16.929	20.33	3.401				-4.563791667	20.82819438
	18.2	35.255	17.055	Confidence Interval	~ t2 - standard deviation /sqrt(number of samples) ~ ci1 - t critical value * t2 ~ md +/- ci1	-0.06483113089	9.090208333	82.63188754
P-115	12.13	22.158	10.028			3.339271029	2.063208333	4.256828625
P-116	18.495	25.139	6.644				-1.320791667	1.744490628
P-117	10.639	20.429	9.79				1.825208333	3.331385459
P-118	11.344	17.425	6.081				-1.883791667	3.548671045
P-119	12.369	34.288	21.919				13.95420833	194.7199302
P-120	12.944	23.894	10.95				2.985208333	8.911468791
P-121	14.233	17.96	3.727				-4.237791667	17.95887821
P-122	19.71	22.058	2.348				-5.616791667	31.54834863
P-123	16.004	21.157	5.153				-2.811791667	7.906172379
	14.051125	22.01591667	7.964791667				v3 = sum of all V2	544.33044
Median 1	14.3565	21.0175	7.6665				v4 = v3 / degrees of freedom	23.66654087
t1 - mean differences 7.964	964791667							
t2 0.9930	930286348							
ci1 1.70	.70205108							