Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 8 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	0.85	1.01	1.02	1.29	1.2	0.87		
sample 2:	1.22	1.26	1.01	1.55	1.65	1.02	1.24	1.37

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 98% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.02? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 7 plants in the treatment group and n_2 = 4 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7
sample 1:	128	130	157	122	100	160	112
sample 2:	100	91	111	95			

   (a) Determine degrees of freedom.

   (b) Determine $t^\star$ for a 96% confidence interval.

   (c) Determine *SE*.

   (d) Determine a lower bound of the 96% confidence interval of $\mu_2 - \mu_1$.

   (e) Determine an upper bound of the 96% confidence interval of $\mu_2 - \mu_1$.

   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.

   (g) Determine a lower bound of the two-tail *p*-value.

   (h) Determine an upper bound of two-tail *p*-value.

   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.04? (yes or no)

1. (a) | | | | | | | . | | |

   (b) | | | | | | | . | | |

   (c) | | | | | | | . | | |

   (d) | | | | | | | . | | |

   (e) | | | | | | | . | | |

   (f) | | | | | | | . | | |

   (g) | | | | | | | . | | |

   (h) | | | | | | | . | | |

   (i) |

Name: _____

1. An experiment has $n_1 = 4$ plants in the treatment group and $n_2 = 3$ plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4
sample 1:	1.28	1.18	1.01	0.67
sample 2:	1.82	1.73	1.76	

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 96% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 96% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 96% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level $\alpha = 0.04$? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 8 plants in the treatment group and n_2 = 4 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	109	108	114	115	103	114	109	110
sample 2:	98	108	124	89				

(a) Determine degrees of freedom.

(b) Determine $t^\star$ for a 90% confidence interval.

(c) Determine *SE*.

(d) Determine a lower bound of the 90% confidence interval of $\mu_2 - \mu_1$.

(e) Determine an upper bound of the 90% confidence interval of $\mu_2 - \mu_1$.

(f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.

(g) Determine a lower bound of the two-tail *p*-value.

(h) Determine an upper bound of two-tail *p*-value.

(i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.1? (yes or no)

1. (a) | | | | | | | . | | |

(b) | | | | | | | . | | |

(c) | | | | | | | . | | |

(d) | | | | | | | . | | |

(e) | | | | | | | . | | |

(f) | | | | | | | . | | |

(g) | | | | | | | . | | |

(h) | | | | | | | . | | |

(i) |

ID: 005

Name: _____

1. An experiment has n_1 = 7 plants in the treatment group and n_2 = 3 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7
sample 1:	255	202	216	204	225	211	214
sample 2:	103	113	126				

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 006

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	14.1	11.2	12.8	15.1	13.8	14.1
sample 2:	9.8	8.1	9.8	11.2	11	10.8

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 5 plants in the treatment group and n_2 = 3 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5
sample 1:	9	6.6	5.2	10.8	11.6
sample 2:	21.2	18.9	18.4		

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 95% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.05? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	139	127	120	142	119	142
sample 2:	111	98	94	81	67	125

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 95% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.05? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 009

Name: _____

1. An experiment has n_1 = 3 plants in the treatment group and n_2 = 7 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7
sample 1:	21.3	21.8	27.2				
sample 2:	8.8	10.9	9.9	10.3	11.4	10.4	9

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 3 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	10.3	8.6	10.8			
sample 2:	17.1	19.7	19.8	16.6	22.2	19.2

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 8 plants in the treatment group and n_2 = 7 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	9.1	11.4	9.7	8.9	11.1	8.1	9.2	13.3
sample 2:	12.4	12.4	18.6	14.5	13.9	12.1	10.6	

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 95% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.05? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 012

Name: _____

1. An experiment has n_1 = 8 plants in the treatment group and n_2 = 8 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	9.4	9.7	10.6	10.9	12.3	9.9	9.6	12
sample 2:	13.1	11.4	11.1	9.6	12.8	10.6	10.3	14.4

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 95% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.05? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 013

Name: _____

1. An experiment has n_1 = 5 plants in the treatment group and n_2 = 3 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5
sample 1:	9	14.7	8.3	11.4	8.5
sample 2:	18.4	17.9	15.4		

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 96% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 96% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 96% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.04? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 4 plants in the treatment group and n_2 = 3 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4
sample 1:	10.6	12.7	10.6	10.8
sample 2:	12.4	13	11.9	

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 95% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.05? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 015

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 7 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7
sample 1:	91	118	144	104	118	141	
sample 2:	97	120	81	87	97	91	112

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 90% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 90% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 90% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.1? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 016

Name: _____

1. An experiment has n_1 = 8 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	137	134	157	141	128	114	166	134
sample 2:	92	102	96	97	89	101		

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 98% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.02? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 3 plants in the treatment group and n_2 = 3 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3
sample 1:	13.9	9.8	7.9
sample 2:	23.3	22.7	21.3

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 018

Name: _____

1. An experiment has n_1 = 3 plants in the treatment group and n_2 = 7 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7
sample 1:	110	106	106				
sample 2:	266	278	266	270	234	250	287

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

ID: 019

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	1.22	1.37	1.33	1.14	1.22	1.29
sample 2:	1.21	1.63	1.1	1.01	1.07	0.81

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 95% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.05? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 8 plants in the treatment group and n_2 = 8 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	12.1	12.5	10	10.8	7.4	11.2	8.2	12.1
sample 2:	10.9	14.2	10.8	12.6	8.7	13.7	16.2	13.8

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 95% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 95% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.05? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 8 plants in the treatment group and n_2 = 4 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	1.91	1.64	1.7	1.72	1.23	1.29	1.61	1.49
sample 2:	0.89	0.96	1.12	0.8				

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 98% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.02? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 5 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	10.6	9.4	9.9	9.4	11.6	9.8
sample 2:	19.4	14.2	14	15.9	15.7	

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 3 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	1.07	0.98	1			
sample 2:	1.86	2.77	2.8	1.91	2.37	2.21

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 99% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 4 plants in the treatment group and n_2 = 8 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7	value8
sample 1:	143	134	145	151				
sample 2:	108	109	101	110	94	81	96	96

(a) Determine degrees of freedom.

(b) Determine $t^\star$ for a 99% confidence interval.

(c) Determine *SE*.

(d) Determine a lower bound of the 99% confidence interval of $\mu_2 - \mu_1$.

(e) Determine an upper bound of the 99% confidence interval of $\mu_2 - \mu_1$.

(f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.

(g) Determine a lower bound of the two-tail *p*-value.

(h) Determine an upper bound of two-tail *p*-value.

(i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.01? (yes or no)

1. (a) | | | | | | | . | | |

(b) | | | | | | | . | | |

(c) | | | | | | | . | | |

(d) | | | | | | | . | | |

(e) | | | | | | | . | | |

(f) | | | | | | | . | | |

(g) | | | | | | | . | | |

(h) | | | | | | | . | | |

(i) |

Name: _____

1. An experiment has n_1 = 7 plants in the treatment group and n_2 = 4 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7
sample 1:	1.07	1.03	1.39	0.76	0.82	0.83	0.74
sample 2:	1.05	0.84	1.62	1.19			

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 90% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 90% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 90% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.1? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 3 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	215	232	210	204	217	215
sample 2:	76	104	92			

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 98% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.02? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 7 plants in the treatment group and n_2 = 5 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6	value7
sample 1:	1.1	1.05	1.08	1.05	0.86	1.29	0.6
sample 2:	1.62	1.4	1.51	1.17	1.46		

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 98% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.02? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 3 plants in the treatment group and n_2 = 4 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4
sample 1:	112	114	100	
sample 2:	211	204	233	223

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 98% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.02? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	1.25	1.13	1.31	1.16	1.13	1.14
sample 2:	1.13	0.96	0.98	1.14	1.26	1.07

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 90% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 90% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 90% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.1? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |

Name: _____

1. An experiment has n_1 = 6 plants in the treatment group and n_2 = 6 plants in the control group. After some time, the plants' heights (in cm) are measured, resulting in the following data:

	value1	value2	value3	value4	value5	value6
sample 1:	0.98	1.03	1.12	1.02	1.3	1.02
sample 2:	1.18	1.34	1.19	1.13	1.22	1.22

   (a) Determine degrees of freedom.
   (b) Determine $t^\star$ for a 98% confidence interval.
   (c) Determine *SE*.
   (d) Determine a lower bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (e) Determine an upper bound of the 98% confidence interval of $\mu_2 - \mu_1$.
   (f) Determine $|t_{\text{obs}}|$ under the null hypothesis $\mu_2 - \mu_1 = 0$.
   (g) Determine a lower bound of the two-tail *p*-value.
   (h) Determine an upper bound of two-tail *p*-value.
   (i) Do you reject the null hypothesis with a two-tail test using a significance level α = 0.02? (yes or no)

1. (a) | | | | | | | . | | |
   (b) | | | | | | | . | | |
   (c) | | | | | | | . | | |
   (d) | | | | | | | . | | |
   (e) | | | | | | | . | | |
   (f) | | | | | | | . | | |
   (g) | | | | | | | . | | |
   (h) | | | | | | | . | | |
   (i) |