

1 Express the confidence interval (0.083,0.135) in the form of $p-E < p > p+E$.

< p <

(Type integers or decimals.)

2.

In the week before and the week after a holiday, there were 10,000 total deaths, and 4923 of them occurred in the week before the holiday.

- a. Construct a 95% confidence interval estimate of the proportion of deaths in the week before the holiday to the total deaths in the week before and the week after the holiday.

- b. Based on the result, does there appear to be any indication that people can temporarily postpone their death to survive the holiday?

a. _____ $p <$ _____ (Round to three decimal places as needed.)

- b. Based on the result, does there appear to be any indication that people can temporarily postpone their death to survive the holiday?

_____ Yes, because the proportion could not easily equal 0.5. The interval is substantially less than 0.5 the week before the holiday.

_____ No, because the proportion could easily equal 0.5. The interval is not less than 0.5 the week before the holiday.

3. An online site presented this question, 'Would the recent norovirus outbreak deter you from taking a cruise?' Among the 34,752 people who responded, 65% answered 'yes'. Use the sample data to construct a 90% confidence interval estimate for the proportion of the population of all people who would respond 'yes' to that question. Does the confidence interval provide a good estimate of the population proportion?

_____ $p <$ _____ (Round to three decimal places as needed.)

Does the confidence interval provide a good estimate of the population proportion?

_____ A. No, the sample is a voluntary sample and might not be representative of the population.

_____ B. Yes, the sample is large enough to provide a good estimate of the population proportion.

_____ C. No, the responses are not independent.

_____ D. Yes, all the assumptions for a confidence interval are satisfied.

4. Do one of the following, as appropriate. (a) Find the critical value $z \alpha/2$, (b) find the critical value $t \alpha/2$, (c) State that neither the normal nor the t distribution applies.

Confidence level 99%; $n=20$; σ is known; population appears to be very skewed.

See printed tables

Find the critical value.

- A. $t \alpha/2=2.861$
- B. $z \alpha/2 =2.332.33$
- C. $t \alpha/2=2.5392.539$
- D. $z \alpha/2=2.575$
- E. Neither normal nor t distribution applies.

5. A data set includes 108 body temperatures of healthy adult humans for which $x=98.3$ degrees°F and $s=0.69$ °F. Complete parts (a) and (b) below. (see charts)

- A. What is the best point estimate of the mean body temperature of all healthy humans?

The best point estimate is _____ °F. (Type an integer or a decimal.)

- b. Using the sample statistics, construct a 99% confidence interval estimate of the mean body temperature of all healthy humans. Do the confidence interval limits contain 98.6degrees°F?

What does the sample suggest about the use of 98.6degrees°F as the mean body temperature?

What is the confidence interval estimate of the population mean μ ?

_____ °F $\mu <$ °F(Round to three decimal places as needed.)

Do the confidence interval limits contain 98.6°F?

NO _____

Yes _____

C What does this suggest about the use of 98.6 degrees°F as the mean body temperature?

- A. This suggests that the mean body temperature could be lower than 98.6°F.
- B. This suggests that the mean body temperature could very possibly be 98.6°F.
- C. This suggest that the mean body temperature could be higher than 98.6°F.

6. In a sample of seven cars, each car was tested for nitrogen-oxide emissions (in grams per mile) and the following results were obtained: 0.16, 0.18, 0.07, 0.06, 0.13, 0.11, 0.11.

Assuming that this sample is representative of the cars in use, construct a 98% confidence interval estimate of the mean amount of nitrogen-oxide emissions for all cars. If the EPA requires that nitrogen-oxide emissions be less than 0.165 g/mi, can we safely conclude that this requirement is being met?

What is the confidence interval estimate of the mean amount of nitrogen-oxide emissions for all cars?

_____ g divided by g/mi < μ < _____ g/mi (Round to three decimal places as needed.)

Can we safely conclude that the requirement that nitrogen-oxide emissions be less than 0.165 g/mi is being met?

- A. No, because the confidence interval does not contain 0.165 g/mi.
- B. Yes, we can definitely conclude that the requirement is met for all cars.
- C. Yes, because the confidence interval contains 0.165 g/mi.
- D. No, it is possible that the requirement is being met, but it is also very possible that the mean is not less than 0.165 g/mi.

7. In order to estimate the mean amount of time computer users spend on the internet each month, how many computer users must be surveyed in order to be 95% confident that your sample mean is within 15 minutes of the population mean? Assume that the standard deviation of the population of monthly time spent on the internet is 202 min. What is a major obstacle to getting a good estimate of the population mean? Use technology to find the estimated minimum required sample size.

The minimum sample size required is _____ computer users.(Round up to the nearest whole number.)

What is a major obstacle to getting a good estimate of the population mean?

- A. It is difficult to precisely measure the amount of time spent on the internet, invalidating some data values.
- B. The data does not provide information on what the computer users did while on the internet.
- C. There may not be 697 computer users to survey.
- D. There are no obstacles to getting a good estimate of the population mean.

8. If we find that there is a linear correlation between the concentration of carbon dioxide in our atmosphere and the global temperature, does that indicate that changes in the concentration of carbon dioxide cause changes in the global temperature?

Choose the correct answer below.

- A. No. The presence of a linear correlation between two variables does not imply that one of the variables is the cause of the other variable.
- B. Yes. The presence of a linear correlation between two variables implies that one of the variables is the cause of the other variable

9. Use the given data set to complete parts (a) through (c) below. (Use $\alpha = 0.05$.)

x	10	8	13	9	11	14	6	4	12	7	5
y	9.15	8.14	8.73	8.77	9.26	8.09	6.12	3.09	9.12	7.26	4.74

- A. Construct a scatterplot.
-

- B. Find the linear correlation coefficient, r , then determine whether there is sufficient evidence to support the claim of a linear correlation between the two variables.

The linear correlation coefficient is $r = \underline{\hspace{2cm}}$ (Round to three decimal places as needed)

Determine whether there is sufficient evidence to support the claim of a linear correlation between the two variables. Choose the correct answer below.

- a. There is insufficient evidence to support the claim of a nonlinear correlation between the two variables.
- b. There is sufficient evidence to support the claim of a nonlinear correlation between the two variables.
- c. There is sufficient evidence to support the claim of a linear correlation between the two variables.
- d. There is insufficient evidence to support the claim of a linear correlation between the two variables.

C. Identify the feature of the data that would be missed if part (b) was completed without constructing the scatterplot. Choose the correct answer below.

- A. The scatterplot reveals a distinct pattern that is a straight-line pattern with positive slope.
- B. The scatterplot does not reveal a distinct pattern.
- C. The scatterplot reveals a distinct pattern that is not a straight-line pattern.
- D. The scatterplot reveals a distinct pattern that is a straight-line pattern with negative slope.

10. For a sample of eight bears, researchers measured the distances around the bears' chests and weighed the bears. Minitab was used to find that the value of the linear correlation coefficient is $r=0.935$. Using $\alpha=0.05$, determine if there is a linear correlation between chest size and weight. What proportion of the variation in weight can be explained by the linear relationship between weight and chest size?

a. Is there a linear correlation between chest size and weight?

A.No, because the absolute value of the test statistic exceeds the critical value of 0.707.

B.Yes, because the test statistic falls between the critical values of -0.707 and 0.707 .

C.Yes, because the absolute value of the test statistic exceeds the critical value of 0.707.

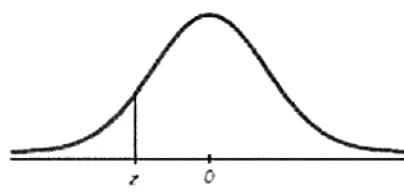
D.The answer cannot be determined from the given information.

What proportion of the variation in weight can be explained by the linear relationship between weight and chest size?

_____ (Round to three decimal places as needed.)

t distribution: Critical t values

	Area in One Tail				
	0.005	0.01	0.025	0.05	0.10
Degrees of Freedom	Area in Two Tails				
	0.01	0.02	0.05	0.10	0.20
1	63.657	31.821	12.706	6.314	3.078
2	9.925	6.965	4.303	2.920	1.886
3	5.841	4.541	3.182	2.353	1.638
4	4.604	3.747	2.776	2.132	1.533
5	4.032	3.365	2.571	2.015	1.476
6	3.707	3.143	2.447	1.943	1.440
7	3.499	2.998	2.365	1.895	1.415
8	3.355	2.896	2.306	1.860	1.397
9	3.250	2.821	2.262	1.833	1.383
10	3.169	2.764	2.228	1.812	1.372
11	3.106	2.718	2.201	1.796	1.363
12	3.055	2.681	2.179	1.782	1.356
13	3.012	2.650	2.160	1.771	1.350
14	2.977	2.624	2.145	1.761	1.345
15	2.947	2.602	2.131	1.753	1.341
16	2.921	2.583	2.120	1.746	1.337
17	2.896	2.567	2.110	1.740	1.333
18	2.878	2.552	2.101	1.734	1.330
19	2.861	2.539	2.093	1.729	1.328
20	2.845	2.528	2.086	1.725	1.325
21	2.831	2.518	2.080	1.721	1.323
22	2.819	2.508	2.074	1.717	1.321
23	2.807	2.500	2.069	1.714	1.319
24	2.797	2.492	2.064	1.711	1.318
25	2.787	2.485	2.060	1.708	1.316
26	2.779	2.479	2.056	1.706	1.315
27	2.771	2.473	2.052	1.703	1.314
28	2.763	2.467	2.048	1.701	1.313
29	2.756	2.462	2.045	1.699	1.311
30	2.750	2.457	2.042	1.697	1.310
31	2.744	2.453	2.040	1.696	1.309
32	2.738	2.449	2.037	1.694	1.309
33	2.733	2.445	2.035	1.692	1.308
34	2.728	2.441	2.032	1.691	1.307
35	2.724	2.438	2.030	1.690	1.306
36	2.719	2.434	2.028	1.688	1.306
37	2.715	2.431	2.026	1.687	1.305
38	2.712	2.429	2.024	1.686	1.304
39	2.708	2.426	2.023	1.685	1.304
40	2.704	2.423	2.021	1.684	1.303
45	2.690	2.412	2.014	1.679	1.301
50	2.678	2.403	2.009	1.676	1.299
60	2.660	2.390	2.000	1.671	1.296
70	2.648	2.381	1.994	1.667	1.294
80	2.639	2.374	1.990	1.664	1.292
90	2.632	2.368	1.987	1.662	1.291
100	2.626	2.364	1.984	1.660	1.290
200	2.601	2.345	1.972	1.653	1.286
300	2.592	2.339	1.968	1.650	1.284
400	2.588	2.336	1.966	1.649	1.284
500	2.586	2.334	1.965	1.648	1.283
1000	2.581	2.330	1.962	1.646	1.282
2000	2.578	2.328	1.961	1.646	1.282
Large	2.576	2.326	1.960	1.645	1.282
Degrees of Freedom	Area in One Tail				
	0.005	0.01	0.025	0.05	0.10
	Area in Two Tails				
	0.01	0.02	0.05	0.10	0.20



NEGATIVE z Scores

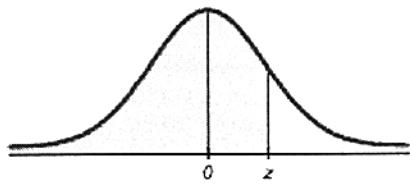
Standard Normal (z) Distribution: Cumulative Area from the LEFT

<i>z</i>	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.50										
and lower	.0001									
-3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
-3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
-3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
-3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
-3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
-2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
-2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
-2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
-2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
-2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	* .0049	.0048
-2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	↑ .0066	.0064
-2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
-2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
-2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
-2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
-1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
-1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
-1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
-1.6	.0548	.0537	.0526	.0516	.0505	* .0495	.0485	.0475	.0465	.0455
-1.5	.0668	.0655	.0643	.0630	.0618	↑ .0606	.0594	.0582	.0571	.0559
-1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
-1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
-1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
-1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
-1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
-0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
-0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
-0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
-0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
-0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
-0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
-0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
-0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
-0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
-0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

NOTE: For values of *z* below -3.49, use 0.0001 for the area.

*Use these common values that result from interpolation:

<i>z score</i>	<i>Area</i>
-1.645	0.0500
-2.575	0.0050



POSITIVE z Scores

Standard Normal (z) Distribution: Cumulative Area from the LEFT										
z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9997	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998	.9998
3.50	.9999									
and up										

NOTE: For values of z above 3.49, use 0.9999 for the area.

*Use these common values that result from interpolation:

z score	Area
1.645	0.9500
2.575	0.9950

Common Critical Value

Confidence Level	Critical Value
0.90	1.645
0.95	1.96
0.99	2.575



n	$\alpha = .05$	$\alpha = .01$
4	.950	.990
5	.878	.959
6	.811	.917
7	.754	.875
8	.707	.834
9	.666	.798
10	.632	.765
11	.602	.735
12	.576	.708
13	.553	.684
14	.532	.661
15	.514	.641
16	.497	.623
17	.482	.606
18	.468	.590
19	.456	.575
20	.444	.561
25	.396	.505
30	.361	.463
35	.335	.430
40	.312	.402
45	.294	.378
50	.279	.361
60	.254	.330
70	.236	.305
80	.220	.286
90	.207	.269
100	.196	.256

NOTE: To test $H_0: \rho = 0$ against $H_1: \rho \neq 0$,
reject H_0 if the absolute value of r is
greater than the critical value in the table.

use
for
9 & 10