1) A

2) C

3) D

4) C

5) A

6) C

7) D

8) **Answer using graphing calculators: 1-PropZTest**

H_0: p = 0.03.
H_1: p ≠ 0.03.

Test statistic: z = - 0.24.
P–value: p = 0.8126. P-value > alpha (0.02)
Conclusions: Fail to reject null hypothesis. There is not sufficient evidence to warrant rejection of the manager's claim that the defect rate is 3%.

8) Answer using formulas:

H_0: p = 0.03.
H_1: p ≠ 0.03.
Test Statistics:

$$z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}}$$

Where p-hat is 5/185 = 0.027; p = 0.03; q = 1 – 0.03 = 0.96 and n = 185.
Obtain z = -0.24 (test statistic);
Critical value for alpha = 0.02, Two tails is z = 2.326 Abs value test stat < critical value: fail to reject H_0.
Conclusions: Fail to reject null hypothesis. There is not sufficient evidence to warrant rejection of the manager's claim that the defect rate is 3%.

9) **Answer using graphing calculators: 1-PropZTest**
H_0: p = 0.52.
H_1: p ≠ 0.52.
Test statistic: z = –1.60.
P–value: p = 0.1093 > alpha 0.05

Conclusions: Fail to reject null hypothesis. There is not sufficient evidence to warrant rejection of the claim that the actual percentage is 53%.

9) Answer using formulas:

H_0: p= 0.52.
H_1: p ≠ 0.52.

Test Statistics:

$$z = \frac{\hat{p} - p}{\sqrt{\frac{pq}{n}}}$$

Where p-hat is 44/100 = 0.44; p = 0.52; q = 1 – 0.52 = 0.48 and n = 100.
Obtain z = -1.60 (test statistic);
Critical value for alpha = 0.05, two tails is z = 1.96. Since abs value test stat < critical value: fail to reject H_0.
Conclusions: Fail to reject null hypothesis. There is not sufficient evidence to warrant rejection of the claim that the actual percentage is 53%.

10) Graphing Calculators: T-Test
H_0: μ = 32.6.
H_1: μ ≠ 32.6.
Test statistic: t = 4.36. P-value = 6.5692E-04 = 0.0005569 < Alpha (0.05).
Conclusions: Reject H_0. There is sufficient evidence to warrant rejection of the claim that the mean is 32.6.

10) Answer using formulas:

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

Where x-bar: 41.6; μ = 32.6, s = 8, and n = 15.
Test statistic: t = 4.36. Critical values for alpha 0.05 two tails, df = n – 1 = 14, t = ±2.145.
Test Stat > T critical; therefore, Reject H_0.
Conclusions: Reject H_0. There is sufficient evidence to warrant rejection of the claim that the mean is 32.6.

11) Graphing Calculators: T-Test

H_0: μ = 2.85.
H_1: μ > 2.85.
Test statistic: t = 1.85. P-value = 0.0504 > alpha (0.01)
Conclusions: Fail to reject H_0. There is not sufficient evidence to support the claim that the mean is greater than 2.85.

11) Answer using formulas:
H_0: μ = 2.85.
H_1: μ > 2.85.

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

Where x-bar is 3.19, $\mu = 2.85$, $s = 0.55$ and $n = 9$.
Test statistic: $t = 1.85$. Critical value: for alpha 0.01, and df = 8, one tail: $t = 2.896$.
Test Sta < T critical; therefore, fail to reject H_0.
Conclusions: Fail to reject H_0. There is not sufficient evidence to support the claim that the mean is greater than 2.85.

12) Using graphing calculators: T-Test
We are given a set of ten values. Enter them on L1; then proceed to the T Test, choose Data on TI calc; choose List on Casio calc.

H_0: $\mu = 510$ hrs.
H_1: $\mu > 510$ hrs.
Test statistic: $t = 4.23$ p-value= 1.1058E-03 or 0.0011 < alpha 0.05
Conclusions: Reject H_0. There is sufficient evidence to support the claim that the mean is greater than 510 hours.

12) Answer using formulas:
H_0: $\mu = 510$.
H_1: $\mu > 510$.

First, use a scientific calculator to find the sample mean and standard deviation for the set of the ten given values: 518, 548, 561, etc. The sample mean is 536.1 and the sample standard dev is 19.52; using the following formula enter the corresponding values:

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$

n = 10, since there are ten values in the list.
t test statistic = 4.23; T critical value for alpha 0.05, df = 10 – 1 = 9, is 1.833.
Test stat > T critical, Reject H_0.
Conclusions: Reject H_0. There is sufficient evidence to support the claim that the mean is greater than 510 hours.

13) Using **graphing Calculator**: this is a Z-Test since we are given the population standard deviation, symbol sigma: σ

H_0: $\mu = 200$;
H_1: $\mu < 200$;

Test statistic: $z = -0.98$. P–value: 0.1645. P-value = 0.1645 > alpha (0.10)
Conclusions: Fail to reject H_0. There is not sufficient evidence to support the claim that the mean is less than 200 pounds.

13) Using formulas:

H_0: μ = 200;
H_1: μ < 200;

Since σ is known, we calculate z instead of t:

$$z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}}$$

Where x-bar is 183.9; μ = 200, sigma is 121.2 and n = 54.
Test Statistic z = -0.98; the z critical value for alpha 0.10, one tail is 2.282; therefore, z test stat is < z critical value; therefore, fail to reject H_0.

Conclusions: Fail to reject H_0. There is not sufficient evidence to support the claim that the mean is less than 200 pounds.

14) Graphing calculators: 2-samples T Test.

H_0: μ1 = μ2
H_1: μ1 > μ2

Choose pool: off.
Test statistic: t = 1.191; p-value: 0.1222; P-value > alpha 0.025

Conclusions: Do not reject H_0. There is not sufficient evidence to support the claim that the mean resting pulse rate of people who do not exercise regularly is larger than the mean resting pulse rate of people who exercise regularly.

14) By Formulas:

H_0: μ1 = μ2
H_1: μ1 > μ2

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

Where x-bar1 is 73.2, s1=10.9, n1=16 and x-bar2=68.9, s2 = 8.2 and n2=12.

Test Stat t = 1.19; Critical value: t = 2.201 for alpha 0.025 and df = 12 – 1 = 11.
Since T stat < T critical, we fail to Reject H_0.

Conclusions: Do not reject H_0. There is not sufficient evidence to support the claim that the mean resting pulse rate of people who do not exercise regularly is larger than the mean resting pulse rate of people who exercise regularly.