**Section 1**

**Directions:** Write out in words the null (HO) and alternative (Ha) hypotheses for the scenarios below.

**Example:** After a renovation and build up in the public transit system in Austin (we wish!), the percent of individuals driving to work decreased.

**HO:** The percent of people driving to work after the transit overhaul was equal to or greater than before the transportation overhaul.

**Ha:** The percent of people driving to work after the transportation overhaul was less than before the transportation overhaul.

1. Sales at HEB grocery in downtown Austin rose between August and September when the nearby competitor Whole Foods Market closed.

HO: Sales in September at HEB in downtown Austin were ≤ the sales from August.

Ha: Sales in September at HEB in downtown Austin were > the sales from August.

1. A new breast cancer screening tool correctly detected 96% of malignant cancers.

HO: The percent of malignant cancers correctly detected by breast cancer screening tool did not equal 96%.

Ha: The percent of malignant cancers correctly detected by the new breast cancer screening tool equaled 96%.

1. Farmers that use genetically engineered seed developed to prevent rootworm used less pesticide than farmers who did not use this seed.

HO: Farmers that used the GMO seed used pesticide at an equal or greater rate than farmers who did not use the seed.

Ha: Farmers using the GMO seed used less pesticide than farmers not using the seed.

**Section 2**

**Directions:** Write out with a mathematical formula the null and alternative hypothesis corresponding to the following scenarios.

**Example:** After Pepsi’s new television advertising campaign started, average daily sales were greater than $1,000,000 in the U.S.

HO: Mean sales ≤ $1,000,000

Ha: Mean sales > $1,000,000

1. Medicaid enrollment equaled 23% of the population in Pennsylvania after Medicaid expansion was passed.

HO: Enrollment ≠ 23%

Ha: Enrollment = 23%

1. Greater than 50% of students at Chesterfield High School got a score of 1000 or higher on the SAT.

HO: Students scoring 1000 or higher ≤ 50%

Ha: Students scoring 1000 or higher > 50%

1. Less than 30% of those who got the flu in 2018 had the flu vaccine.

HO: Vaccinated with flu ≥ 30%

Ha: Vaccinated with flu < 30%

1. Removing antibiotics from animals grown to produce meat lowered the percentage of MRSA infections in hospitalized patients to 10%.

HO: Hospitalized infections ≠ 10%

Ha: Hospitalized infections = 10%

1. Playground injuries requiring medical attention decreased to 5 students or less per year at Hamilton Elementary after the merry-go-round was removed in 2016.

HO: Injured students > 5

Ha: Injured students ≤ 5