**Study:** Athletes were measured using two different concussion assessment tests to determine which test was better in diagnosing concussion after hits on the field. These results were compared to a physician’s determination of injury as the gold standard.

**Test 1:**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Physician Scored (the “truth”) | |
|  |  | Injured | Non injured |
| Test Result | Injured | 10 | 5 |
| Non injured | 14 | 19 |

**Test 2:**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Physician Scored (the “truth”) | |
|  |  | Injured | Non injured |
| Test Result | Injured | 20 | 4 |
| Non injured | 8 | 15 |

**Calculate the following for each test:**

1. Prevalence
2. Sensitivity
3. Specificity
4. Positive and Negative Predictive Values
5. Positive and Negative Likelihood ratios
6. Include a screen shot of the Vassar Stats output.

**Interpret the findings:**

1. Which test appears to be better? Explain the findings from above and which test you would choose to use because of these findings.

**ROC Curves:** A new chemical marker was found to measure concussion injuries, and we want to construct an ROC curve to determine the usefulness of this test. We’ve determined the false and true positive rates for six levels of the chemical marker to plot.

|  |  |  |
| --- | --- | --- |
|  | False Positive | True Positive |
| Level 1 | 1 | 10 |
| Level 2 | 4 | 8 |
| Level 3 | 3 | 6 |
| Level 4 | 7 | 3 |
| Level 5 | 6 | 3 |
| Level 6 | 10 | 2 |

1. Create the ROC curve for this data (using the excel sheet).
2. Interpret the area under the curve. Is this chemical marker useful?