** Mathematics Assignment 2**

**Baseball Statistics**

**Date:** Due

**Overview:**

Many statistics about baseball involve ratios, decimals, and percents. This table shows the batting statistics for the Toronto Blue Jays during the 2004 season.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Player** | **G****(Games****Played)** | **AB****(At Bat)** | **R****(Runs Scored)** | **H****(Hits/ Singles)** | **2B****(Double)** | **3B****(Triple)** | **HR****(Home Runs)** | **RBI****(Runs Batted In)** | **BB****(Bases on Ball)** | **SO****(Strike Outs)** |
| Gregg Zaun | 107 | 338 | 46 | 91 | 24 | 0 | 6 | 36 | 47 | 61 |
| Carlos Delgado | 128 | 458 | 74 | 123 | 26 | 0 | 32 | 99 | 69 | 115 |
| Orlando Hudson | 135 | 489 | 73 | 132 | 32 | 7 | 12 | 58 | 51 | 98 |
| Eric Hinske | 155 | 570 | 66 | 140 | 23 | 3 | 15 | 69 | 54 | 109 |
| Chris Gomez | 109 | 341 | 41 | 96 | 11 | 1 | 3 | 37 | 28 | 41 |
| Reed Johnson | 141 | 537 | 68 | 145 | 25 | 2 | 10 | 61 | 28 | 98 |
| Vernon Wells | 134 | 536 | 82 | 146 | 34 | 2 | 23 | 67 | 51 | 83 |
| Alex Rios | 111 | 426 | 55 | 122 | 24 | 7 | 1 | 28 | 31 | 84 |
| Josh Phelps | 79 | 295 | 38 | 70 | 13 | 2 | 12 | 51 | 18 | 73 |

**Preparation Work and Tasks:**

1. Which player had the most home runs? **(/1)**
2. Which player had the most hits? **(/1)**
3. Which player struck out the least number of times? **(/1)**
4. Which player was the best hitter? Justify your decision. **(/2)**
5. A common statistic used in baseball is *batting average*. It is the ratio of **hits/singles : at bats** expressed as a decimal rounded to three decimal places.

 Determine the batting average of each player. **(/3)**

1. Who had the highest batting average? **(/1)**
2. Using the batting averages, how many hits would you expect Carlos Delgado to have after 150 at bats? **(/2)**
3. Use the batting averages to determine the team’s overall batting average. **(/2)**
4. Another stistic used to compare hitters is the *home run ratio*. This is determined by the ratio **home runs : at bats**.

 Determine the home run ratio for each player. Express each ratio in fractional form. **(/3)**

1. Is the home run ratio a statistic you can easily compare between players when it is expressed as a fraction? Why or why not? **(/2)**
2. How many home runs would you expect Carlos Delgado to hit in 1000 at bats? **(/2)**
3. Express each home run ratio as a decimal rounded to one decimal place. **(/3)**
4. What does this decimal represent? Could this decimal be considered a unit rate? Explain. **(/2)**

**Evaluation:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Level 4** | **Level 3** | **Level 2** | **Level 1** | **%** |
| Depth of Understanding | Demonstrates thorough understanding of concepts. | Demonstrates considerable understanding of concepts. |  |  | 20 |
| Problem Solving / Thinking | Use of procedure includes almost no errors or omissions. | Use of procedures is mostly correct, but there may be a few minor errors and / or omissions. |  |  | 20 |
| Application of Learning | Demonstrates sophisticated ability to make connections between mathematics learning and the real world. | Demonstrates considerable ability to make connections between mathematics learning and the real world. |  |  | 20 |
| Explanation and Justification of Concepts, Procedures, and Problem Solving | Provides thorough, clear and insightful explanations / justifications, using a range of words, pictures, symbols, and / or numbers. | Provides complete, clear and logical explanations / justifications, using appropriate words, pictures, symbols, and / or numbers. |  |  | 20 |
| Use of Mathematical Vocabulary | Uses a broad range of mathematical vocabulary to communicate clearly and precisely. | Uses mathematical vocabulary with considerable clarity and precision. |  |  | 20 |