Lesson 5: Normal Distribution

Preparation

## Solutions

**Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.**

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| Problem | Part | Solution |
| 1 | A | 0.19- Unusual () |
| 1 | B | 0.225- Not Unusual () |
| 1 | C | 0.325- Not Unusual () |
| 1 | D | 0.335- Unusual () |
| 2 | - | The probability that a randomly selected professional baseball player will have a batting average that is greater than 0.335 is 0.015. |
| 3 | - | The Normal Density curve is symmetric and has a bell shape. It is determined by its mean and standard deviation. |
| 4 | - | z: tells how many standard deviations away from the mean a certain observation lies. x: an observed data point. : mean of the population. : standard deviation of the population. |
| 5 | - | For any bell-shaped distribution, 68% of the data will lie within 1 standard deviation of the mean, 95% of the data will lie within 2 standard deviations of the mean, and 99.7% of the data will lie within 3 standard deviations of the mean. This is called the 68-95-99.7% Rule for Bell-shaped Distributions. Needs to be at least three sentences. |
| 6 | A |  |
| 6 | B |  |
| 6 | C | ; this is Not Unusual. See question 1. |
| 6 | D | GRE score = 139.5, which rounds to 140. |
| 7 | A |  |
| 7 | B |  |
| 7 | C | This answer is easier to get by subtracting the answer to part (a) from 1. |
| 7 | D |  |
| 7 | E |  |
| 7 | F | quartile of the speeds of hydrogen = 2204.4 |
| 8 | A | Not normal |
| 8 | B | Not Normal |
| 8 | C | Normal |
| 8 | D | Normal |
| 8 | E | Not Normal |
| 8 | F | Normal |