**Breakout Session #6**

**March 2014**

**Numerical Statistics**

Questions 1-6 refer to the following set of data related to average number of minutes per day that children of age 5 spend with each parent, relative to the country in which the family lives.

|  |  |  |  |
| --- | --- | --- | --- |
| **Time spent with DAD** | | **Time spent with MOM** | |
| Country | Minutes per Day | Country | Minutes per Day |
| Belgium | 30 | Belgium | 250 |
| Canada | 40 | Canada | 240 |
| China | 42 | China | 230 |
| Finland | 50 | Finland | 245 |
| Germany | 38 | Germany | 235 |
| Belgium | 30 | Belgium | 255 |

1. Calculate the mean time spent with dad.

2. Calculate the mean time spent with mom.

3. Calculate the range for time spent with mom.

4. Calculate the range for time spent with dad.

5. Calculate the median time spent with mom.

6. Standard deviation is a measure of dispersion--how spread out the data is. Which set of times appears to have a greater standard deviation?

7. A population has a mean of 50 and a standard deviation of 2. Find the z-score for a raw score of 45.

8. A population has a mean of 40 and a standard deviation of 5. Find the raw score for a

z-score of 1.8.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Test | Bob's test  Score | Mean | Standard Deviation | Z-Score |
| English | 88 | 80 | 5 |  |
| Science | 94 | 90 | 8 |  |
| History | 80 | 60 | 16 |  |

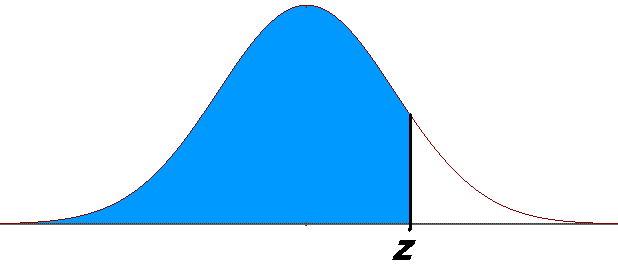
9. Consider the information given in the table above, regarding Bob's test results on his last 3 exams.

A. Complete the table by calculating Bob's z-score for each subject. Show your work below.

B. Relative to his classmates, on which exam did Bob perform best?

C. Using the portion of the z chart below, determine the percent of the students in Bob's science class who scored lower than he did.

D. Using the portion of the z chart that follows, determine the percentage of the students in Bob's English class who scored higher than he did.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Z** | **.00** | **0.01** | **0.02** | **0.03** | **0.04** | **0.05** |
| **0.0** | 0.5 | 0.504 | 0.508 | 0.512 | 0.516 | 0.5199 |
| **0.1** | 0.5398 | 0.5438 | 0.5478 | 0.5517 | 0.5557 | 0.5596 |
| **0.2** | 0.5793 | 0.5832 | 0.5871 | 0.591 | 0.5948 | 0.5987 |
| **0.3** | 0.6179 | 0.6217 | 0.6255 | 0.6293 | 0.6331 | 0.6368 |
| **0.4** | 0.6554 | 0.6591 | 0.6628 | 0.6664 | 0.67 | 0.6736 |
| **0.5** | 0.6915 | 0.695 | 0.6985 | 0.7019 | 0.7054 | 0.7088 |
| **0.6** | 0.7257 | 0.7291 | 0.7324 | 0.7357 | 0.7389 | 0.7422 |
| **0.7** | 0.758 | 0.7611 | 0.7642 | 0.7673 | 0.7704 | 0.7734 |
| **0.8** | 0.7881 | 0.791 | 0.7939 | 0.7967 | 0.7995 | 0.8023 |
| **0.9** | 0.8159 | 0.8186 | 0.8212 | 0.8238 | 0.8264 | 0.8289 |
| **1.0** | 0.8413 | 0.8438 | 0.8461 | 0.8485 | 0.8508 | 0.8531 |
| **1.1** | 0.8643 | 0.8665 | 0.8686 | 0.8708 | 0.8729 | 0.8749 |
| **1.2** | 0.8849 | 0.8869 | 0.8888 | 0.8907 | 0.8925 | 0.8944 |
| **1.3** | 0.9032 | 0.9049 | 0.9066 | 0.9082 | 0.9099 | 0.9115 |
| **1.4** | 0.9192 | 0.9207 | 0.9222 | 0.9236 | 0.9251 | 0.9265 |
| **1.5** | 0.9332 | 0.9345 | 0.9357 | 0.937 | 0.9382 | 0.9394 |
| **1.6** | 0.9452 | 0.9463 | 0.9474 | 0.9484 | 0.9495 | 0.9505 |