Procedure

After compiling our survey we chose a random sample of classrooms to distribute the survey to. We numbered all the possible classrooms that met our requirements of teaching only upper-classmen and then used a random number generator on a calculator in order to determine the classrooms we would survey. In all we surveyed 193 upper classman. After collecting all the surveys we divided them up into three groups: competitive athletes, people who exercise at least four times a week for at least a half an hour, and people that rarely exercise. In order to analyze all this raw data we decided to use a two proportion z test. In order to do this we looked at each group independently. First of all there were certain checks we needed to perform in order to make sure that the sample sizes for each groups would be large enough to give us accurate data. These checks were that n\_1 (p) ≥5, and that n\_1 (1-P) > 5, where n= the sample size. We then did the same checks with the other sample sizes, and they all worked out. We then tabulated the number of people in each group that answered yes to certain questions. For each question we divided the number of people that said yes by the total sample size for that group, which gave us one of the proportions known as p- one. The second proportion was found by doing the same thing with the next group. This proportion is p- two. To find p, we needed to pool, which means to simply add the numerator and denominator of each of the two previous proportions. With these proportions defined we could use the formula:

Z=(p1-p2)/ p(1-p)(1/n1)(1/n2)

After finding Z, we used the command normalcdf on the Ti-83 calculator to find the p- value which tells us the probability of getting the data we received. This also tells us if the difference in the data between the groups is significant because if the probability of the data occurring is above five percent, then the difference between groups could simply be due to chance.

We also used a Ti- 83 calculator to analyze the data. Instead of always using the formula, we used the tests option on the calculator and that way only had to enter in how many people said yes, and the sample size, and then the calculator did the work for us.

The raw data of people that answered yes to certain questions:

|  |  |  |  |
| --- | --- | --- | --- |
| Question Number | Athletes | Exercise | Non-Athletes |
| 11. | 14 | 25 | 24 |
| 12. | 29 | 36 | 27 |
| 13. | 39 | 39 | 30 |
| 15. | 46 | 42 | 45 |
| 16. | 52 | 52 | 45 |
| 17. | 63 | 59 | 54 |
| 18. | 63 | 47 | 29 |
| 19. | 42 | 45 | 32 |
| 20. | 7 | 18 | 12 |
| 21. | 2 | 8 | 11 |
| 23. | 5 | 5 | 9 |
| 24. | 3 | 5 | 8 |
| 25. | 4 | 12 | 17 |
| 27. | 42 | 42 | 23 |
| 28. | 16 | 24 | 18 |
| 29. | 26 | 15 | 13 |
| 30. | 33 | 31 | 28 |
| 31. | 33 | 28 | 23 |
| 32. | 41 | 38 | 46 |

Sample Sizes:

Athletes: 71

Exercise: 62

Non- Athletes: 60

Average GPA:

|  |  |  |
| --- | --- | --- |
| Athletes | Exercise | Non- Athletes |
| 3.52 | 3.44 | 3.22 |

Average number of AP classes:

|  |  |  |
| --- | --- | --- |
| Athletes | Exercise | Non- athletes |
| 1.77 | 1.967 | 1.1 |

Confidence level:

|  |  |  |
| --- | --- | --- |
| Athletes | Exercise | Non- Athletes |
| 2.41- somewhat | 2.38- somewhat | 2.3- somewhat |

Average hours spent on Homework:

|  |  |  |
| --- | --- | --- |
| Athletes | Exercise | Non- athletes |
| 1.97 | 2 | 1.99 |

Average hours of sleep:

|  |  |  |
| --- | --- | --- |
| Athletes | Exercise | Non- Athletes |
| 6.68 | 6.42 | 7.02 |

**Calculations**

a= Athletes e= Exercisers n= Non-athletic individuals

|  |  |  |  |
| --- | --- | --- | --- |
|  | A vs. E | A vs. N | E vs. N |
| 11. | A=.197  E=.403  ^p=.29  z=-2.6  p=.009 | A=.197  N=.4  ^p=.29  z=-2.55  p=.011 | E=.403  N=.4  ^p=.4  z=.036  p=.0475 |
| 12. | A=.41  E=.58  ^p=.489  z=-1.98  p=.0475 | A=.41  N=.45  ^p=.489  z=-.48  p=.63 | E=.45  N=.58  ^p=.52  z=1.44  p=.15 |
| 13. | A=.54  E=.63  ^p=.59  z=-.93  p=.35 | A=.54  N=.5  ^p=.53  z=.56  p=.57 | E=.63  N=.5  ^p=.57  z=1.44  p=.15 |
| 15. | A=.64  E=.68  ^p=.66  z=-.35  p=.72 | A=.64  N=.75  ^p=.69  z=-1.26  p=.21 | E=.68  N=.75  ^p=.71  z=-.89  p=.38 |
| 16. | A=.73  E=.84  ^p=.78  z=-1.48  p=.14 | A=.73  N=.75  ^p=.74  z=-.23  p=.82 | E=.84  N=.75  ^p=.795  z=1.21  p=.22 |
| 17. | A=.89  E=.95  ^p=.92  z=-1.34  p=.18 | A=.89  N=.9  ^p=-.23  z=.89  p=.82 | E=.95  N=.9  ^p=.93  z=1.1  p=.28 |
| 18. | A=.89  E=.76  ^p=.83  z=1.97  p=.049 | A=.89  N=.48  ^p=.7  z=5.04  p=.0000004 | E=.76  N=.48  ^p=.62  z=3.13  p=.002 |
| 19. | A=.59  E=.73  ^p=.65  z=-1.65  p=.104 | A=.59  N=.53  ^p=.56  z=.67  p=.5 | E=.73  N=.53  ^p=.63  z=2.2  p=.028 |
| 20. | A=.099  E=.29  ^p=.188  z=-2.82  p=.005 | A=.099  N=.2  ^p=.15  z=-1.64  p=.1 | E=.29  N=.2  ^p=.25  z=1.16  p=.25 |
| 21. | A=.028  E=.13  ^p=.08  z=-2.2  p=.028 | A=.028  N=.18  ^p=.099  z=-2.95  p=.003 | E=.13  N=.18  ^p=.156  z=-.83  p=.41 |
| 23. | A=.07  E=.08  ^p=.075  z=-.22  p=.82 | A=.07  N=.15  ^p=.11  z=-1.47  p=.14 | E=.08  N=.15  ^p=.115  z=-1.20  p=.23 |
| 24. | A=.04  E=.08  ^p=.06  z=-.93  p=.35 | A=.04  N=.13  ^p=.08  z=-1.87  p=.06 | E=.08  N=.13  ^p=.11  z=-.94  p=.35 |
| 25. | A=.06  E=.19  ^p=.12  z=-2.43  p=.015 | A=.06  N=.16  ^p=.16  z=-3.5  p=.0004 | E=.19  N=.16  ^p=.24  z=-1.6  p=.24 |
| 27. | A=.59  E=.68  ^p=.63  z=-1.02  p=.31 | A=.59  N=.38  ^p=.5  z=2.37  p=.017 | E=.68  N=.38  ^p=.53  z=3.25  p=.001 |
| 28. | A=.23  E=.39  ^p=.3  z=-2.03  p=.04 | A=.23  N=.3  ^p=.26  z=-.97  p=.33 | E=.39  N=.3  ^p=.34  z=1.01  p=.31 |
| 29. | A=.37  E=.24  ^p=.31  z=1.55  p=.12 | A=.37  N=.22  ^p=.3  z=1.86  p=.06 | E=.24  N=.22  ^p=.23  z=.33  p=.74 |
| 30. | A=.46  E=.5  ^p=.48  z=-.41  p=.69 | A=.46  N=.47  ^p=.47  z=-.02  p=.98 | E=.45  N=.47  ^p=.46  z=-.167  p=.87 |
| 31. | A=.46  E=.45  ^p=.46  z=.15  p=.88 | A=.46  N=.38  ^p=.43  z=.94  p=.35 | E=.45  N=.38  ^p=.42  z=.76  p=.44 |
| 32. | A=.58  E=.61  ^p=.59  z=-.42  p=.68 | A=.58  N=.77  ^p=.66  z=-2.28  p=.02 | E=.61  N=.77  ^p=.69  z=-1.82  p=.06 |