

STANDARD DEVIATION INVESTIGATION DRUG TESTING ATHLETES



In major sporting events, performance-enhancing drugs such as testosterone are sometimes used by cheating athletes. The table below shows the blood testosterone levels (in ng/dL) for twenty young male cyclists in a random blood test.

For this age group, the normal testosterone levels are between 500 to 700 ng/dL. As men age, their testosterone levels can decrease to a minimum level of 200 ng/dL.

You are to use a scientific calculator to calculate the mean and the standard deviation (sample) of the data.

Athletes with levels higher than 2 standard deviation above the mean are recalled for further testing.

Predict which athletes may be recalled for further testing.

ATHLETE NUMBER	BLOOD TESTOSTERONE LEVEL (ng/dL)	ATHLETE NUMBER	BLOOD TESTOSTERONE LEVEL (ng/dL)
1	550	11	621
2	428	12	640
3	687	13	840
4	563	14	790
5	346	15	589
6	561	16	831
7	547	17	900
8	604	18	652
9	633	19	450
10	780	20	390
MEAN			
STANDARD DEVIATION			

What conclusions can you deduce from your data analysis?

Are the athletes to be recalled the ones you predicted?

Are they really drug cheats or could there be problems with the testing procedure? Explain.