

STUDENT WORK SHEET

Statistics: More Than Numbers

Eight seconds are left in the basketball game and your team is down by one. You have the ball. Who do you pass to?

Understanding statistical probability can help you determine the likelihood of something happening, and prepare you to make smart decisions. Back to the game:

- The freshmen have made 40 out of 100 shots this season (40%).
- The seniors have made 160 out of 200 shots this season (80%).

To understand this another way, a senior is two times more likely to make the shot than a freshman because the seniors' shooting percentage is twice as high. This is calculated by dividing the seniors' 80% by the freshmen's 40%, equaling 2. In a bar graph, this means the seniors' bar is two times the size of the freshmen's (see *Figure 1*). Could a freshman make the shot and a senior miss? Of course! These are probabilities, not certainties, but the seniors' *chance* of scoring is still twice as high.

The same process can be applied to understanding drug statistics, which have more serious consequences

than a game outcome. To obtain statistics, scientists study reliable data to find patterns and probabilities. For example, statistics show that teens who use drugs are two times more likely to behave violently—a serious outcome (see *Figure 2*). This means that the act of using drugs multiplies the average teen's likelihood of violence not once, but *two whole times*.

Figure 1

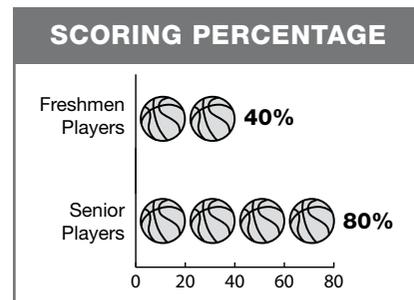
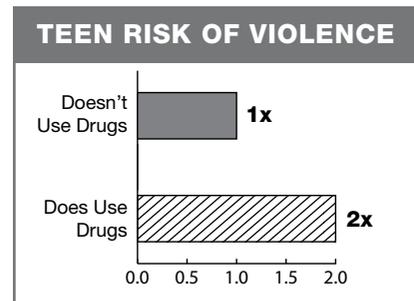


Figure 2

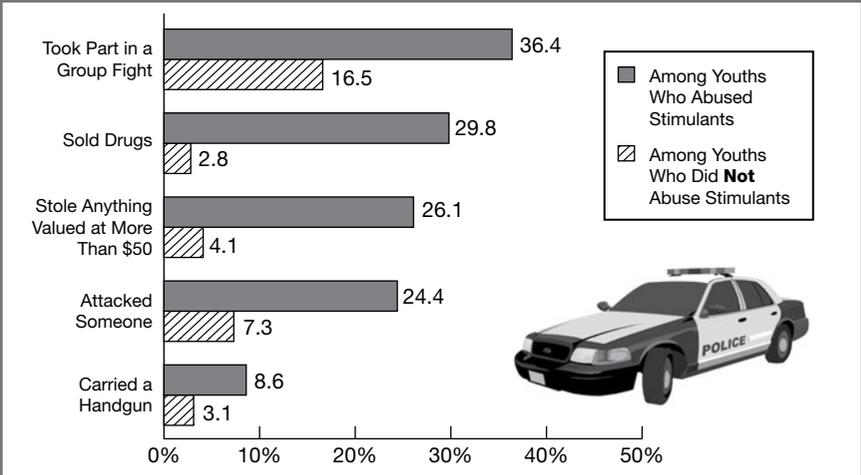


Violence graph: Substance Abuse and Mental Health Services Administration (SAMHSA), 2006; <http://oas.samhsa.gov/2k6/youthViolence/youthViolence.htm>. Stimulants graph: SAMHSA, 2008; <http://oas.samhsa.gov/2k8/stimulants/depression.htm>.

Think It Through

The graph below compares the probability of certain behaviors among stimulant abusers and non-abusers. Stimulants (cocaine, methamphetamine, and “ecstasy”) are a class of drugs that increase energy and feelings of well-being but they also cause increased blood pressure and irregular heartbeat. Study the graph, and then answer the questions on separate paper.

PERCENTAGES OF YOUTHS AGED 12–17 PARTICIPATING IN DELINQUENT BEHAVIORS, BY NONMEDICAL STIMULANT USE



1. How much more likely are stimulant abusers than non-abusers to participate in each of the behaviors on the graph? Round your results to the nearest tenth.

Example: Using stimulants makes a teen 2.8 times more likely to carry a handgun. Calculation: $8.6\% \text{ abusers} \div 3.1\% \text{ non-abusers} = 2.8$.

2. Why do you think drugs like stimulants increase a teen's likelihood of violent behavior and illegal activities?
3. How can examining probability help a person make decisions?