Students who score in the top 10% of an achievement test qualify for a scholarship.

The test had a mean of 86 and a standard deviation of 7.

1. If you had a score of 88 you did better than what % of those who took the test? $z = \frac{88-86}{7} = .29 \rightarrow 61.41\%$

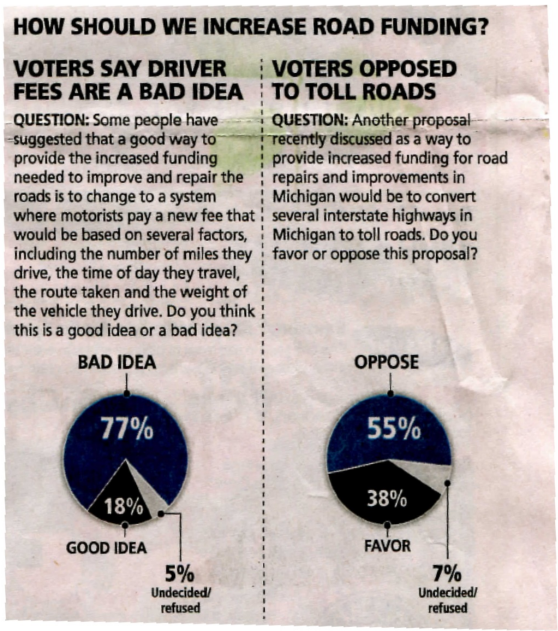
2. If you had a score of 91 what % of those who took the test did better than you? $z = \frac{91-86}{7} = .71$ $100 - 76.11 = 23.89\%$

3. You need to get at least what score to qualify for the scholarship? $1.28 = \frac{X-86}{7}$ 94.96%

Sec 12-5: Working With Samples

The governor wanted to know what percent of the people in Michigan were in favor of raising driver fees in order to produce enough money to fix the roads. How would he go about finding this out.

It's too costly and time consuming to try and actually ask everybody. A survey would then by used to ask a SAMPLE of all the people.



Population:

The whole group.

Sample:

Part of the population

Random Sample:

All members of the population are equally likely to be chosen.

Results of the driver fee survey:

In favor of raising fees = 108

Against raising fees = 462

What percent of people favor raising driver feesto fix the roads?

TOTAL = 570

$\frac{108}{570} \times 100 = 18.94\%$

This is called the Sample Proportion

Sample Proportion:

The ratio of: $\frac{\text{\# times an event occurs}}{\text{Sample Size}}$

Sample Proportion:

Example:
In a sample of 500 TV viewers, 159 watch the 11:00pm news. Find the sample proportion.

$\frac{159}{500} = 31.8\%$

The greater the sample size the __less__ variation in the data can be expected.

Sample	Score	Stand Dev
A	4.4	1.4
B	4.6	0.6
C	4.6	1.2

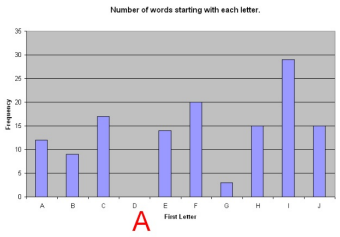
Which sample was most likely the greatest in size?

B because there is less variation (smaller std dev)

Which sample was most likely the smallest?

A

because it has the most variation (greater std dev)



A

B

The two charts show the number of words found in two a sample passage from two different books. Which sample was most likely the largest?

B because the graph shows less variation.

According to a CNN/Time poll, among likely voters, Murkowski and Miller each take 37 percent while Democrat Scott McAdams is pulling 23 percent with a 3.5 percent margin of error.

$\pm 3.5\%$

$37 \pm 3.5\% \rightarrow$ 33.5% TO 40.5%

West leads Klein 47 percent to 44 percent among likely voters, with a 3.46 percent margin of error.

West 47%
±3.46
43.54 to 50.46

Klein 44%
±3.46
40.54 to 47.46%

Because of the margin of error it's not clear who will win.

The same poll a month ago showed the pair in a statistical dead heat, with Berg edging Pomeroy by three points, with a 4.5 percent margin of error

Margin of Error:

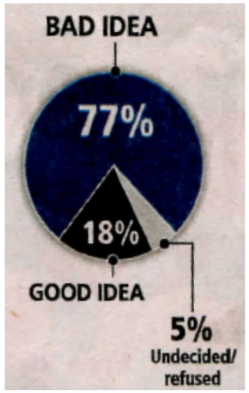
A range of values that most likely contains the actual population proportion.

Usually given as ±%.

SOURCE: Exclusive poll done for the Free Press/WXYZ-TV (Channel 7) and our statewide media polling partners. The survey was done May 17-20 by Lansing-based EPIC-MRA. It was a 600-voter sample, using 20% cell phones, with an error margin of +/- 4 percentage points. About 20% of respondents were union members and 58% of respondents were at

A poll leading up the election shows that Jones is favored by 43% of the people. The poll has a margin of error of ±4%. What is the range of voters that can be expected to vote for Jones?

39% to 47%



What interval most likely contains the actual percent of voters who think increasing driver fees is a Bad Idea?

73% to 81%

error margin of +/- 4 percentage

Margin of Error Formula:

$\pm \frac{1}{\sqrt{n}}$ n = sample size

Convert this to a percent by x100.

$\pm \frac{1}{\sqrt{600}} \times 100 = 4.08$

SOURCE: Exclusive poll done for the Free Press/WXYZ-TV (Channel 7) and our statewide media polling partners. The survey was done May 17-20 by Lansing-based EPIC-MRA. It was a 600-voter sample, using 20% cell phones, with an error margin of +/- 4 percentage points. About 20% of respondents were union members and 58% of respondents were at