

Honors Statistics

3.2

1. Which of the following values cannot be probabilities?

0 1 -1 2 .00123 3/5 5/3 $\sqrt{2}$

2. Identifying Probability Values

- What is the probability of an event that is certain to occur?
- What is the probability of an impossible event?
- A sample space consists of 10 separate events that are equally likely. What is the probability of each?
- On a true/false test, what is the probability of answering a question correctly if you make a random guess?
- On a multiple choice test with five possible answers for each question, what is the probability of answering a question correctly if you make a random guess?

3. List the possible combinations of girls and boys when a couple has 3 children. Find the probability of each event.

- Among three children, there is exactly one girl.
- Among three children, there are exactly two girls.
- Among three children, all are girls.

4. Baseball player Barry Bonds broke a major record when he hit 73 home runs in the 2001 season. During that season, he was at bat 476 times. If one of those "at bats" is randomly selected, find the probability that it is one of the times he hit a home run. Is the result very different from the probability of 0.0715 that results from his 567 career home runs in 7932 "at bats"?

5. In one Gallup poll, 1038 adults were asked about the effects of secondhand smoke and 52 of them indicated that the effects are "not at all harmful".

- If you randomly select one of the surveyed adults, what is the probability of getting someone who feels that secondhand smoke is not at all harmful?
- Is it "unusual" for someone to believe that secondhand smoke is not at all harmful?

6. In a recent year, 2624 American Airlines passengers were involuntary denied boarding their flights, and 168,262 other passengers volunteered for bumping in exchange for cash or vouchers.

- Estimate the probability that a randomly selected bumped American Airlines passenger is one who was involuntarily bumped.
- Are involuntary bumpings "unusual"?

7. Probability of a Birthday

- If a person is randomly selected, find the probability that his or her birthday is October 18, which is National Statistics Day in Japan. Ignore leap years.
- If a person is randomly selected, find the probability that his or her birthday is in October. Ignore leap years.
- If a person is randomly selected, find the probability that he or she was born on a day of the week that ends with the letter y.