

5.1 Class-work

4. **Statistical Literacy** What is the law of large numbers? If you were using the relative frequency of an event to estimate the probability of the event, would it be better to use 100 trials or 500 trials? Explain.
11. **Critical Thinking** Consider a family with 3 children. Assume the probability that one child is a boy is 0.5 and the probability that one child is a girl is also 0.5, and that the events “boy” and “girl” are independent.
- List the equally likely events for the gender of the 3 children, from oldest to youngest.
 - What is the probability that all 3 children are male? Notice that the complement of the event “all three children are male” is “at least one of the children is female.” Use this information to compute the probability that at least one child is female.
14. **Critical Thinking**
- Explain why -0.41 cannot be the probability of some event.
 - Explain why 1.21 cannot be the probability of some event.
 - Explain why 120% cannot be the probability of some event.
 - Can the number 0.56 be the probability of an event? Explain.
21. **Expand Your Knowledge: Odds in Favor** Sometimes probability statements are expressed in terms of odds.

The *odds in favor* of an event A are the ratio $\frac{P(A)}{P(\text{not } A)} = \frac{P(A)}{P(A^c)}$.

For instance, if $P(A) = 0.60$, then $P(A^c) = 0.40$ and the odds in favor of A are

$$\frac{0.60}{0.40} = \frac{6}{4} = \frac{3}{2}, \text{ written as 3 to 2 or 3:2}$$

- (c) A sports announcer says that the odds a basketball player will make a free throw shot are 3 to 5. What is the probability the player will make the shot?