# Math 110 Supplemental Instruction Worksheet 3

1. The probability that a randomly selected student on campus went to Starbucks today is $\frac{7}{25}$. What are the odds against a student going to Starbucks today?

odds against $P(E'):P(E)$.

$P(E) = \frac{7}{25}$

$P(E') = 1 - \frac{7}{25} = \frac{18}{25}$

$\frac{18}{25} : \frac{7}{25} \Rightarrow 18:7$

2. A bucket contains cards that have both a shape and a number on them. In the bucket, there is:

$$2\bigcirc, 4\bigcirc, 5\bigcirc, 2\triangle, 3\triangle, 5\triangle, 1\square, 3\square, 4\square \text{ and } 5\square$$

for a total of 10 cards. A card is chosen. What is the probability that card has:

(a) an even or a $\square$

$P(\text{even}) + P(\square) - P(\text{even } \square)$

$= \frac{4}{10} + \frac{4}{10} - \frac{1}{10} = \frac{7}{10}$

(b) a number bigger than 3 or a $\triangle$

$P(\text{bigger than 3}) + P(\triangle) - P(\triangle \text{ bigger than 3})$

$= \frac{5}{10} + \frac{3}{10} - \frac{1}{10} = \frac{7}{10}$

3. In my office, I am listening to a Disney radio station. The odds in favor that the radio station plays a song from the Lion King next are 3: 17. What is the probability that a song from the Lion King plays next?

$P(E) = \frac{3}{3+17} = \frac{3}{20}$ or $.15$

4. A coin is flipped 8 times. What is the probability that at least one tails was obtained? (Hint: The sample space has 256 outcomes in it.)

$$P(\text{at least on tails}) = 1 - p(\text{no tails})$$
$$= 1 - p(\text{all heads})$$
$$= 1 - \frac{1}{256} = \frac{255}{256}$$

5. A survey of 100 people about their music expenditures gave the following information: 38 bought rock music, 20 were teenagers who bought rock music, and 26 were teenagers. Using a Venn diagram and/or the union rule, find the probabilities that a person is:

  (a) a teenager who buys non-rock music.

$$P(\text{teenager non rock}) = \frac{6}{100}$$
$$= \frac{3}{50}$$
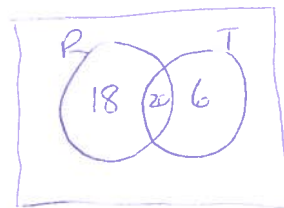


  (b) someone who buys rock music, or is a teenager.

$$p(\text{rock or teen}) = \frac{18 + 20 + 6}{100} = \frac{44}{100}$$
$$= \frac{11}{25}$$

6. Shade a Venn Diagram reprsenting the set $A' \cup (B \cap C')$.