MAT 135, Discussion Questions 3.04

1. What conditions must all probabilities satisfy?

$P \geq 0$ & $P \leq 1$ i.e. $0 \leq P \leq 1$

$\Sigma p_i = 1$

P_i in sample space

2. If the probability of an event is 2/3, what is the probability of its complement?

$1 - 2/3 = 1/3$

3. If the probability of an event is 20%, what is the probability this event will not occur?

$100\% - 20\% = 80\%$

4. What does it mean for two events to be mutually exclusive?

they cannot both occur at the same time

5. Give an example of two pairs of events that are mutually exclusive.

H, T on same coin

4, 6 on same die

answers will vary

6. Here is the distribution of ethnicity for students taking German at a particular school.

Ethnicity	African American	Caucasian	Latino	Native American	Asian
Probability	0.42	0.43		0.01	0.01

What is the probability that a student taking German is Latino?

add up subtract from 1

.13

7. A department store sells shirts in three sizes and in three patterns (small, medium and large; plaid, print and stripes). The table below gives the number of shirts of each type sold on a particular, typical day.

Size	**Plaid**	**Print**	**Stripes**
Small	3	2	3
Medium	10	5	7
Large	4	2	8

What is the probability of being Plaid or Medium?

Plaid $\frac{17}{44}$

Medium $\frac{22}{44}$

both $\frac{10}{44}$

$\frac{17}{44} + \frac{22}{44} - \frac{10}{44} = \frac{29}{44}$

8. How can we use Venn diagrams to help us understand probability relationships? There are examples in the book, but you can also look here: http://www.mathsisfun.com/sets/venn-diagrams.html.

allows up to visualize relationships between events. Complements, mutually exclusive, intersections & unions of sets.