PHE 431: Public Health Biostatistics
Probability & Conditional Probability

Problem 1: Webster Aquatic Center offers various levels of swimming lessons year-round. The March 2005 Monday and Wednesday evening lessons included instructions from Water Babies through Adults. The number in each level is given in the table that follows.

Swim Lesson Levels	No. of Participants
Water Babies	15
Tiny Tots	12
Tadpoles	12
Level 2	15
Level 3	10
Level 4	6
Level 5	2
Level 6	1
Adults	4
Total	77

If one participant is selected at random, find the probability of the following:
a. The participant is in Tiny Tots.

b. The participant is in the Adults lesson.

c. The participant is in a Level 2 to Level 6 lesson.

Problem 2: The U.S. Department of Transportation annually reports the number of consumer complaints against the top U.S. airlines by category. Following are the figures for 2002. In the table below you have 10 categories of complaints.

Read the table and answer the 3 questions that follow.

Complaint Category	# of complaints	Complaint Category	# of complaints
1) Flight problems	2031	6) Oversales	454
2) Customer service	1715	7) Fares	523
3) Baggage	1421	8) Disability	477
4)Reservations/ticketing/boarding	1159	9) Advertising	68
5) Refunds	1106	10) Other	322

If one of these complaints is selected at random for follow-up evaluation, what is the probability that the complaint is:

a. About flight problems?

b. About customer services or baggage?

c. Not about baggage?

Problem 3: One student is selected at random from a group of 200, which is known to consist of 140 full-time (80 female and 60 male) students and 60 part-time (40 female and 20 male) students. Event A is "the student selected is full-time," and event C is "the student selected is female."

1) What is the probability of event A: P(A)?

2) What is the probability of event C: P(C)?

3) What is the probability the student selected is full-time given that the student is female: P(A C)?

4) What is the probability the student selected is female given that the student is full-time: (C A)?

5) What is the probability of event C not occurring: P(C)?