KEY Epidemiologic Principles Midterm Exam March 15, 2005

1.   *Reliability* [3 pts]
        a.   No
        b.   Yes
        c.   Moderate

2.   *Incidence and prevalence* [6 pts]
        a.   prevalence: numerator = 10   denominator = 1000
        b.   incidence proportion: numerator = 20   denominator = 990
        c.   incidence rate: numerator = 20   denominator =1980 or 1960

3.   *Sensitivity & specificity* [6 pts]
        a.   the total number with disease = 100
        b.   the number of true positives = 90
        c.   the number of true negatives = 95904
        d.   the number of false negatives = 10
        e.   the number of false positives = 3996
        f.   the total for those that test positive = 4086

2-by-2 table

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        D+      D-
T+      90      3996      4086
T-      10      95904     95914
        100     99900     100000
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4.   *Vital statistics* [4 pts]
        a.   850
        b.   200
        c.   10
        d.   No
        e.   The birth rate is greater than the death rate, so this is unbalanced. (All other things being equal, the population will grow over time and decrease, if life expectancy were constant, average age will decrease over time.)

5.   *Age-adjustment* [8 pts]
        a.   Population B has the higher crude rate; about 5 times higher (991 vs. 203; *all rates in this problem reported per 100,000*).
        b.   In the younger age group, population A has the higher rate; exactly twice as high (200 vs. 100).
        c.   In the older age group, population B has the higher rate; twice as high (500 vs. 1000).
        d.   This problem was discarded due to a typographical error in the table.

6.   *Study Design 1* [7]
        a.   Observational
        b.   The investigator had no influence over exposure status (age, sex, smoking habits).
        c.   No
        d.   The unit of observation is the individual person.
        e.   Cross-sectional
        f.   The disease (response variable) was measured at a point in time.
        g.   Cross-sectional
7.   *Study Design 2*
        a.   Observational
        b.   No
        c.   Longitudinal
        d.   No
        e.   Cohort [Choices: Trial, Cohort, Case-Control, Cross-sectional, Ecological]