ECO220Y1Y, Test #2, Prof. Murdock SOLUTIONS

(1) (a) First blank is <u>14.2</u> [OK to round to 14]: $P(L2 \mid E) = \frac{P(L2 \,\&\, E)}{P(E)} = \frac{0.1204}{0.8473} = 0.142$

Second blank is <u>64.1</u> [OK to round to 64]: $P(E \mid L1) = \frac{P(L1 \,\&\, E)}{P(L1)} = \frac{0.0371}{0.0579} = 0.641$

(b) $P(L5 \; or \; U) = P(L5) + P(U) - P(L5 \,\&\, U) = 0.3986 + 0.0384 - 0.0132 = 0.4238$ [Note: "or" can also be written as ∪ and "&" can also be written as "and" or ∩.]

(2) (a) $P(A \mid T) = 0.055$

$P(R \mid A) = 0.100$

(b) Both statements are decidedly false. Column (1) shows that typical applicants, regardless of their race, have a small chance – between 5 and 8 percent – of being admitted to Harvard, but this does NOT mean that they are a small fraction of admitted students. The table is showing chances of admission conditional on various student characteristics – P(A | characteristics) – and NOT the fraction of admitted students with certain characteristics – P(Characteristics | A). Similarly, Column (2) shows the chances of recruited athletes of various races being admitted, and NOT the fraction of admitted recruited athletes of various races. If Statement B were about what this table showed, then the numbers in