MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2014
ROUND 5 ALG 1: RATIO, PROPORTION OR VARIATION

ANSWERS

A) _____

B) (_____ , _____)

C) _____

A) For some <u>positive</u> integer values of n, the value of $\dfrac{174-37n}{4n-3}$ is <u>not</u> an integer. Compute the <u>minimum</u> value of n for which this is the case.

B) F varies jointly as a and the sum of b and c, and inversely as the square of d. The proportionality constant is k.
If $F = 96$ when $(a,b,c,d) = (80,\, 5,\, 7,\, 4)$ and
$F = 50$ when $d = 12$ and $a:b:c = 1:2:3$, compute the ordered pair (k,c).

C) I have 56 hits in 172 at-bats for a rounded average of 0.326 (hits per at-bats). If I have at least 400 at-bats this season, what is the <u>minimum</u> number of additional hits I must get to <u>exceed</u> an average of 0.400? A Hall of Fame season indeed!