MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 3 - DECEMBER 2008
ROUND 7 TEAM QUESTIONS – continued

E) In the game of baseball, a *hit* (*H*) falls into one of the following four categories:
1*B* (singles), 2*B* (doubles), 3*B* (triples) and *HR* (homeruns)

The following abbreviations are used in the formula for a player's slugging percentage:
AB (at bats), *SAC* (sacrifices), *BB* (base-on-balls), *HBP* (hit-by-pitch).

(Additional knowledge of the game is **not** essential.)

Given: $AB = 120$, $H = 35$, $SAC = BB + HBP = 5$ and $2B : 3B : HR = 3 : 1 : 2$

How many singles (1*B*) has a player hit, if this player's slugging percentage,
$\left(\dfrac{1B + 2(2B) + 3(3B) + 4(HR)}{AB - (SAC + BB + HBP)} \right)$ is 0.618 (rounded to 3 decimal places)?

F) In hexagon *ABCDEF*, $AB = CD = EF = 4$, $BC = DE = FA = 3$,
$m\angle A = m\angle C = m\angle E = 90°$, and $m\angle B = m\angle D = m\angle F = 150°$
Compute $AC^2 - AD^2$.