

MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 2 - NOVEMBER 2016
ROUND 2 ALGEBRA 1: ANYTHING

ANSWERS

A) (_____ , _____)

B) _____

C) _____

- A) Richard and Anne were the only candidates running for President of the Chemistry Club. There were no write-in votes for other candidates, so all of the votes cast were for either Richard or Anne.
If 7 of the votes that went to Anne had gone to Richard instead, the candidates would have tied.
If 5 of the votes Richard received had gone to Anne, she would have had 7 times as many votes as Richard.
How many votes did each candidate receive?
Express your answer as an ordered pair (Anne, Richard).

- B) Given: $x \diamond y = x^2 + y^2 + xy$
If $2 \diamond x = 12$, compute all possible values of $3 \diamond x$.

- C) The force F exerted between two bodies varies inversely as the square of the distance (d) between the two bodies and jointly as the masses of the two bodies (m_1 and m_2).
 $F = 1200$, when $(m_1, m_2, d) = (5, 20, 8)$.
If the distance between the masses remains unchanged, but each mass is increased by n , the resulting force F is 2208. Compute n .