

Name _____

PHY2049C, Practice Quiz 1

A- Read all the quiz once, or twice, before beginning to write. Make sure to comprehend all questions and start with those you feel most confident.

B – Be clear and concise. There are no extra points for being verbose or writing extra.

C –Only use the white pages that I will provide. You have 50 minutes to answer the quiz.

Problem 1

A basket contains 75 brown eggs and some white eggs. Alice discovers that 15% of the total eggs are bad. From the bad eggs, $2/3$ are white, and the 6 left are brown. (a) how many total eggs are there on the basket? (b) how many eggs are not bad?

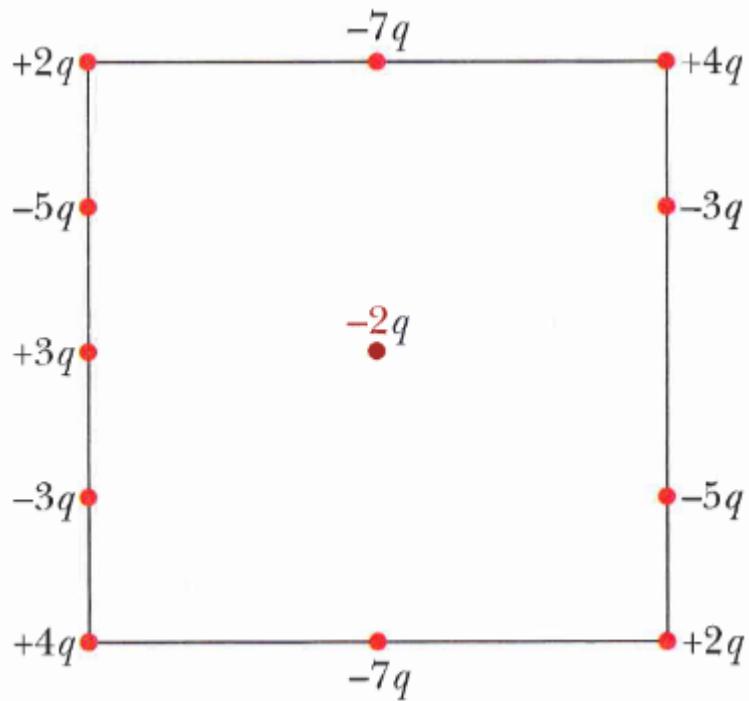
Jimmy had 800 B/. more than Dayana. Jimmy gave $1/4$ of his money to Dayana, and the proportion between Jimmy's and Dayana's money is 5:7. (c) How much money did Jimmy gave to Dayana?

Problem 2

A line of charge with charge density $\lambda=0.5 \text{ mC/m}$ forms a quarter of a circle with radius $R=1\text{cm}$. If I place a point charge of $Q = 1.2 \text{ mC}$ at the center, what is the force?

Problem 3 (From Halliday, Resnik, Walker)

In the figure below, a central particle of charge $-2q$ is surrounded by a square array of charged particles, separated by either distance d or $d/2$ along the perimeter of the square. What are the magnitude and direction of the net electrostatic force on the central particle due to the other particles? (Hint: Consideration of symmetry can greatly reduce the amount of work required here.)



Problem 4 (From Halliday, Resnik, Walker)

The figure below shows four arrangements. Rank the arrangements according to the net electrostatic force on the particle with charge $+Q$, greatest first

