

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.**

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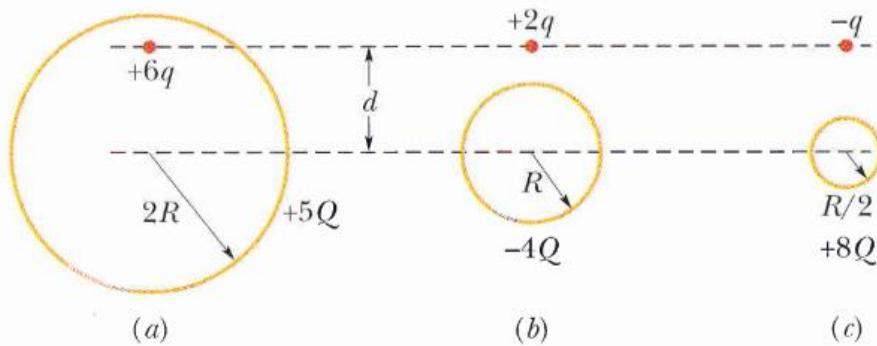
#### Problem 1

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?

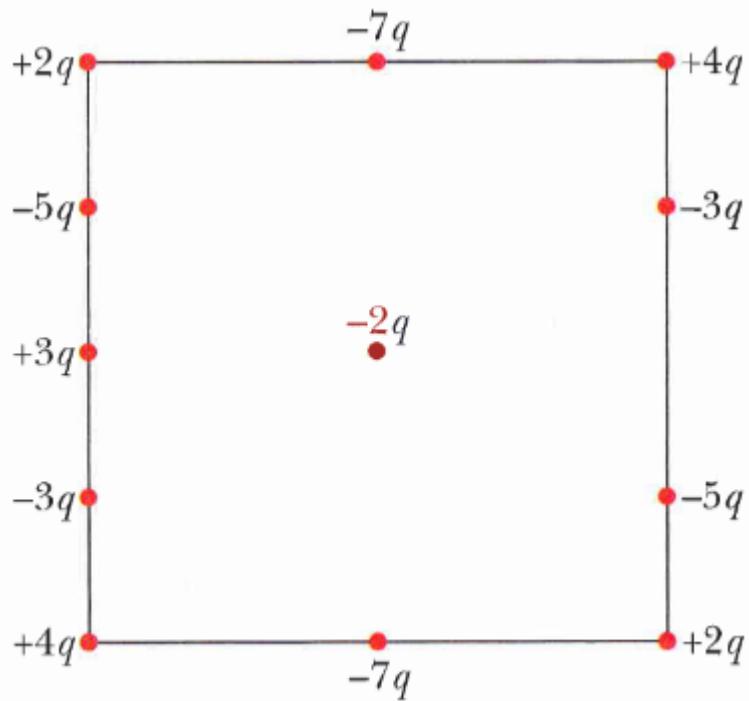
#### Problem 2 (From Halliday, Resnik, Walker)

The figure below shows three situations involving a charged particle and a uniformly charged spherical shell. The charges are given, and the radii of the shells are indicated. Rank the situations according to the magnitude of the force on the particle due to the presence of the shell, greatest first.



#### 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

