

Name _____

PHY2049C, Practice Quiz 2

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.

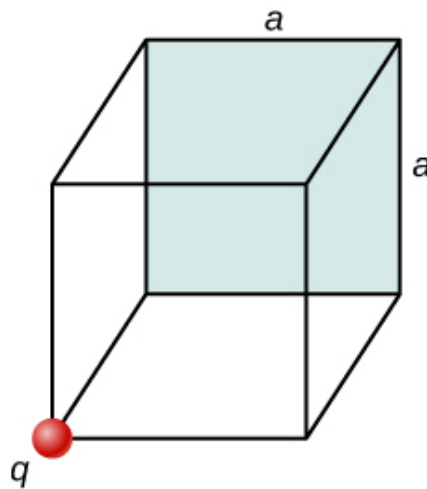
C –Only use the white pages that I will provide. You have 50 minutes to answer the quiz.

Problem 1

Hector has a total of 30 red and blue balls in his bowling court. Each red ball weights 8 lb, and each blue ball weights 9 lb. If the total weight for all blue balls is 49 lb more than the total weigh for all red balls, how many red balls are there?

Problem 2 (OpenStax)

A charge q is placed at one of the corners of a cube of side a , as shown below. Find the magnitude of the electric flux through the shaded face due to q . Assume $q > 0$.



Problem 3 (OpenStax)

Charge is distributed uniformly with a density ρ throughout an infinitely long non-conducting cylindrical volume of radius R . Show that the field of this charge distribution is directed radially with respect to the cylinder and that

$$E = \frac{\rho r}{2\epsilon_0} \quad (r \leq R);$$

$$E = \frac{\rho R^2}{2\epsilon_0 r} \quad (r \geq R).$$