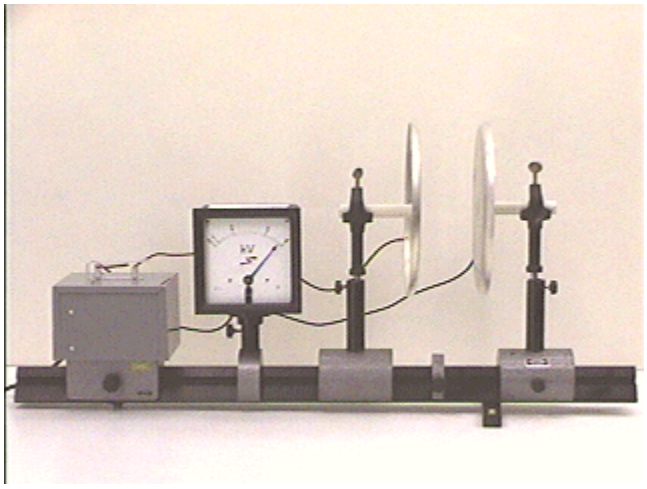
Answer #125

The answer is (a): the voltage will become greater, as seen in an mpeg video by clicking your mouse on the photograph below.



The relationship between the charge *Q*, capacitance C, and voltage V across a capacitor is:

$$Q = C\ V,$$

and the capacitance is inversely proportional to the plate spacing d:

$$C = 4\ \text{pi}\ e_0/d,$$

where e_0 is the electrical permittivity, here assumed to be approximately that of a vacuum, but constant as the plates are pulled apart.

When the plates are pulled apart, the charge remains the same but the capacitance decreases, so the voltage across the plates increases, as seen in the video.

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For questions and comments regarding the *Question of the Week* contact
Dr. Richard E. Berg by e-mail or using phone number or regular mail address

given on the Lecture-Demonstration Home Page.