

Lesson Title:	Charges and Fields PhET
AP Objective(s):	Electric field and electric potential (including point charges) Students should understand the concept of electric field, so they can: (5) Interpret an electric field diagram.

AGENDA	KEY POINTS
1. PhET Simulation 2. Exit Check-in	<ul style="list-style-type: none"> • <i>The electric field is said to be present anywhere we can measure an electromagnetic force on a positive test charge.</i> • <i>A field map shows the relative magnitude and direction of the field in a region of space as “continuous lines of force.”</i> • <i>Field lines start on positive charge and always end on negative charge (starting and ending places are not always visible in your drawing).</i> • <i>Field lines never cross.</i> • <i>The field decreases rapidly with distance (inverse-squared dependency). More field lines in an area indicate a stronger field.</i> • <i>The field vectors are everywhere tangent to the field lines.</i> • <i>A positive test charge that is free to move will follow a path along the field lines.</i>

Time	Learning Activity
45	Using the PhET “Charges and Fields” sim, students will practice drawing field lines surrounding point charges. Part 1 – Field around one charge Part 2 – Field around two charges Part 3 – Field around multiple charges Part 4 – Field around charge distributions Guiding Questions 1. How is the number of lines related to the amount of charge? 2. How does the proximity of the lines relate to the charges present? 3. What are some of the limitations of using a computer model? 4. What would the field lines look like if a charge was placed in a conductor?
10	Students will take an exit check in.