

A-ii. The effect of a test object on a field (black puck in EFH and compass needle in M&E).

The test object is the black puck in EFH. The test object is the north end of the compass needle in M&E.

Suggestion for EFH: observe the field with only the black puck in view (no red or blue charges).

4. Write a hypothesis about how the field will change when the test object changes position or strength.

5. Use both simulations to investigate how the field changes due to the presence of the test object.

Which simulation and what did you do?	Effect on Field
(M&E - bar magnet) Move compass around screen and observe the field arrows.	

6. Conclusion: Use your evidence to verify or change your hypothesis as your conclusion. Explain your reasoning.

B. Drawing field diagrams

7. Use both simulations to draw field lines around the charges and magnets in each box below.

8. Observe your field line drawings. Write lists of rules that you could use to tell someone how to draw field lines around charges and magnets.

Charges	
Magnets	

C. Test your understanding of the relationship between forces and fields.

9. Draw one test object in each box of the table in step 7. Label each test object appropriately: charges with + or -, and each end of a compass with N or S.
10. In a different color than the fields, draw a force vector on each test object to show the direction of the force on the object due to the field.

D. Extend your understanding of fields to the gravitational field.

11. Compare and contrast gravity with electric and magnetic forces. *Use the simulation Gravity and Orbits if you need help (shows only forces, not fields).*

Similarities

Differences
