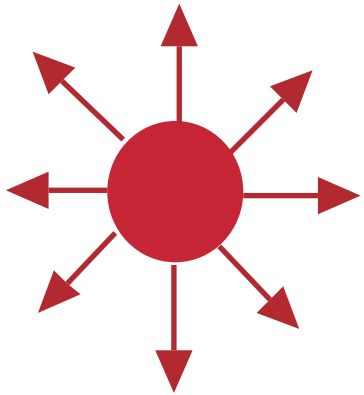
Topic 3

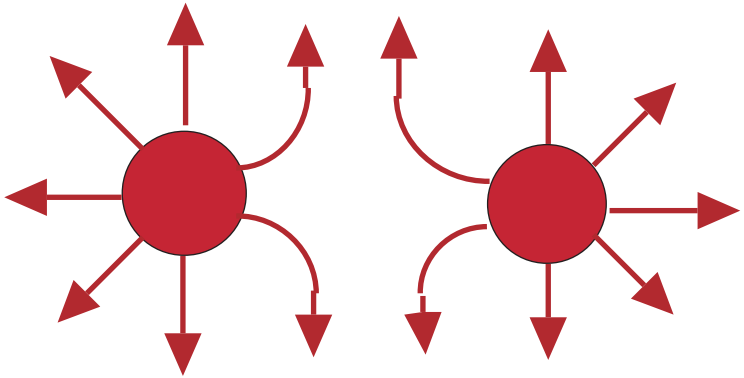
Electric Fields

An electric field is produced by an electric charge. An electric field has both direction and magnitude. An electric field is always drawn so that it points from the positive to the negative charge. The stength of an electric field is represented by the line density (number of lines).

eg #1

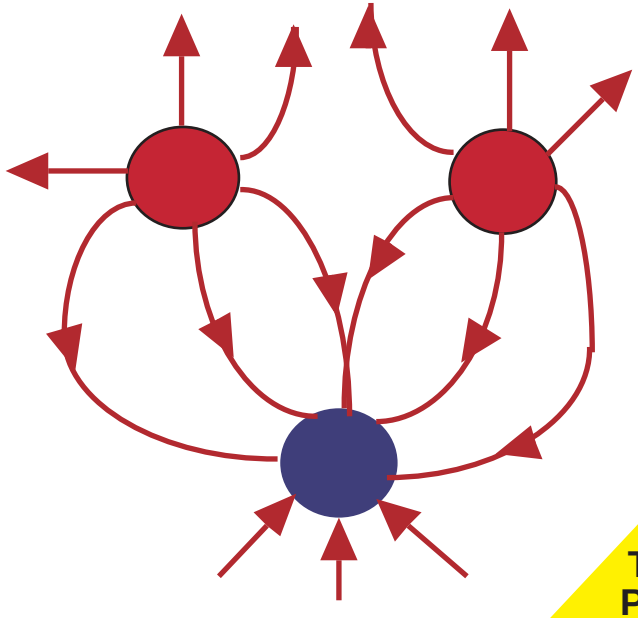


eg #2



By definition the direction of an electric field is the direction a small positive test charge will move in an electric field.

eg #3



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Topic 3

Electric fields

The electric field measured in newtons / coulomb. symbol "N/C"

The force exerted on the charge measured in newtons. symbol "N"

$$E = \frac{F_{on\ charge}}{q}$$

The charge on the object measured in coulombs. symbol "C"

An electric field can be treated the same as a gravity field.

$$F = ma \quad or \quad g = \frac{F_{on\ object}}{m}$$

Note that "g" is the same as "E", "m" is equal to "q" and "F" is the force on the object in both equations. The difference is one is a force caused by a mass while the other is a force caused by a charge.

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