Edexcel GCSE Physics

Topic 11.1P-11.10P - Static Electricity

Flashcards

What can happen when insulating materials are rubbed together?

What can happen when insulating materials are rubbed together?

They can become (statically) electrically charged.

Why can insulators become electrically charged when rubbed together?

Why can insulators become electrically charged when rubbed together?

- Electrons transfer from one material onto the other
- The material gaining electrons becomes negatively charged
- The material losing electrons becomes equally positively charged

What would happen when two electrically charged objects are brought close together?

What would happen when two electrically charged objects are brought close together?

They exert a force on each other.

What happens when two identically charged objects are brought close together?

What happens when two identically charged objects are brought close together?

They exert a repulsive force on each other and repel.

What happens when two oppositely charged objects are brought close together?

What happens when two oppositely charged objects are brought close together?

They exert an attractive force on each other and attract.

Give an example of a non-contact force.

Give an example of a non-contact force.

The repulsive or attractive force acting between two electrically charged objects.

Why do we feel an electric shock?

Why do we feel an electric shock?

- When an object builds up an electrostatic charge, it needs to be ‘earthed’ via a conductor.
- Electrons flow to/from the earth to balance the charge.
- This can also occur if you touch a charged object whilst you are earthed.
- If earthing occurs through a person/animal, it causes an electric shock.

Why does lightning occur?

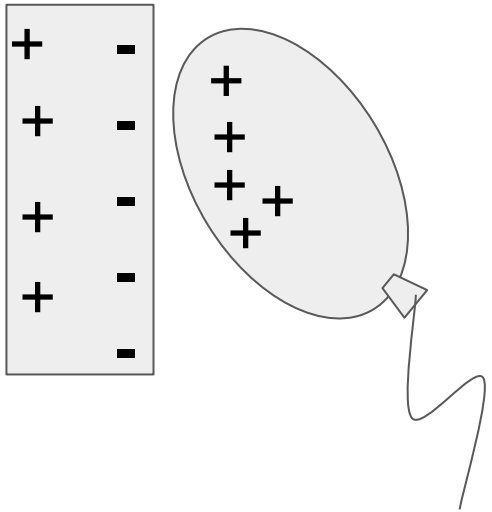
Why does lightning occur?

- Clouds can build up an electrostatic charge.
- When this charge becomes large enough, the clouds discharge via the air to the earth.
- This is known as lightning

Why does a charged balloon stick to the wall?

Why does a charged balloon stick to the wall?

When a positively charged balloon is placed next to a wall the positive charges near the balloon get repelled to other parts of the wall. This leaves an area of the wall with a negative charge, which attracts the positively charged balloon towards the wall, making the balloon stick.



(The inverse occurs with a negatively charged balloon).

How does earthing remove excess charge?

How does earthing remove excess charge?

It provides a path with a low resistance for the electrons to flow either from the device or towards the device to reduce the charge build up.

How does static electricity cause danger when fuelling cars?

How does static electricity cause danger when fuelling cars?

- Static charge can build up due to the friction between the pipes and the fuel
- When the charge builds up, a spark may be discharged
- The spark could start a fire if it reacts with the flammable fuel
- This is resolved by earthing the vehicle and pump

What is an electric field?

What is an electric field?

A region where an electric charge will experience a non-contact force.

What direction do the field lines in an electric fields point?

What direction do the field lines in an electric field point?

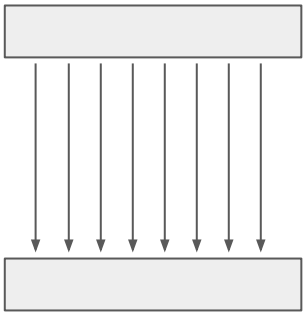
In the direction that a positive charge would move (experience a force).

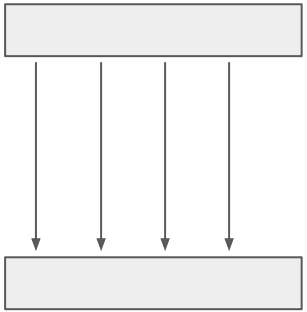
Describe the appearance of electric field lines in a parallel field.

Describe the appearance of electric field lines in a parallel field.

Straight lines, which are parallel to each other and point from the positive plate to the negative plate. At the edges, the lines are partially curved.

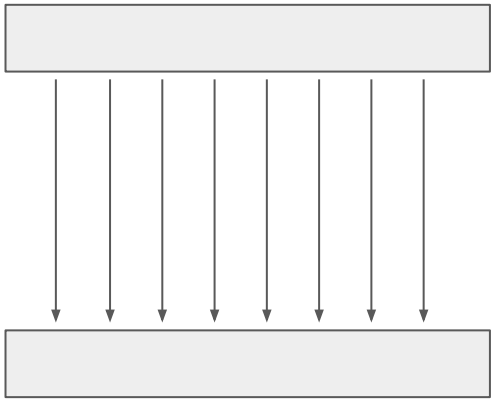
Which field is the stronger field?





Which field is the stronger field?

The field lines being closer together shows a stronger field



How can you use electric fields to explain static electricity?

How can you use electric fields to explain static electricity?

- The object that is statically charged will generate an electric field
- This field attracts the electrons on other objects causing a flow of charge resulting in sparks