

GCSE Physics

Worksheet: Static charge

TIME 20 min	TOTAL 20 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Static charge

NAME	CLASS	DATE
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- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

0 1

0 1 . 1 A student rubs two different insulating materials together and they become oppositely charged.

What has been transferred between them?

Tick (✓) **one** box.

Protons

☐

Neutrons

☐

Electrons

☐

Ions

☐

[1 mark]

0 1 . 2 Which type of material allows charge to move through it easily?

Tick (✓) **one** box.

An insulator

☐

A conductor

☐

[1 mark]

0 2

Two balloons are each rubbed on a woollen jumper, and both become negatively charged. The balloons are then hung on threads next to each other.

0 2 . 1

What happens to the balloons?

Tick (✓) **one** box.

They move towards each other.

☐

They move away from each other.

☐

Nothing happens.

☐

[1 mark]

0 2 . 2

Complete the sentence.

Two objects with the same type of charge each other.

.....

.....

.....

[1 mark]

0 2 . 3

The force between the balloons acts even though they are not touching.

What type of force is this?

Tick (✓) **one** box.

A contact force

☐

A non-contact force

☐

A frictional force

☐

[1 mark]

0 3

A student rubs a polythene rod with a woollen cloth. The rod becomes negatively charged.

0 3 . 1

Which particles are transferred when the rod is rubbed with the cloth?

Tick (✓) **one** box.

atoms

☐

electrons

☐

neutrons

☐

protons

☐

[1 mark]

0 3 . 2

In which direction are the particles transferred?

Tick (✓) **one** box.

from the cloth to the rod

☐

from the rod to the cloth

☐

[1 mark]

0 3 . 3

What type of charge does the cloth have after it has been rubbed?

.....

.....

.....

[1 mark]

0 3 . 4

The student brings a second negatively charged polythene rod close to the first rod. The rods do not touch.

What happens?

Tick (✓) **one** box.

The rods attract each other.

☐

The rods repel each other.

☐

Nothing happens.

☐

[1 mark]

0 4

A student holds a metal rod in one hand and rubs it with a cloth. The metal rod does not become charged. The student then rubs a polythene rod with the same cloth, and the polythene rod becomes negatively charged.

0 4 . 1

Explain how the polythene rod becomes negatively charged.

.....

.....

.....

.....

[2 marks]

0 4 . 2

Explain why the metal rod does not become charged.

.....

.....

.....

.....

[2 marks]

0 5

A student rubs a balloon on their hair. The balloon becomes negatively charged.

0 5 . 1

Explain how the balloon becomes negatively charged.

.....

.....

.....

.....

[2 marks]

0 5 . 2

Explain why the student's hair is attracted to the balloon.

.....

.....

.....

.....

[2 marks]

0 5 . 3

After rubbing, the student's hairs move apart from each other.
Explain why.

.....

.....

.....

.....

[2 marks]

0 5 . 4

The force between the balloon and the hair is a non-contact force.
What is meant by a non-contact force?

.....

.....

[1 mark]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Physics · Worksheet: Static charge · 20 marks

Question 1 (2 marks)

01.1 [1 mark]

Correct: Electrons

01.2 [1 mark]

Correct: A conductor

Question 2 (3 marks)

02.1 [1 mark]

Correct: They move away from each other.

02.2 [1 mark]

Answer: repel

- repel (1)
-

02.3 [1 mark]

Correct: A non-contact force

Question 3 (4 marks)

03.1 [1 mark]

Correct: electrons

03.2 [1 mark]

Correct: from the cloth to the rod

03.3 [1 mark]

Answer: Positive

- positive (1)
-

03.4 [1 mark]

Correct: The rods repel each other.

Question 4 (4 marks)

04.1 [2 marks]

Answer: Rubbing transfers electrons from the cloth to the polythene rod; the rod gains electrons, which are negatively charged.

- electrons are transferred from the cloth to the rod (by friction / rubbing) (1)
 - the rod gains (negatively charged) electrons, so it has a negative charge (1)
-

04.2 [2 marks]

Answer: Metal is a conductor, so electrons can move through it; any electrons transferred flow through the rod and the student's body to or from earth, so no charge builds up on the rod.

- metal is a (good) conductor, so electrons can move (flow) through it (1)
 - the electrons flow through the rod and the student (to or from earth), so no charge builds up on the rod (1)
-

Question 5 (7 marks)

05.1 [2 marks]

Answer: Rubbing transfers electrons from the hair to the balloon; the balloon gains electrons, so it has a negative charge.

- electrons are transferred / rubbed off (the hair) onto the balloon (1)
- the balloon gains electrons (which are negative) (1)

Notes: Do not accept transfer of positive charge / protons.

05.2 [2 marks]

Answer: The hair has lost electrons so it has a positive charge; opposite (unlike) charges attract.

- the hair has lost electrons so is positively charged (1)
 - opposite / unlike charges attract (1)
-

05.3 [2 marks]

Answer: Each hair has the same type of charge (positive), and like charges repel.

- each hair has the same type of charge (positive) (1)
 - like charges repel (1)
-

05.4 [1 mark]

Answer: A force that acts between objects that are not touching.

- a force that acts between objects that are not touching / physically separated (1)
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