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## Essential Pre-Uni Physics H2.2

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Physical constants which may be necessary to answer the problems on this page can be found within the hint tabs.

Calculate the electric field strength 1.0 mm away from a  $+1.0 \text{ pC}$  charge.

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## Essential Pre-Uni Physics H2.10

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A Level



Physical constants which may be necessary to answer the problems on this page can be found within the hint tabs.

Two charges are stuck to a metre stick: a  $+1.0 \text{ pC}$  charge at the  $0 \text{ cm}$  mark, and a  $-1.0 \text{ pC}$  charge at the  $10 \text{ cm}$  mark. What is the strength of the electric field at the  $20 \text{ cm}$  mark? Assume that the wooden metre ruler is strong enough to hold the charges in place, but does not affect the electric field. Give your answer to 2 significant figures.

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## Essential Pre-Uni Physics H2.1

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Physical constants which may be necessary to answer the problems on this page can be found within the hint tabs.

Calculate the magnitude of the force of attraction on a  $+1.0 \text{ nC}$  charge placed  $1.0 \text{ m}$  away from a  $-1.0 \text{ nC}$  charge.

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## Essential Pre-Uni Physics F5.3



Physical constants which may be necessary to answer the problems on this page can be found within the hint tabs.

### Part A Planet Mogg

The planet Mogg is completely spherical, with radius  $2.3 \times 10^6$  m.

At a distance of  $1.0 \times 10^7$  m from the centre of planet Mogg, the gravitational field strength ( $g$ ) due to Mogg is  $2.1 \text{ N kg}^{-1}$ . Calculate the gravitational field strength at a distance of  $5.0 \times 10^7$  m.

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### Part B 100 km above the surface

Calculate the gravitational field strength at a height of 100 km above the surface of the planet.

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### Part C $3.0 \times 10^6$ m from the centre

Calculate the gravitational field strength due to planet Mogg at a distance of  $3.0 \times 10^6$  m from the centre.

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## Essential Pre-Uni Physics F5.2

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Physical constants which may be necessary to answer the problems on this page can be found within the hint tabs.

Calculate the force of attraction between two metal spheres each of mass 20 kg whose centres are 20 cm apart. Give your answer to 2 significant figures.

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## Essential Pre-Uni Physics H4.2

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Ignore the effect of the Earth's magnetic field unless specifically asked to include it.

Calculate the force on 3.0 mm of wire carrying a 4.0 A current in a 0.020 T field, if the current is perpendicular to the field.

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# Essential Pre-Uni Physics H1.5

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Please give your answers to the lowest number of significant figures provided in the question. In these questions ignore the effects of non-electrical forces.

What is the field strength needed to cause a spark in air, if 240 V can only jump a distance of  $8.0 \times 10^{-5} \text{ m}$ ?

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## Essential Pre-Uni Physics H1.4

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A Level  


Please give your answers to the lowest number of significant figures provided in the question. In these questions ignore the effects of non-electrical forces.

What is the strength of the electric field between two metal sheets held 5.0 cm apart, if one is connected to  $-500\text{ V}$ , and the other connected to  $+2000\text{ V}$ ? Give your answer to 2 significant figures.

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# Essential Pre-Uni Physics H1.1

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Please give your answers to the lowest number of significant figures provided in the question. In these questions ignore the effects of non-electrical forces.

What magnitude is the force if a  $+6.0 \times 10^{-9} \text{ C}$  charge is put in a  $50000 \text{ N C}^{-1}$  field?

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## Essential Pre-Uni Physics H5.3

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**A Level**

Physical constants which may be necessary to answer the problems on this page can be found within the hint tabs.

An electron is travelling at right angles to a magnetic field, and at right angles to an electric field such that the electric and magnetic forces cancel out. If the magnetic flux density is  $0.043 \text{ T}$  and the electric field is  $330 \text{ kV m}^{-1}$ , how fast is the electron going?

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