

Name _____

Date _____

Mr Rawson



Circuitry I

1. A net charge of 51 mC passes through the cross-sectional area of a wire in 14.0 s.
 - A. What is the current in the wire? Give your answer in mA.

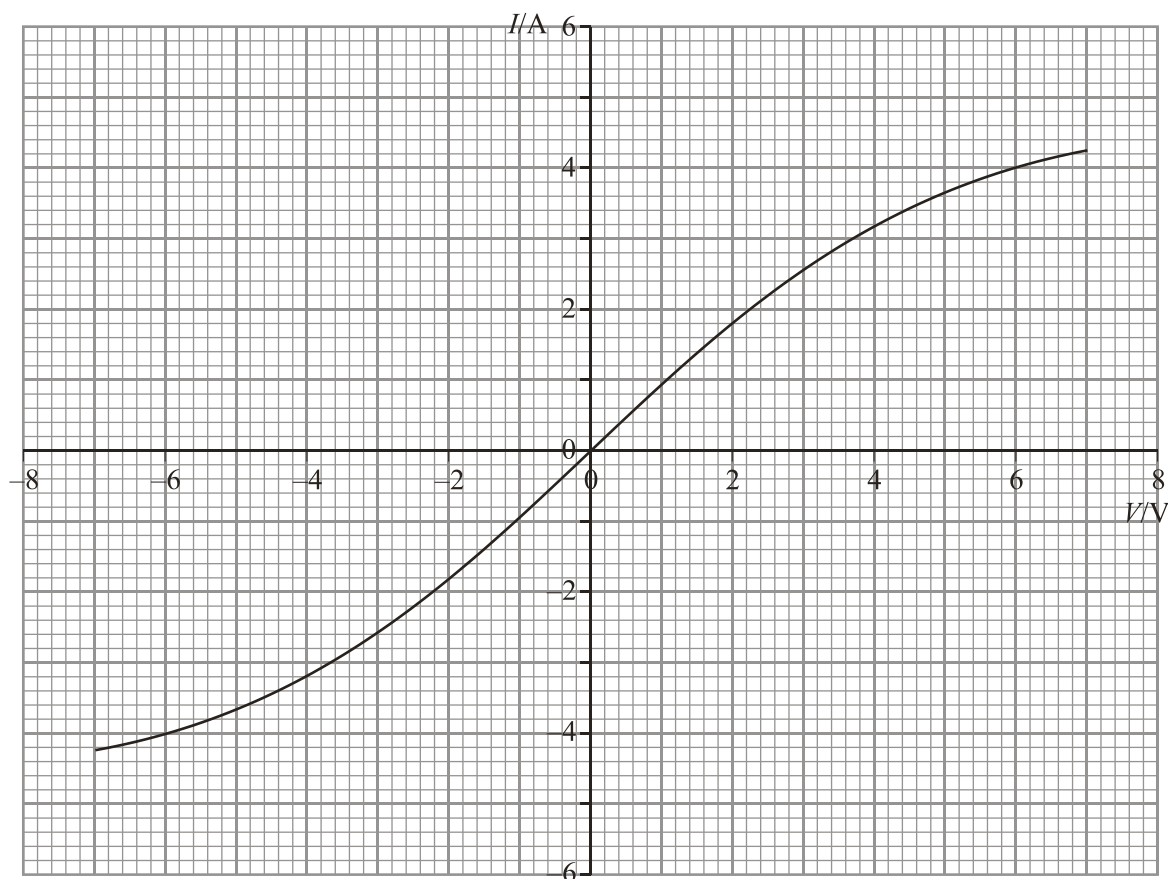
 - B. How many electrons pass the cross-sectional area in 1.0 min? (Your answer should be between 1×10^{15} and 1×10^{20} electrons)

2. How much charge passes through a cross-sectional area of a copper wire in 1.0 s if $I = 6.5 \text{ A}$?

3. The definition of the unit of current, the ampere, is based on:
 - A. the force per unit length on a conductor in a uniform magnetic field.
 - B. the force per unit length on parallel current-carrying conductors.
 - C. the charge per unit time delivered by a cell of e.m.f. 1.0 V.
 - D. the charge passing a point per unit time in an electrical circuit.

4. How much current is drawn by a Sharp Aquos 37" HDTV if it has a resistance of 73.8Ω and is connected across a potential difference of 120 V?

5. The graph below shows the I-V characteristics for the component X.



The component X is now connected across the terminals of a battery of e.m.f. 6.0 V and negligible internal resistance.

A. Use the graph to determine

i. the current in component X

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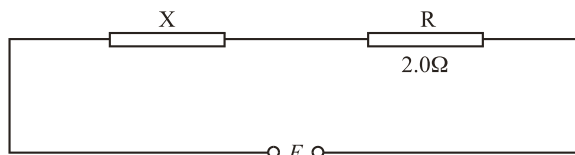
ii. the resistance in component X

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A resistor R of constant resistance $2.0\ \Omega$ is now connected in series with component X as shown below.



B. i. On the graph in (a), draw the I-V characteristics for the resistor R.

ii. Determine the total potential difference E that must be applied across component X and across resistor R such that the current through X and R is 3.0 A.