On charge flow and current

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Warm-up problems

1. What is the definition of *current*?

2. Write down the equation linking charge, current and time.

3. Copy out and complete the following sentences

    (a) If charge is measured in coulombs, and current in amps, then the time must be measured in . . . .

    (b) The symbol for charge is . . . .

    (c) One coulomb can be defined as the charge passed if one . . . flows for one . . . .

Regular problems

4. Copy out and complete the following table.

Charge, Q / C	Current, I / C	time, t / s
	3	10
100		25
1200	0.5	
3×10^4		6×10^3

5. (a) A car headlamp draws 2 A from the battery. How much charge flows through it in 5 minutes?

    (b) How much charge flows in a lamp in two minutes if it carries a steady current of 0.3 A flows?

6. A capacitor can store electric charge. If a capacitor has a charge of 0.06 C on it, for how long could it deliver a constant current of 5 mA.

Extension problem

7. In an electrolysis experiment of copper sulphate solution a current of 0.5 A is recorded. The experiment if performed for 20 minutes, and 5 g of copper is deposited.

    (a) At which electrode is the copper deposited?

    (b) How much charge has passed?

    (c) How much charge passes per gram?

    (d) Suggest two ways to increase the amount deposited to 20 g.