203: Electrical installations technology  
**Worksheet 16: Cable selection**

**Answer guide**

1. **A 230V 4kW load is to be wired in non‑armoured single‑core 70°C thermoplastic insulated copper conductors wired in steel conduit installed on the surface some 25 metres from the distribution board. Three other similar circuits are installed in the same conduit which passes through an area where the ambient temperature reaches 40°C. Calculate the cross‑sectional area of cable required if protection is by a BS88‑2 fuse. Show all working.**

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**The correction factors to be included in this calculation are:**

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|  | **Ca** | **ambient temperature; the correction factor for 40°C is 0.87 from Table 4B1 of Appendix 4** | | |
|  | **Cc** | **cable is installed above ground so Cc = 1** | | |
|  | **Cf** | **since protection is by a BS88‑2 fuse the factor is 1** | | |
|  | **Cg** | **the cable is grouped with one similar cable so we have a factor of 0.65 from Table 4C1 of Appendix 4** | | |
|  | **Ci** | **as the cable is installed in conduit on the surface, this factor does not apply** | | |
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**From Table 4A2 Reference Method B (number 4) is the installation method.**

**From Column 4 of Table 4D1A a 6mm2 cable, having a rating (It) of 41 amperes, is required to carry this current.**

**Test for volt drop. The maximum permissible is 11.5 volts.**

**From Table 4D1B Column 3 the volt drop per ampere metre for a 6mm2 cable is 7.3mV. Therefore, the volt drop for this cable length and load is equal to:**

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**Since this is less than the maximum permissible value of 11.5 volts, a 6mm2 cable satisfies the current carrying capacity and voltage drop requirements and is therefore the chosen cable when BS88-2 protection is used.**