

## Electrical circuits

Specification reference	Checklist questions	
4.3.1 a	Can you explain Kirchhoff's second law and the conservation of energy?	<input type="checkbox"/>
4.3.1 b	Can you describe Kirchhoff's first and second laws applied to electrical circuits?	<input type="checkbox"/>
4.3.1 c	Can you determine the total resistance of two or more resistors in series using $R = R_1 + R_2 + \dots$ ?	<input type="checkbox"/>
4.3.1 d	Can you determine the total resistance of two or more resistors in parallel using $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \dots$ ?	<input type="checkbox"/>
4.3.1 e	Can you analyse circuits with components both in series and in parallel?	<input type="checkbox"/>
4.3.1 f	Can you analyse circuits with more than one source of e.m.f.?	<input type="checkbox"/>
4.3.2 a	Can you define source of e.m.f. and internal resistance?	<input type="checkbox"/>
4.3.2 b	Can you define terminal p.d. and 'lost volts'?	<input type="checkbox"/>
4.3.2 c i	Can you use the equations $\mathcal{E} = I(R + r)$ and $\mathcal{E} = V + Ir$ ?	<input type="checkbox"/>
4.3.2 c ii	Can you list and describe techniques and procedures used to determine the internal resistance of a chemical cell or other source of e.m.f.?	<input type="checkbox"/>
4.3.3 a	Can you analyse a potential divider circuit with components?	<input type="checkbox"/>
4.3.3 b	Can you use potential divider circuits with variable components, e.g., LDRs and thermistors?	<input type="checkbox"/>

Specification reference	Checklist questions	
4.3.3 c i	Can you use potential divider equations $V_{\text{out}} = \frac{R_2}{R_1 + R_2} \times V_{\text{in}}$ and $\frac{V_1}{V_2} = \frac{R_1}{R_2}$ ?	<input type="checkbox"/>
4.3.3 c ii	Can you list and describe techniques and procedures used to investigate potential divider circuits which may include a sensor such as a thermistor or a LDR?	<input type="checkbox"/>