Parallel circuits and Kirchhoff's 1st law

Core BUILD THE BASICS

C1 **State** what is the same across every branch of a parallel circuit. **[1]**

C2 I_1 = 0.4 A and I_2 = 0.6 A. **Calculate** I_t. **[1]**

C3 Two 10 Ω resistors in parallel. **Calculate** R_t. **[1]**

C4 I_t = 5 mA and I_1 = 2 mA (two branches). **Calculate** I_2. **[1]**

C5 I_1 = 1.5 A, I_2 = 0.5 A. **Calculate** I_t. **[1]**

C6 Two 100 Ω resistors in parallel. **State** R_t. **[1]**

C7 **State** Kirchhoff's 1st law. **[1]**

C8 **State** whether R_t of a parallel circuit is bigger or smaller than its smallest branch. **[1]**

Stretch GO FURTHER

S1 6 Ω and 12 Ω in parallel across 12 V. **Calculate** R_t and I_t. **[3]**

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S2 20 Ω, 20 Ω and 10 Ω in parallel. **Calculate** R_t. **[2]**

S3 12 V across 4 kΩ and 6 kΩ in parallel. **Calculate** I_1, I_2 and I_t. **[3]**

S4 **Calculate** R_t for 220 Ω and 330 Ω in parallel. **[2]**

Exam Ready QUALIFICATIONS SCOTLAND STYLE

E1 A pupil calculates the resistance of 4.7 kΩ and 10 kΩ in parallel as 14.7 kΩ. **Explain** why this must be wrong. **[2]**

E2 **Calculate** the correct total resistance for E1. **[2]**

E3 **State** the name of the arrangement where resistors are on separate branches between the same two points. **[1]**

E4 Three identical 12 V lamps are in parallel on a 12 V supply. Each takes 0.5 A. **Calculate** the total current and total resistance. **[3]**

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E5 **Describe** one advantage of wiring house lights in parallel. **[1]**

Total: 27 marks. Use the Data Booklet. Show your working and give units.