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| **Worksheet for Lab on Capacitors in Series**  | **Name** |  |
| **and Parallel** |  |  |
|  | **Date** |  |

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|  | **Partner #1** |  |
|  |  |  |
|  | **Partner #2** |  |

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| **Experiment #1 – Solo Capacitors:** |
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| **Complete and fill in Data Table 01** |
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| --- | --- | --- | --- | --- |
|  | **Capacitor** | **A** | **B** | **C** |
| **Trial 1** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Trial 2** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Trial 3** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Average** | **Discharge Time** **(s)** |  |  |  |
|  |  | $$τ\_{A}$$ | $$τ\_{B}$$ | $$τ\_{C}$$ |

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| **Experiment #2 – Capacitors in Parallel:** |
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| **Complete and fill in Data Table 02** |
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|  | **Capacitors** | **A & B** | **B & C** | **A & B & C** |
| **Trial 1** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Trial 2** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Trial 3** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Average** | **Discharge Time****(s)** |  |  |  |
|  | **Using Values from Table 01** |  |  |  |
|  |  | $$τ\_{A}+τ\_{B}$$ | $$τ\_{B}+τ\_{C}$$ | $$τ\_{A}+τ\_{B}+τ\_{C}$$ |
|  | **% Difference** |  |  |  |

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| **Experiment #3 – Capacitors in Series:** |
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| **Complete and fill in Data Table 03** |
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|  | **Capacitors** | **A & B** | **B & C** | **A & B & C** |
| **Trial 1** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Trial 2** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Trial 3** | **Time For V~8 V****(s)** |  |  |  |
|  | **Time For V~3 V****(s)** |  |  |  |
|  | **Discharge Time****(s)** |  |  |  |
|  |  |  |  |  |
| **Average** | **Discharge Time****(s)** |  |  |  |
|  | **Using Values from Table 01** |  |  |  |
|  |  | $$\frac{1}{τ\_{Ser}}=\frac{1}{τ\_{A}}+\frac{1}{τ\_{B}}$$ | $$\frac{1}{τ\_{Ser}}=\frac{1}{τ\_{B}}+\frac{1}{τ\_{C}}$$ | $$\frac{1}{τ\_{Ser}}=\frac{1}{τ\_{A}}+\frac{1}{τ\_{B}}+\frac{1}{τ\_{C}}$$ |
|  | **% Difference** |  |  |  |

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