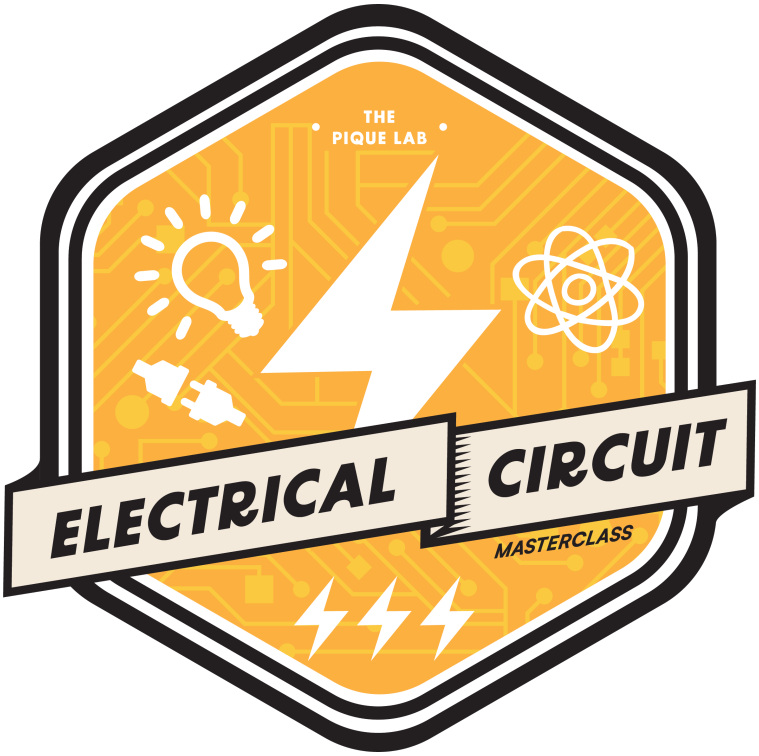
THE PIQUE LAB LEARNING CENTRE

Primary School Science Programme



ELECTRICAL CIRCUIT MASTERCLASS

Answer Booklet

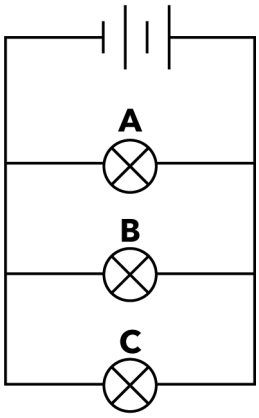
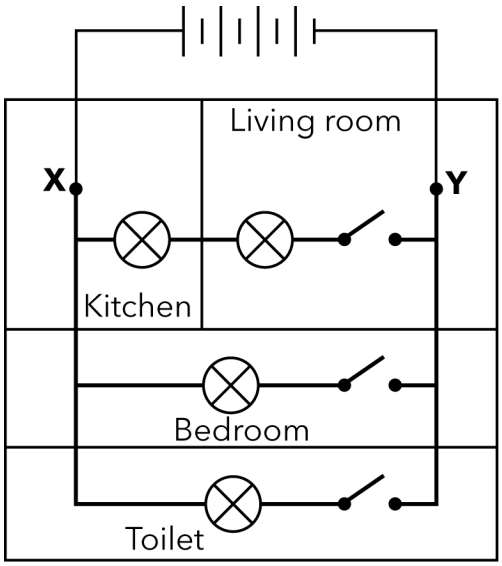
Name: _____

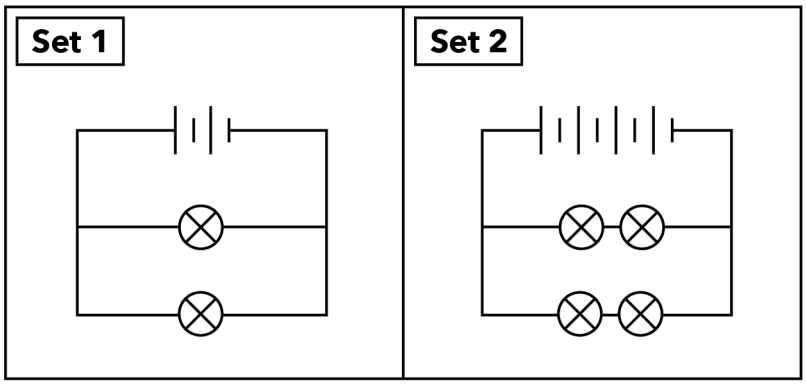
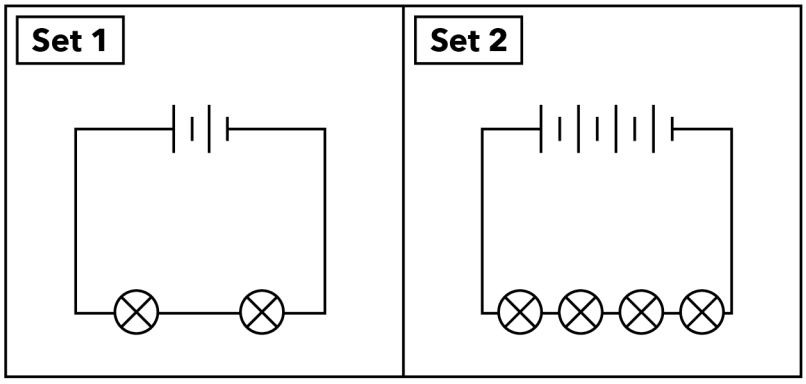
Class: _____

TOPICS COVERED

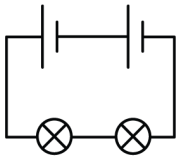
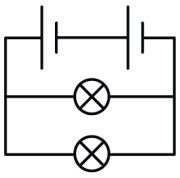
ELECTRICAL CIRCUIT MASTERCLASS

ARRANGEMENT/DRAWING OF CIRCUITS

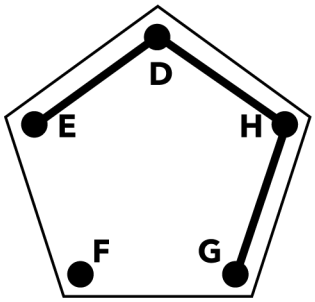
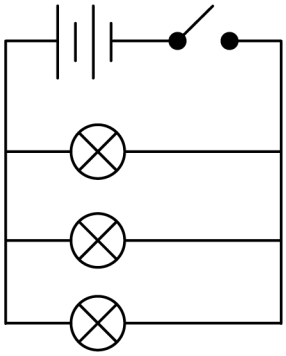
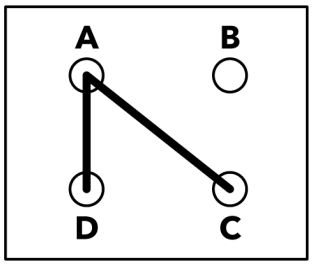
Qn	Answer
Q1	1
Q2	3
Q3	2
Q4	3
Q5	4
Q6a	0
b	Bulb C
c	
Q7	
Q8a	The bulbs in Circuit A are arranged in series while the bulbs in Circuit B are arranged in parallel.

b	**Advantage 1**: The bulbs can be controlled independently. **Advantage 2**: **Step 1:** When one bulb fuses, **Step 2:** there would still be a closed circuit with the other bulb. **Step 3:** Thus, electric current would be able to flow through the other bulb, **Step 4:** allowing the other bulb to light up.
Q9	 OR 

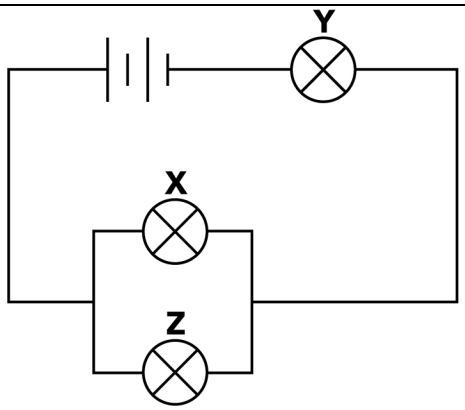
DETERMINING THE BRIGHTNESS OF THE BULB

<table>
<tr><th>Qn</th><th>Answer</th></tr>
<tr><td>Q10</td><td>1</td></tr>
<tr><td>Q11</td><td>3</td></tr>
<tr><td>Q12</td><td>4</td></tr>
<tr><td>Q13</td><td>1</td></tr>
<tr><td>Q14</td><td>1</td></tr>
<tr><td>Q15a</td><td>Conductors of electricity: B and D
Insulators of electricity: A and C</td></tr>
<tr><td>b</td><td>Circuit 1
 
Circuit 2
  </td></tr>
<tr><td>Q16a</td><td>As the carbon content of the lead increases, the brightness of the bulb increases.</td></tr>
<tr><td>b</td><td>Carbon is a conductor of electricity.</td></tr>
<tr><td>Q17</td><td>
<table>
<tr><th>Step No.</th><th>Description</th></tr>
<tr><td>1</td><td>Arrange 2 dry cells and 1 bulb in series arrangement using the wires.</td></tr>
<tr><td>2</td><td>Observe the brightness of the bulb.</td></tr>
<tr><td>3</td><td>Add one more bulb to the circuit in series.</td></tr>
<tr><td>4</td><td>Observe the brightness of the bulb.</td></tr>
<tr><td>5</td><td>Repeat steps 3 and 4.</td></tr>
<tr><td>6</td><td>Compare the brightness of the bulbs.</td></tr>
</table>
</td></tr>
</table>

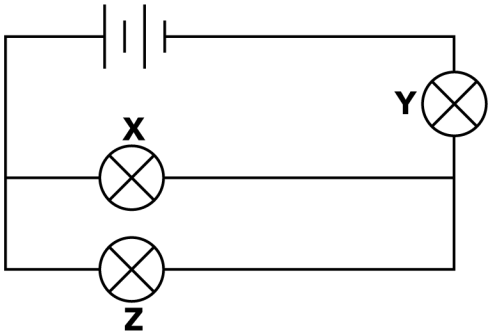
CIRCUIT BOARD/CARD

Qn	Answer
Q18	1
Q19	1
Q20	1
Q21	3
Q22	4
Q23	2
Q24	1
Q25a	 ** Any answers that connect buttons D, E, G, and H with 3 straight lines will be accepted.*
b	
Q26a	 ** Any answers that connect points A, C, and D with 2 straight lines are accepted.*
b	**Step 1:** The lamps are arranged in parallel. When one lamp fuses, **Step 2:** <u>there would still be a closed circuit with the other lamps.</u> **Step 3:** Thus, electric current would still be able to flow through the other lamps, **Step 4:** allowing the other lamps to light up.

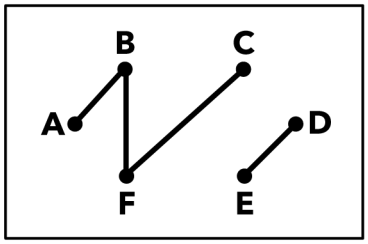
c

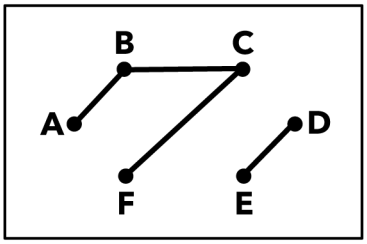


OR



Q27a



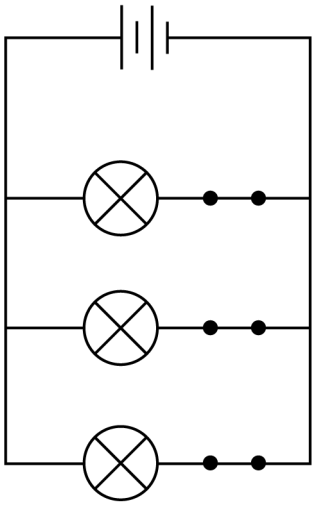


** Any answers that connect points A, B, C, and F with 3 straight lines, and separately, connect points D and E with 1 straight line will be accepted.*

b

Number of batteries	Brightness of the bulb (units)
1	**400**
2	800
3	0
4	**0**

CONDUCTORS AND INSULATORS OF ELECTRICITY

Qn	Answer
Q28	2
Q29	3
Q30	4
Q31	1
Q32	3
Q33a	A – **M1** B – M2 C – M3 D – M4 ** Any answers with M1 in position A will be accepted.*
b	**Step 1:** When M1, an insulator of electricity, was placed at Position A, **Step 2:** there was an open circuit with all of the bulbs. **Step 3:** Thus, no electric current flowed through all of the bulbs, **Step 4:** preventing the bulbs from lighting up.
c	
Q34	Rod P – Conductor of electricity Rod Q – Not possible to tell Rod R – Conductor of electricity Rod S – Insulator of electricity
Q35a	A – Iron B – Steel C – **Plastic** ** Any answers with plastic in position C will be accepted.*

b	**Object:** Battery **Explanation for position A:** When the battery was placed at position A, it was arranged wrongly, and the positive terminals of the batteries were connected to each other. Thus, no electric current flowed through the bulbs, preventing them from lighting up. **Explanation for position C:** **Step 1:** However, when the battery was placed at position C, **Step 2:** there was a closed circuit with bulbs L2 and L3. **Step 3:** Electric current was able to flow through bulbs L2 and L3, **Step 4:** allowing them to light up.