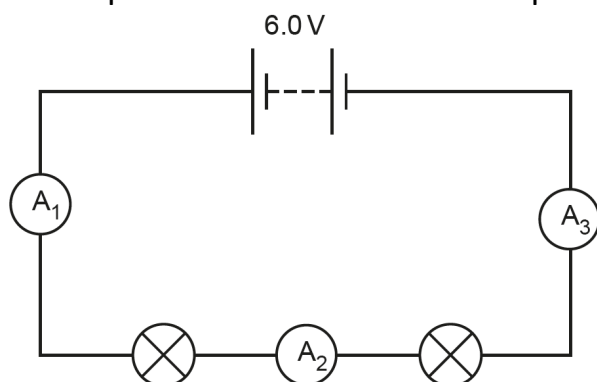
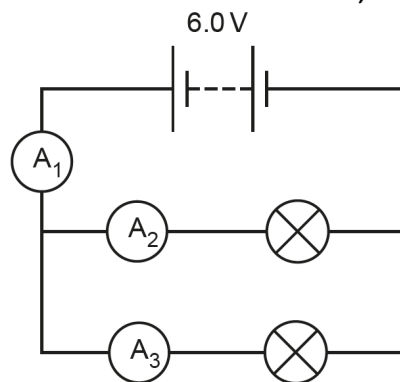


Name:

Class:



Figure 1 below shows lamps in series. Figure 2 below shows lamps in parallel.

 The lamps are all identical 6.0 V lamps. In each circuit are three ammeters A₁, A₂ and A₃.

Figure 1

Figure 2

- i. Compare the readings on ammeters A₁, A₂ and A₃ in Figure 1.

The ammeters all have the same reading. Accept any correct version of this answer.

- ii. Compare the readings on ammeters A₁, A₂ and A₃ in Figure 2.

The reading on A₁ is the biggest.

- iii. State **two** advantages of connecting the 6.0 V lamps in parallel with the 6.0 V battery, compared with connecting the lamps in series with the battery.

Any **two** of the following:

1. Lamps can be switched on independently.
2. The lamps have normal brightness (in parallel) or brighter (than lamps in series).
3. If one lamp fails the other lamp is still lit.

- iv. Determine the combined resistance of the two lamps connected in series.

$$12\ \Omega + 12\ \Omega$$

$$\text{resistance} = \mathbf{24\ \Omega}$$

- v. Compare the resistance of one lamp with the combined resistance of the two lamps in parallel.

The resistance of one lamp/12 (Ω) is more than the combined resistance of lamps in parallel.

State the equation to determine the magnetic flux density of a magnetic field.

$$B = \frac{F}{I \times L}$$

Do not accept $F = B \times I \times L$

In the space below draw the labelled **symbols** for a concave and convex lens.

