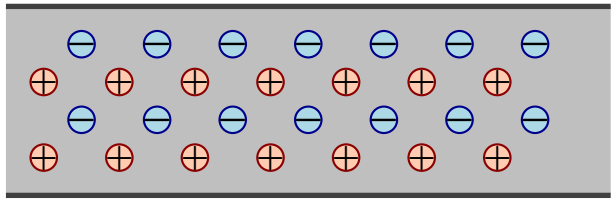
Question 1

A cross section of a wire is illustrated showing the positive atomic nuclei and negative electrons. The charges are at rest.

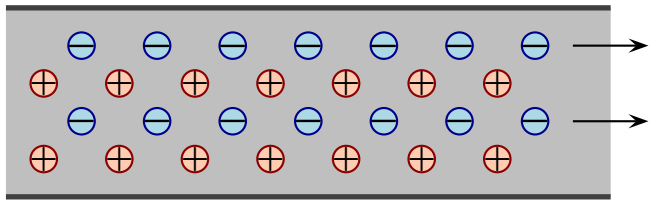


Which of the following is true?

1. The charge in the wire is neutral. There is *no* current.
2. The charge in the wire is neutral. There is *some* current.
3. The charge in the wire is not neutral. There is *no* current.
4. The charge in the wire is not neutral. There is *some* current.

Question 2

A cross section of a wire is illustrated showing the positive atomic nuclei and negative electrons. The electrons move and the protons are at rest.



Which of the following is true?

1. The charge in the wire is neutral. There is *no* current.
2. The charge in the wire is neutral. There is *some* current.
3. The charge in the wire is not neutral. There is *no* current.
4. The charge in the wire is not neutral. There is *some* current.

Question 3

Two small bulbs are on for different amounts of time. The currents and times are as indicated.

Wire	Current	Time On
Bulb A	$0.20\,\mathrm{A}$	$100\,\mathrm{s}$
Bulb B	$0.10\,\mathrm{A}$	$400\,\mathrm{s}$

Which of the following is true while the bulbs are on?

1. The total charge flowing through B is the same as that of A.
2. The total charge flowing through B is smaller than that of A.
3. The total charge flowing through B is larger than that of A.