

- 10 (a) A long straight vertical wire A carries a current in an upward direction. The wire passes through the centre of a horizontal card, as illustrated in Fig. 10.1.

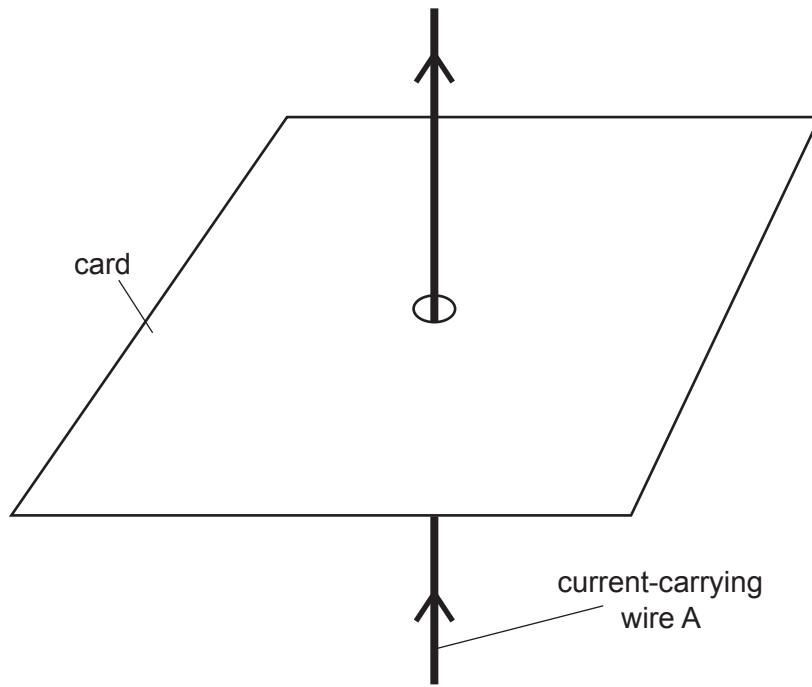


Fig. 10.1

The card is viewed from above. The card is shown from above in Fig. 10.2.

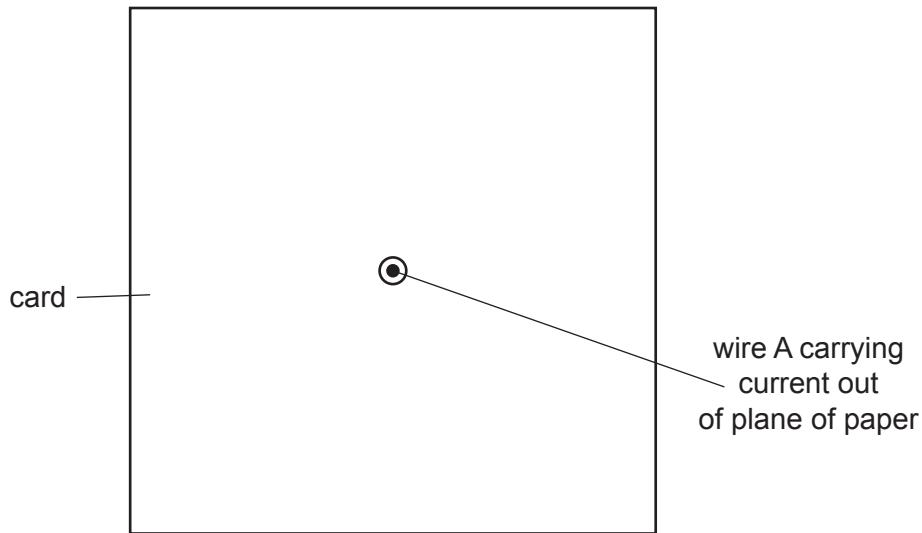


Fig. 10.2

On Fig. 10.2, draw four lines to represent the magnetic field produced by the current-carrying wire. [3]

- (b) Two wires A and B are now placed through a card. The two wires are parallel and carrying currents in the same direction, as illustrated in Fig. 10.3.

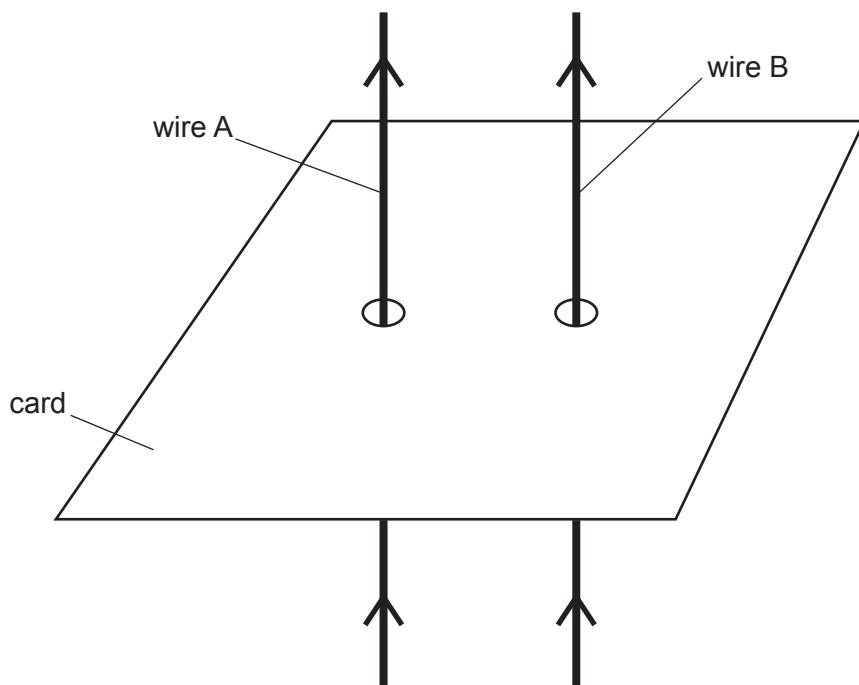


Fig. 10.3

- (i) Explain why a magnetic force is exerted on each wire.

.....  
 .....  
 .....  
 ..... [2]

- (ii) State the directions of the forces.

.....  
 ..... [1]

- (c) The currents in the two wires are not equal.

Explain whether the magnetic forces on the two wires are equal in magnitude.

.....  
 .....  
 ..... [1]