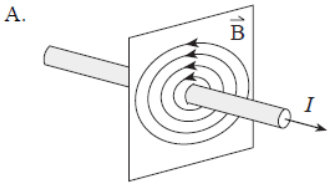
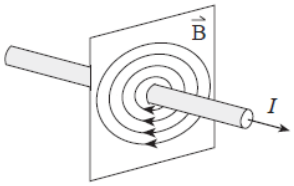
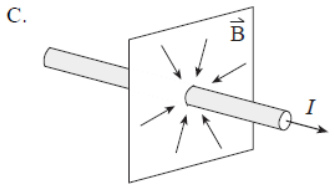
NAME: _____

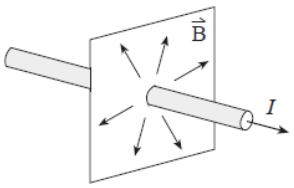
Magnetic Field Handout #1

1. Which of the following diagrams best shows the magnetic field due to a long straight wire carrying a conventional current *I* as shown?

A. 

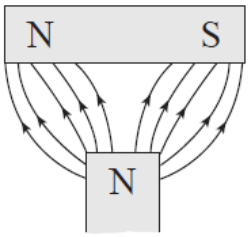
B. 

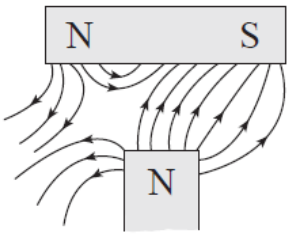
C. 

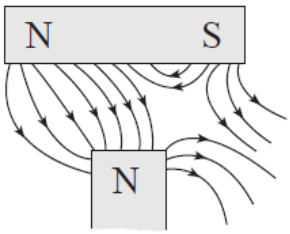
D. 

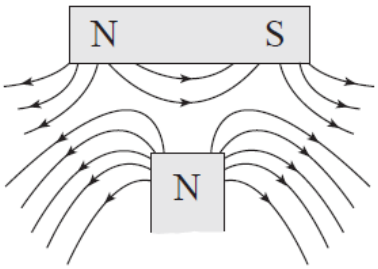
2. The direction of a magnetic field is determined to be the direction in which
   A. a positive charge would tend to move.
   B. a negative charge would tend to move.
   C. the north end of a compass needle would point.
   D. the south end of a compass needle would point.

3. Which of the following diagrams best represents the magnetic field in the region between the two permanent magnets?

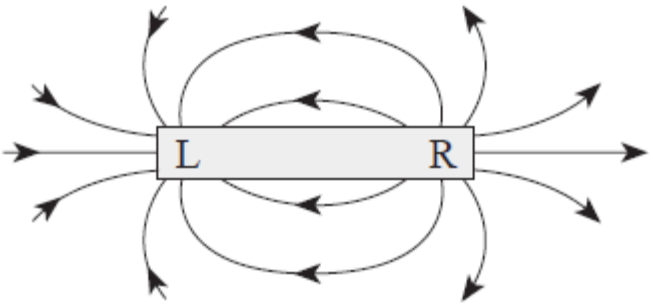
A. 

B. 

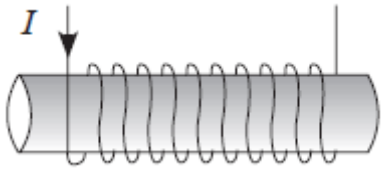
C. 

D. 

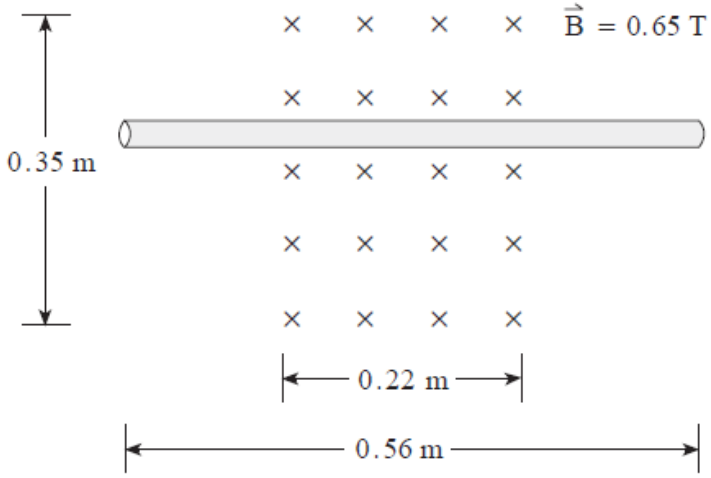
4. Identify the magnetic poles labelled L and R in the diagram shown.



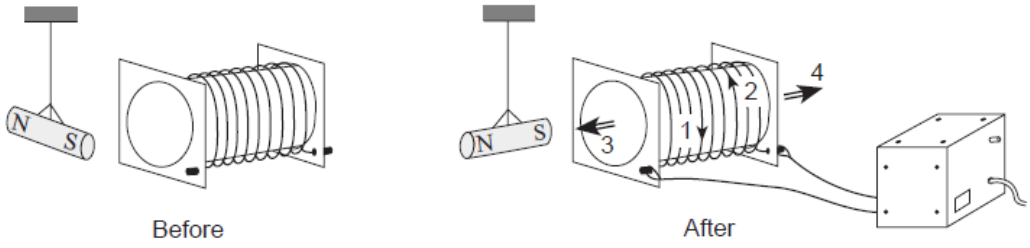
5. An electric current flows through a solenoid as shown below. What is the direction of the magnetic field inside the solenoid?



6. A long conductor is placed in a 0.65 T magnetic field as shown below. What are the magnitude of the current that produces a 1.6 N force on the wire?



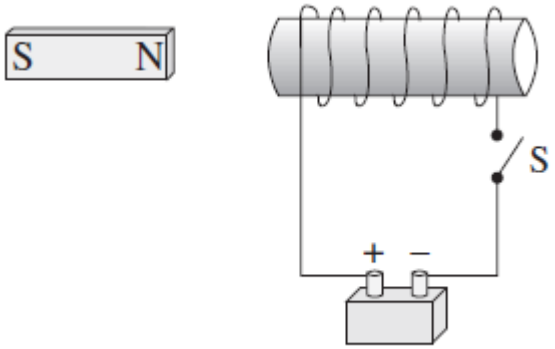
7. The diagram shows a magnet suspended near a solenoid. After the solenoid has been connected to a power supply, the magnet rotates to a new position with its south pole pointing towards the solenoid. Which arrows show the direction of the current in the solenoid and the direction of the magnetic field caused by this current?



	DIRECTION OF CURRENT	DIRECTION OF MAGNETIC FIELD
A.	1	3
B.	1	4
C.	2	3
D.	2	4

8. Which of the following devices commonly uses a solenoid?
   A. kettle
   B. battery
   C. television set
   D. incandescent bulb

9. A bar magnet is at rest, next to a fixed coil. When switch S is closed, which direction will the bar magnet move?



10. What is the force per meter on a wire carrying a 3.60 A current when perpendicular to a 1.20 T magnetic field?

11. How much current is flowing in a wire 3.00 m long if the force on it is 0.900 N when placed in a uniform 0.080 T field?

12. Calculate the magnetic force on a 180 m length of wire stretched between two towers and carrying a 280 A current. The Earth magnetic field is 5.00×10^{-5} T.

Answers: 1) A, 2) C, 3) B, 4) S, N, 5) right, 6) 11.2 A, 7) C, 8) C, 9) left, 10) 4.32 N/m, 11)3.75 A 12) 2.5 N