Which one of these devices does *not* use magnetic fields for some useful purpose(s)

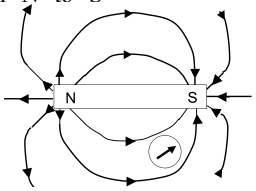
A: 20 year old car
B: DVD player
C: Simple electric drill
D: Refrigerator
E: They all use magnets/magnetic fields for useful purposes

Facts about bar magnets:

1) North poles attract to South poles (opposites attract)

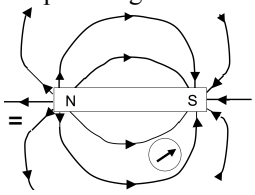
2) B field lines point from "N" to "S"

3) Compass needles are little magnets. (They point in the *same* direction as **B**-field**)**



The arrow (tip) of the compass needle must be… A: North B: South

Compass needles point roughly towards the earth's geographic North Pole. Earth can be viewed as having a giant dipole magnet embedded in it

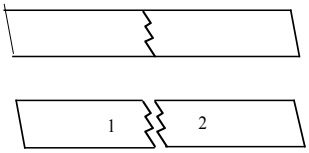


From this, which can you conclude?…

A: Geographic North = magnetic North Pole of earth

B: Geographic North = magnetic South Pole of earth

A permanent bar magnet is broken in half. Do the pieces attract or repel?

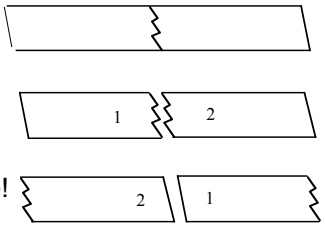


A: Attract

B: Repel

C: Neither, no net force!

A permanent bar magnet is broken in half. The two pieces are interchanged, keeping their orientations fixed, as shown below.
Do the pieces attract or repel?

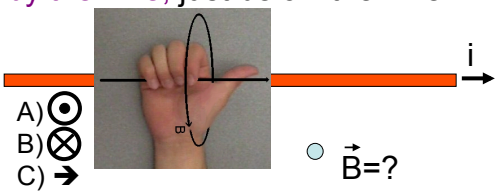


A: Attract

B: Repel

C: Neither, no net force!

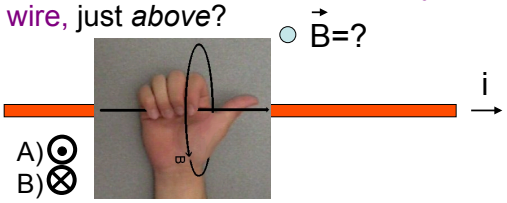
A long wire has a current. What is the direction of the B-field created by the wire, just below the wire?



A) ⊙
B) ⊗
C) ➔
D) ➔
E) other

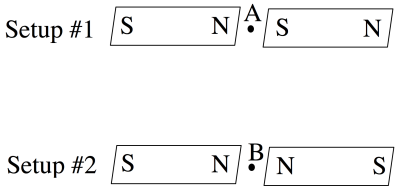
$\vec{B}$=?

A long wire has a current. What is the direction of the B-field created by the wire, just *above*?



A) ⊙
B) ⊗
C) ➔
D) ➔
E) other

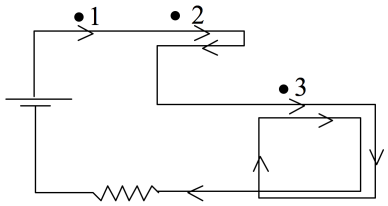
At which point (A or B) is the magnitude of the magnetic field LARGER?



C: Same (both are 0)
D: Same (both nonzero)

A magnetic compass is placed at the points 1, 2, and 3 near an electric circuit with this twisty shape. Rank order |B| from *biggest* to *smallest:*

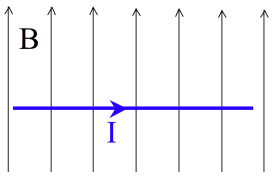
A) 1-2-3
B) 3-2-1
C) 2-3-1
D) 1-3-2
E) Other



A current-carrying wire is in a B-field.

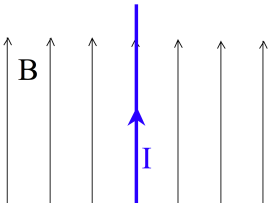
What is the direction of the magnetic force on the wire?

A: →
B: 0
C: ⊗
D: ⊙
E: Other/not sure



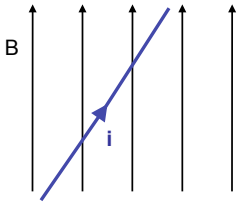
A current-carrying wire is in a B-field.
What is the direction of the magnetic force on the wire?

A: →
B: 0
C: ⊗
D: ⊙
E: Other/not sure

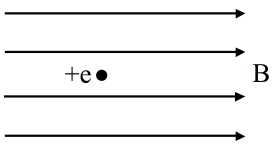


A current-carrying wire is in a B-field.
What is the direction of the magnetic force on the wire?

A: →
B: ↖
C: ⊗
D: ⊙
E: Other/not sure



A proton (charge +e) sits at rest in a uniform magnetic field, B, that points to the right.
What is the direction of the force on the charge?



A: →

B: 0 (no force)

C:(into the page) ⊗

D: Other/not sure