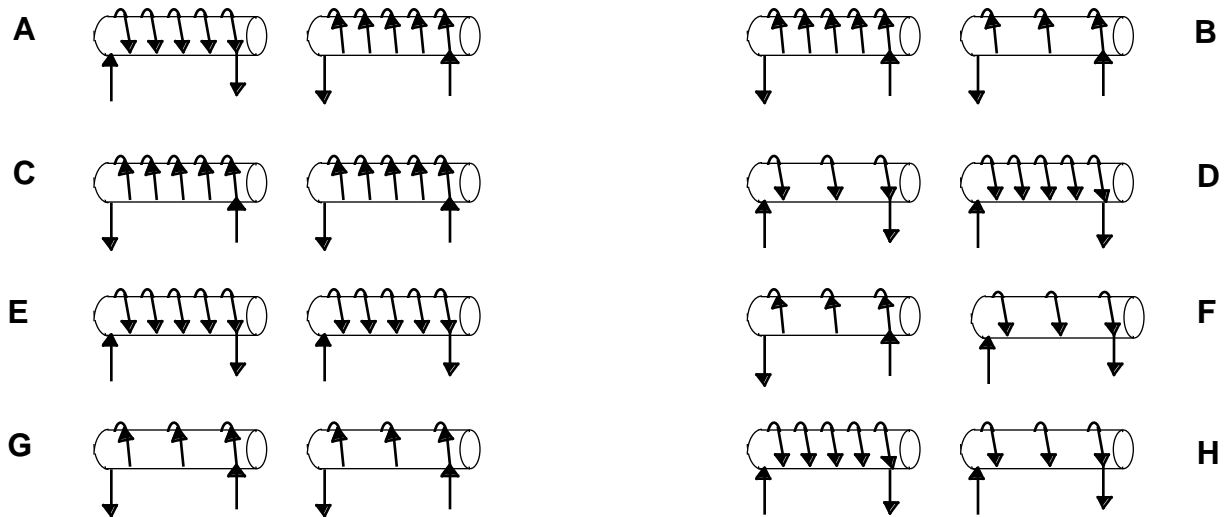


Pairs of Equal Current Electromagnets—Magnetic Field Between¹⁸⁷

Eight pairs of electromagnets are shown below. The same current flows in each electromagnet. The pairs are separated by the same distance, and they have the same length and diameter. Carefully observe the orientation of the coil and direction of current flow in the electromagnets.

Rank the magnitudes of the magnetic fields at the midpoint between the electromagnets from the largest to the smallest.



Largest 1____ 2____ 3____ 4____ 5____ 6____ 7____ 8____ Smallest

Or, the magnitudes of the magnetic field are all the same._____

Please carefully explain your reasoning.

How sure were you of your ranking? (circle one)

Basically Guessed

Sure

Very Sure

1 2 3 4 5 6 7 8 9 10

¹⁸⁷ B. Emerson, C. Hieggelke