MAGNETIC NORTH

PROBLEM STATEMENT:

YOUR ASSIGNMENT IS TO DETERMINE THE NORTH POLE OF AN UNMARKED BAR MAGNET, AND WRITE AN EXPLANATION OF YOUR FINDINGS.

YOU MAY SELECT MATERIALS FROM THE FOLLOWING LIST:

6" BAR MAGNET
COMPASS
100' COPPER WIRE
1½ VOLT BATTERY DRY CELL
6 VOLT BATTERY DRY CELL
BREAD BOARD
NAILS, NUTS AND BOLTS
SPST SWITCH
ANALOG MULTIMETER
ALAGATOR CLIPS

GRADING:

GRADING WILL BE BASED ON TIME REQUIRED TO SOLVE FOR MAGNETIC NORTH OF THE BAR MAGNET. EACH 15 MINUTE TIME INTERVAL ALLOWS FOR 10 POINTS TO BE DEDUCTED FROM A POSSIBLE 100 POINTS MAXIMUM.

MAGNETIC NORTH CONT:

THIS IS AN INDIVIDUAL PROJECT AND YOU SHOULD KEEP YOUR IDEAS TO YOURSELF.

MINIMUM POINTS FOR CLASS PARTICIPATION (40 PTS)

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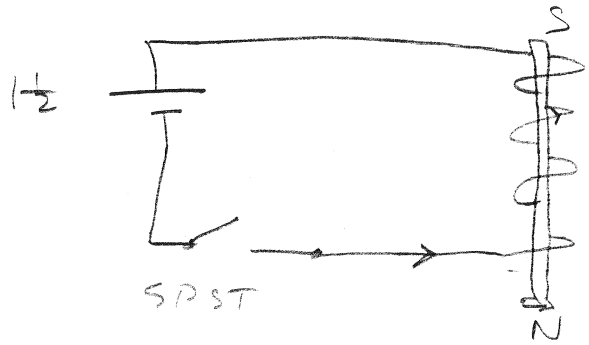
KEY:

1. WRAP A LARGE NAIL WITH 2 - 3 LAYERS OF COPPER WIRE LEAVING 12" OF WIRE AT EACH END. STRIP THE CLEAR ENAMEL COATING FROM 1" OF THE WIRE AT EACH END. YOU NOW HAVE A COIL

2. CONNECT THE COIL TO THE $1\frac{1}{2}$ VOLT DRY CELL AND TO THE SWITCH.



3. DETERMINE THE N POLE OF THE COIL USING THE LH RULE FOR COILS.

4. POSITION THE N POLE CLOSE TO ONE END OF THE BAR MAGNET AND CLOSE THE SWITCH.

MAGNETIC NORTH

KEY CONT:

5. IF THE N END OF THE COIL ATTRACTS THIS END OF THE BAR MAGNET, LABEL THIS END OF THE BAR MAGNET THE S POLE; UNLIKE POLE ATTRACT

LABEL THE OTHER END OF THE BAR MAGNET, N POLE & LIKE POLE REPEL.