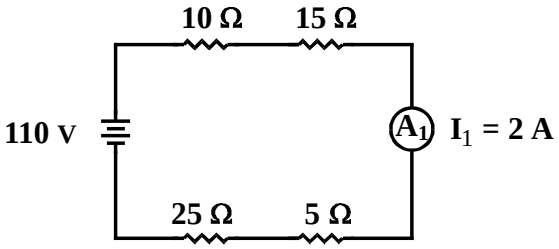
STE Pretest 3.2

1. Which resistor will experience the biggest drop in voltage? Why?

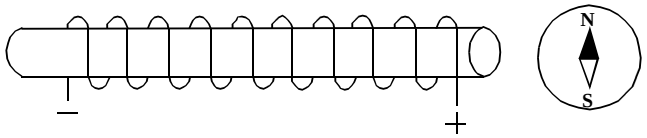


2. A) V_1 = 2.0 V, V_2= 4.0 V, V_3 = 2.0 V, V_4 = 6.0 V, VT = 10.0V. All resistors are identical. Draw the circuit.

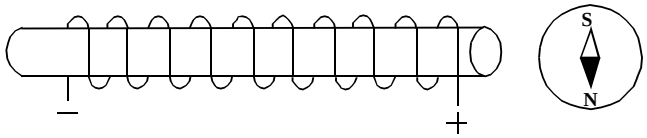
   b) If 3.0 A flows through R_1, how much current flows through R_4?

3. A compass is placed at one end of a solenoid. (2 marks)
   In which illustration is the compass needle pointing in the proper direction?

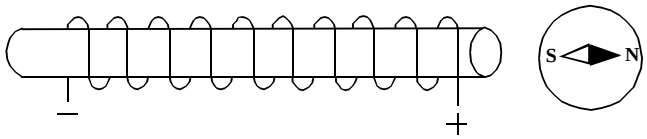
A)



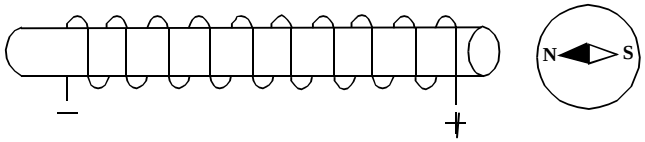
B)



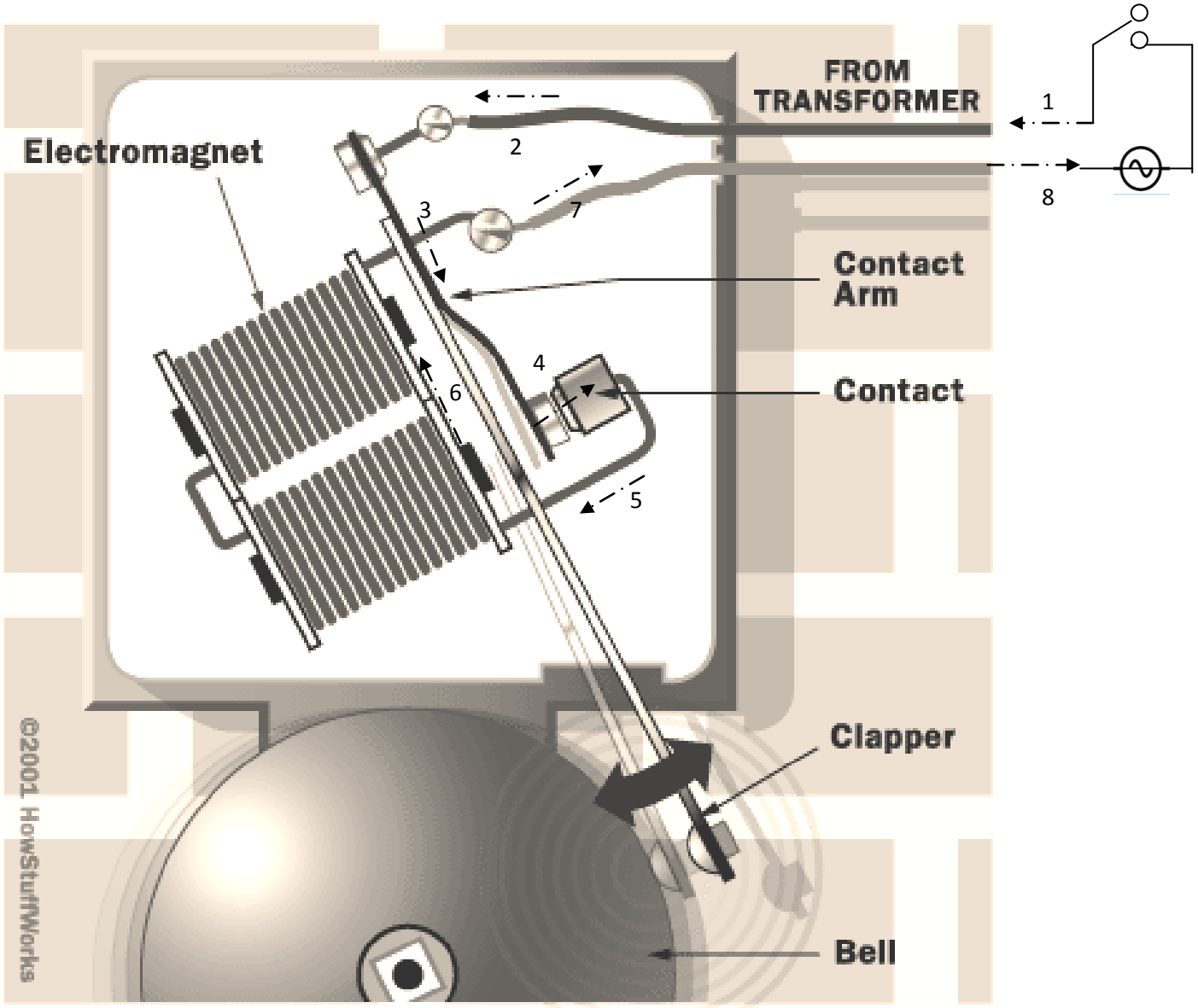
C)



D)



4. How can the electromagnets in no. 3 be strengthened? List two ways.
5. Redraw a solenoid, showing two different ways by which the magnetic field direction can be reversed.



The above model of a doorbell uses an electromagnet and a contact arm. The electron flow is revealed by the 8 numbered broken-lined arrows in the diagram.

6. What must you do to make the clapper hit the bell?_____
7. Why does your action make the clapper move?_____
   _____
   ____
8. Aside from the obvious one, there is another “switch” that makes sure that the clapper does not get stuck to the bell when the electromagnet attracts the clapper arm. Where is it, and explain how it works?
   _____

_____
_____

9. Show the difference in the type of bonding formed by oxygen when

   (A) It reacts with an alkaline earth metal and
   (B) When it reacts with carbon.

10. Why does 28.0 grams of nitrogen gas contain 1 mole of molecules but two moles of atoms? Show work?

11. If an iceberg's weight is given by $F = m_i g$ and the buoyant force is equal to the weight of the displaced water, show mathematically that

    The displaced water's volume = $\frac{\rho_i}{\rho_w} V_i$