Name_____

Favorite Band_____

Show your work, circle your answers, and use sig figs to receive full credit.

1. The motion of a North pole of a magnet above the page makes the magnetic field change by 1.15 T inside this 0.650 x 0.650 square wire loop. If the loop has a resistance of 1.30 Ω, and a current of 560. mA flowed ACW while the magnet was moving, what time did it take the magnet to move, and did the magnet <u>approach</u> or <u>recede</u>?
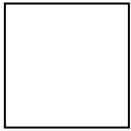
2. A loop of wire with a radius of 0.78 m is in the plane of this page, and is rotated so that the loop forms a 23.0^o angle with the page. If there is a 3.72 T magnetic field into the page, and the rotation takes 0.0150 s, what is the average EMF generated? Which way does it flow?

as seen from above:

before   after
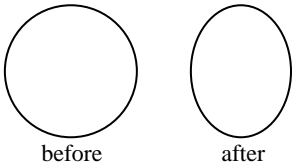
3. The wire below is 2.28 m long (really!) and is traveling through a 6.71 T magnetic field out of the page. What is its speed if there exists a potential of 41.6 V from one end to the other? Label the positive end of the wire with a "+".
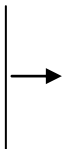
4. A transformer has 350. primary windings, and 1600. secondary windings. What is the voltage in the primary if there is a voltage of 512 V (AC) in the secondary? If the transformer has 3.40 A in the primary, what is the current in the secondary? (Assume it is 100% efficient)

5. If you transmit 1200. W of power at 800. VAC, how much power is lost if the lines have a resistance of 3.20 Ω? How much would be lost if you transmitted the same power at 10,000. VAC?