Electric Motor Rubric

Name_____

Date_____ Period_____ Score____/4

Drawing / Captions / Labels

Place a check by each expectation you completely fulfilled

		Basic	Advanced
1.	Figure 11 from page 234	_____	
2.	Each armature tested is clearly identified – type of metal, thickness (gauge), length.	_____	
3.	Drawing shows all parts of the set up – power source, paper clips, magnet, armature, alligator clips	_____	
4.	Labels identify all parts of the set up	_____	
5.	The time each armature spun is identified for each power level	_____	
6.	The approximate (relative) speed each armature spun for each power level	_____	
7.	Additional outcomes for each power level are identified – melting, smoking, sparks, etc.	_____	
8.	Troubleshooting techniques are included- example, fixing an out-of-balance armature	_____	
9.	Wobbling identified.	_____	
10.	The sanded portion of the armature is identified	_____	

Summary Paragraphs(s)

Place a check by each expectation you completely fulfilled.

1. *The armature becomes an electromagnet.* _____
   a. The sanded portion of the armature is identified as the commutator-which switches the electromagnet on and off as it spins _____
   b. The paper clips serve as the brushes of conventional electric motor-which act as conductors to the commutator. _____
2. *The electromagnet is attracted to and repelled by the permanent magnet* _____
   a. The poles of the armature are reversed by the commutator which switches repulsion into attraction between the permanent magnet and the electromagnet. _____
   b. The pole reversal is the result of the current being reversed by the commutator. _____
3. *When the coil (armature) moves around it briefly becomes non-magnetic.* _____
4. *The momentum of the coil allows it to continue moving until it becomes re-magnetized* _____
5. *Energy transformations are identified*
   a. Electricity to mechanical (motion) _____
   b. Electricity to heat (thermal) _____
   c. Electricity to light (glowing, sparks) _____
6. *The source of heat is identified as electrons that are piling up in the armature and the paper clip.* _____

4	3	2	1
15 of the basics covered AND 3 advanced topics are discussed	12-14 basic expectations are covered.	9-11 basic expectations covered.	1-8 basic expectations covered.