Leading Questions

1) What is the actual catalytic mechanism discussed in the paper? How does it differ from the mechanism that you proposed at the end of the last class period?

2) The authors discuss a previously reported alternate system that uses silanes to reduce alkyl halides. What is the reference information for this paper? How do the trends in reactivity (Cl vs. Br vs I) from this referenced study differ from those in the Brookhart paper?

3) The authors use a term called the turnover number (TON) to describe catalytic activity? Without consulting your textbook or the internet, what is your perception of turnover number? What does it mean to have a single turnover in a catalytic cycle? Now, consulting your text or the internet: How does one calculate turn-over number (TON)? Try calculating the turnover number for one of the specific reactions mentioned in the article (for example conversion of 1-chloropentane to pentane. Note: I expect everyone to do a different sample, so don't use the chloropentane example).

4) The authors use Schlenk techniques and J. Young NMR tubes in their experiments. Using a simple web search to inform your answer, briefly describe Schlenk techniques and why they are important in inorganic chemistry. Also, describe what a J. Young NMR tube is and how this is used in conjunction with Schlenk techniques.

5) What types of magnetic resonance experiments are used in this study? Assign all of the NMR spectra associated with one of the Ir complexes in the paper.