

Homework Assignment #7

1. Describe thermal and chemical changes underway during the four stages of combustion in a CI engine. How is pressure impacted in each stage? Identify characteristic behavior in the pressure-crankangle diagram.
2. Complete the Engine Heat Balancing Activity found on the Mindworks website. Implement your solution using tips described on the activity sheet. Watch the corresponding BbLearn video on this activity for additional hints.
3. Complete the In-Cylinder Pressure Modeling Activity found on the Mindworks website. Provide artistic sketches of the requested graphs and supporting discussion. Watch the corresponding BbLearn video on this activity for additional hints.
4. Explain what is meant by MBT Timing and describe the steps you would take using inputs and outputs from Jeremy's two-zone engine heat release model to determine the MBT Timing. How might you expect MBT Timing to change at a slower speed for the same load? How might you expect MBT Timing to change at higher load for the same speed? Don't get too carried away, but explain your reasoning.
5. Prepare a detailed outline for your 5-page SAE technical paper that includes a descriptive title, logically sequenced/meaningful subsection labels, identifies all figures/tables that you intend to use/replicate/modify, and supplies complete citations for all your references.