



## ACTIVITY: SSME Mathematical Reference

### Directions:

Read the SSME readings and worksheets. Study the pictures of the computer control screen so you can identify the parts with which you will be working. While you can do this by yourself, we recommend you work in a group of at least three (3) people. You will need a pencil, highlighter, and a calculator, along with the readings to complete the launch.

### Job Title:

Space Shuttle Main Engine Engineer (SSME)  
Main Propulsion System Engineer (MPS)

### Job Duty:

Manning console C3 and C4 in the Firing Room.

### College Education:

Bachelor of Science in Aerospace Engineering

### High school Education:

Algebra, Algebra II, Trigonometry, Calculus, Biology, and Chemistry

### Launch task and responsibilities:

#### Level 1:

**Monitor** and **record** the rpm of the HPFTP and the HPOTP.

Calculate flow rates for the oxidizer and fuel valves. Using the computer controller, correct any changes needed to the system in order have the engines provide adequate thrust to launch the Shuttle System. This is done using sensors on the feedlines, valves, fuel pumps and nozzle. Changes are made to the valves using the computer at the launch station.

#### Level 2:

Monitor and record the Total Mass Flow.

#### Level 3:

Monitor and record the Exit Velocity and Vacuum Thrust.

### Did You Know?

- To launch the Space Shuttle, many people are involved. You can go to the firing room at [nasa.gov](http://nasa.gov) and learn more about these people.
- To launch the Space Shuttle there are people whom monitor and adjust the main engines, people who monitor the environment within the orbiter itself, weather people who check the outside weather, and people who watch over and monitor the astronauts. Can you think of any other things that NASA might watch over and monitor?
- For more information about launching the Shuttle, try the web at : <http://enterfiringroom.ksc.nasa.gov/S0007Simulation/S0007Index.htm>