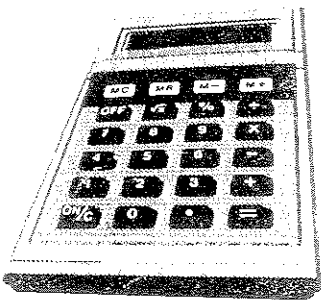
PRACTICAL PROBLEM SOLVING

DESCRIPTION: Teams will be required to gather and process data to solve a given problem. Intermediate measurements and calculations may be required.



EVENT PARAMETERS: Only non-programmable and non-graphing calculators are permitted.

A TEAM OF UP TO: 2 **APPROXIMATE TIME:** 50 minutes

THE COMPETITION:

1. The event will consist of up to six lab stations and use materials commonly found in a high school laboratory. Additional stations may be added to accommodate large enrollments.

2. The students are required to apply scientific theories and principles in the solution of the problems presented. Students will make measurements and determine specific values. **Note: the solution to some of the problems may be too large, small or obscure for direct measurement and must be arrived at by reasoning out an indirect method of obtaining the necessary data.**

3. **All data collected and equations used must be shown in an organized manner on the answer sheet.**

4. The students are expected to use the mathematical expressions that are required for the values **and the correct** equations for basic relationships. Students will be expected to apply the proper statistical analysis. The event supervisor may provide a list of mathematical relationships or constants.

5. Students will be required to use correct metric units throughout calculations and to work with significant figures.

6. Supervisors are encouraged to use computer or calculator sensors/probes wherever possible or provide students with data sets collected by such sensors/probes following demonstration of the data collection.

SCORING:

Problems may have a different point value depending upon the difficulty of the problem. Points will be awarded for the correct answers and/or the use of the proper mathematical relationship. Points will be deducted for failure to express values in the proper units and the incorrect use of significant figures. No points will be awarded for answers that are not supported by data and calculations. Tiebreakers will be problems selected in advance of the competition by the event supervisor. If the event is held over a series of time periods, the tiebreakers will be the same for all groups.