

# STANDARD VS. HONORS CHEMISTRY

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# SAMPLE PROBLEMS

CAN YOUR STUDENT ANSWER (OR ESTIMATE ANSWERS) TO THE FOLLOWING QUESTIONS WITHOUT A CALCULATOR?

1.  $25\text{ cm} = \underline{\hspace{1cm}}\text{ km}$

2.  $\frac{(2.8 \times 10^5)(6.1 \times 10^{-2})}{8.9 \times 10^4} =$

3.  $(2\text{ DAYS}) \left( \frac{24\text{ HOURS}}{\text{DAY}} \right) \left( \frac{60\text{ MINUTES}}{\text{HOUR}} \right) =$

4. REARRANGE THE VARIABLES TO SOLVE FOR  $T_2$ .

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

# SKILLS FOR SUCCESS IN ALL CHEMISTRY CLASSES

## ACADEMIC SKILLS

- FOLLOWING DIRECTIONS (WRITTEN & ORAL)
- PROBLEM SOLVING
- APPLICATION OF MATH SKILLS (FRACTIONS, PERCENTS, RATIOS, BASIC ALGEBRA)
- CRITICAL THINKING
- TECHNICAL READING & WRITING
- NOTE TAKING & STUDY SKILLS
- COMPREHENSION RATHER THAN ROTE MEMORIZATION
- LABORATORY SKILLS, INCLUDING LAB SAFETY

## PERSONAL SKILLS

- **INDEPENDENCE**
- **PERSONAL RESPONSIBILITY**
- **SELF-ADVOCACY**
- **RESILIENCE & PERSEVERANCE**
- **TIME MANAGEMENT**

# THINGS TO CONSIDER...

- **ALL CHEMISTRY CLASSES WILL REQUIRE A CHANGE IN STUDY HABITS FOR MOST STUDENTS! ROTE MEMORIZATION IS INSUFFICIENT.**
- REGULAR ATTENDANCE IS ALSO CRUCIAL TO SUCCESS.
- HONORS CLASSES MOVE AT A FASTER PACE, COVER MORE MATERIAL AND IN GREATER DEPTH.
- **HONORS CLASSES ARE TAUGHT DIFFERENTLY!** SCIENCE FAIR IS NOT THE ONLY DIFFERENCE. STUDENTS WILL RECEIVE LESS DIRECT INSTRUCTION AND MORE INDEPENDENT PROBLEM SOLVING OPPORTUNITIES.
- DROPPING FROM HONORS TO STANDARD MAY NOT BE AN OPTION. IT DEPENDS ON CLASS SIZES AND STUDENT SCHEDULES. CHOOSE WISELY!

# • THINGS TO CONSIDER (CONT.)...

- HONORS STUDENTS ALREADY MUST HAVE STRONG MASTERY OF BASIC CONCEPTS COVERED IN MIDDLE SCHOOL AND BASIC ARITHMETIC. MINIMAL TIME IS DEVOTED TO REVIEWING THESE CONCEPTS.
- ALGEBRA II IS A COREQUISITE FOR HONORS CHEMISTRY.
- STUDENTS GENERALLY ARE MORE SUCCESSFUL IN HONORS CHEMISTRY IF:
  - THEY ARE GENUINELY INTERESTED IN SCIENCE AND WANT TO BE IN THE CLASS
  - THEY HAVE EARNED:
    - B+ OR BETTER IN HONORS ALGEBRA I -OR-
    - A- OR BETTER IN STANDARD ALGEBRA I
    - *BIOLOGY GRADES ARE POOR INDICATORS OF SUCCESS IN CHEMISTRY*
    - *NUMBER SENSE IS MORE IMPORTANT THAN OVERALL MATH GRADES*
    - *SCORES ON MATH EXAMS ARE BETTER INDICATORS THAN OVERALL MATH GRADES*

# SAMPLE STANDARD VS. HONORS LABS

## STANDARD CHEMICAL REACTIONS LAB

- PLACE A DROPPER FULL OF HYDROCHLORIC ACID INTO A TEST TUBE. ADD A SMALL PIECE OF MAGNESIUM TO THE TUBE AND OBSERVE.
  - LIST EVIDENCE OF A REACTION.
  - SOLID MAGNESIUM METAL PRODUCES HYDROGEN GAS AND AQUEOUS MAGNESIUM CHLORIDE WHEN MIXED WITH AQUEOUS HYDROCHLORIC ACID. WRITE THE BALANCED EQUATION FOR THIS REACTION.
  - IDENTIFY THE TYPE OF REACTION THAT OCCURRED.

## HONORS CHEMICAL REACTIONS LAB

- DEVELOP PROCEDURES TO CREATE ONE SINGLE REPLACEMENT REACTION AND ONE DOUBLE REPLACEMENT REACTION USING THE CHEMICALS AND EQUIPMENT LISTED BELOW. YOU MUST INCLUDE OBSERVATIONS AND/OR DIAGNOSTIC TESTS LISTED BELOW TO SUPPORT YOUR WORK. YOU MAY USE YOUR PERIODIC TABLE, ION SHEET, SOLUBILITY CHART AND ACTIVITY SERIES WHILE WORKING. WRITE BALANCED EQUATIONS FOR EACH REACTION.

# SCIENCE FAIR IN HONORS CHEMISTRY

- HONORS CHEMISTRY STUDENTS MUST COMPLETE A SCIENCE FAIR PROJECT (OR ONE OF THE APPROVED ALTERNATIVES). IT COUNTS 10% OF THE OVERALL GRADE.
- PROJECTS ARE INTENDED TO BE COMPLETED INDEPENDENTLY WITH MINIMAL GUIDANCE FROM TEACHERS & PARENTS.
- MINIMAL CLASS TIME IS DEVOTED TO PROJECTS.
- PROJECTS COMPLETED IN BIOLOGY MAY BE USED IN CHEMISTRY, WITH TEACHER APPROVAL.
- STUDENTS WILL CREATE POSTER BOARDS INSTEAD OF POWERPOINT PRESENTATIONS.
- PROJECTS ARE DUE IMMEDIATELY AFTER WINTER BREAK (NOT AT THE END OF THE YEAR).
- ALTERNATES INCLUDE A PBL OPTION (PRIMARILY AN IN CLASS PROJECT WITH OUT OF CLASS EXTENSION IN 3<sup>RD</sup> QUARTER), OR PARTICIPATION IN ROBOTICS OR SCIENCE OLYMPIAD (YEAR LONG, OUT OF CLASS AND MUST MAKE THE TEAM).

**TIME MANAGEMENT & GENUINE INTEREST ARE KEYS TO SUCCESS ON THE PROJECT!**