Certified Metric Specialist Program (CMS)

For Industry
Government
Education
And Consumers

South Carolina Version
Dear CMS Candidate:

I have included your CMS Packet. Your Packet includes, an introduction about CMS, applications, sample test questions and many other items. I am pleased to know that you are interested in becoming a Certified Metric Specialist.

The USMA Certified Metrification Specialist program, which is known as the CMS program, is designed to provide documentary evidence for individuals who can qualify as a metric specialist because of their education and experience in the use of the modernized metric system which is known as SI (for Systeme International d'Unites).

The CMS program is structured to help maintain professional standards in the field of metrification. With U.S. conversion to SI, companies, schools, agencies, businesses and other facilities will seek personnel who, in addition to their job skills, are knowledgeable about SI. The USMA CMS program is designed to give both employers and employees the documented evidence that an individual's qualifications have been carefully screened to verify that he or she has the background and ability to use the SI version of the metric system correctly.

We now have over 100 certified metric specialists in South Carolina. I look forward to hearing from you soon. If you have questions or need more information, please call me at (803) 777-7007 or FAX (803) 777-4396 or email at djordan@sc.edu. Check the web at www.cas.sc.edu/cse, click on Other Programs and click on Metric Activities.

THANK YOU A YOTTA (10^24)

Don Jordan, Professor USC
Director for CMS - Program

PS. Please return the white copy of the Guide To The Use of The Metric System [SI Version] after you take your CMS Exam. Note: the CMS-Exam can be administered close to your home, usually within 80km.
Certified Metrication Specialist (CMS) Program

The USMA CMS Program is designed to provide documentary evidence for individuals who can qualify as metric specialists because of their education and experience in the use of the modernized metric system—known as SI (systeme international d’unites).

The CMS program is structured to help maintain professional standards in the field of metrication. With the United States’ conversion to SI, companies, schools, agencies, businesses, and other facilities will seek personnel who, in addition to their job skills, are knowledgeable about SI. The USMA CMS Program is designed to give both employers and employees the documented evidence that an individual’s qualifications have been carefully screened to verify that he or she has the background and ability to use the SI version of the metric system correctly.

The South Carolina version of the CMS Program encourages each school superintendent in the state to recommend one person from his/her district to be certified. Ideally we want each of over 1,500 schools in the state to employ a certified metric specialist.

Outline for South Carolina Educators - CMS

South Carolina applicants follow these procedures:

1. Obtain information (including a CMS packet) about the CMS Program
2. Fill out application form and include as references
   a. Immediate Supervisor
   b. School District Superintendent
   c. USMA Eastern Director, Don Jordan
3. List courses taught, number of years of teaching experience, and at what levels (elementary, middle, high school, post-secondary).
4. Make arrangements to take CMS Exam (80% is passing score)
   a. By appointment
   b. At SCAS/SCJAS Annual Meeting site
   c. At SCSC
   d. SCCTM Annual Meeting
   e. Other
   You may schedule your exam at any one of several sites across the state. See address at bottom of page.
5. Checks should be made payable to USMA CMS Program. A discounted fee ($25.00) can be paid at the time of the exam. (Note: Regular fee is $65.00).

CMS Exam results are confidential.

Names of successful candidates will be added to all USMA lists and, for SC educators, names will be published in both the SCJAS Newsletter and the SCAS Newsletter. Names will also be forwarded to the State Department of Education, the Commission on Higher Education, and the United States Department of Commerce.

Note: The CMS/CAMS Certification Program is an educational project that has the support of the State Department of Education and the following organizations.

<table>
<thead>
<tr>
<th>SCSC</th>
<th>South Carolina Science Council</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCJAS</td>
<td>South Carolina Junior Academy of Science</td>
</tr>
<tr>
<td>USMA</td>
<td>United States Metric Association</td>
</tr>
<tr>
<td>SCAS</td>
<td>South Carolina Academy of Science</td>
</tr>
<tr>
<td>SCCTM</td>
<td>South Carolina Council of Teachers of Mathematics</td>
</tr>
</tbody>
</table>

For information, to obtain a CMS Exam application, or to schedule an exam, write or call:

Dr. Don Jordan, CMS Program, College of Arts and Science, Center for Sci Ed, Sumwalt 323, University of South Carolina, 1212 Green Street, Columbia, SC 29208
Phone: (803) 777-7007  Fax: (803) 777-4396  Web: www.cas.sc.edu/cse/jordan  E-mail: djordan@sc.edu
SOUTH CAROLINA EDUCATORS CMS PROGRAM

U.S METRIC ASSOCIATION, INC.

CERTIFIED METRICATION SPECIALIST (CMS) PROGRAM

DATA AND GUIDELINES

For industry, government, education and consumers

CERTIFICATION AVAILABLE AS

Certified Metrication Specialist

OR

Certified Advanced Metrication Specialist
These guidelines for the U.S. Metric Assn CMS Program are submitted at your request. The CMS application form and the forms that a CMS applicant sends to three persons (who will be his/her references) are given at the back of this document.

For South Carolina Educators mail applications, forms and all correspondence to Dr. Don M. Jordan, USMA Eastern Director c/o College of Arts and Sciences, USC Columbia SC 29208.

CHAIRMAN, USMA Certified Metrication Specialist Board

Printed in the USA by the
U.S. Metric Association, Inc.

First Printing: December 1978
Second printing: January 1980

First Printing August 1987 (South Carolina Educators Version)
Second Printing January 1991 (South Carolina Educators Version)
Third Printing April 1994 (South Carolina Educators Version)
Fourth Printing Sept 2003 (South Carolina Educators Version)
INTRODUCTION

This document provides information on the only bona fide Certified Metrication Specialist (CMS) program that is available. It is the U.S. Metric Association's (USMA) carefully monitored program which is under the direction of some of the nation's top metric experts who operate as the USMA Certified Metrication Specialist Board.

WHAT IS USMA?

The U.S. Metrication Association Inc., is a nonprofit organization with membership consisting of citizens from all sectors of the community, including the industry and government personnel, educators and consumers. USMA has been promoting U.S. metric conversion and correct metric system usage since its establishment in 1916 by Columbia University, and has assisted many individuals, companies and businesses in their metric planning. The corporate members supporting USMA include companies ranging from the nation's largest multinational and industrial firms to companies in the small-business categories, plus educational and governmental institutions at all levels.

WHAT IS THE CMS PROGRAM?

The USMA Certified Metrication Specialist program, which is known as the CMS program, is designed to provide documentary evidence for individuals who can qualify as metric specialists because of their education and experience in the use of the modernized metric system which is known as the SI (for Systeme International d'Unites). To verify that holders of CMS certificates have kept abreast of new developments in SI, arrangements also have been made for rectification every 3 years or longer in some cases.

WHAT IS THE CMS PROGRAM OBJECTIVE?

The CMS program is structured to help maintain professional standards in the field of metrication. With U.S. conversion to SI, companies, schools, agencies, businesses and other facilities will seek personnel who, in addition to their job skills, are knowledgeable about SI. The USMA CMS program is designed to give both employers and employees the documented evidence that an individual's qualifications have been carefully screened to verify that he or she has the background and ability to use the SI version of the metric system correctly.

WHO IS ELIGIBLE TO APPLY FOR CERTIFICATION?

Any person who is knowledgeable about SI units/symbols and the rules for using them is eligible for certification as a metric specialist.

HOW IS THE QUALIFICATION FOR CMS/CAMS DETERMINED?

Qualification of a CMS/CAMS applicant is based upon two requirements:

- A certain amount of experience in metric activities/education.
- Obtaining a passing grade on an SI-metric-data examination which each applicant must take.

To Be Awarded a CMS Rating:

Applicants must first provide information and proof of the involvement in metric activities, which will total at least 30 certification-rating points, or have three years of teaching experience in science and/or mathematics. Then applicants must pass the CMS exam.

To Be Awarded a CAMS Rating:

Applicants must first provide information and proof of the involvement in metric activities, which will total at least 50 certification-rating points, or have a CMS rating. Then applicant must pass the CAMS exam.

In addition, all CMS/CAMS candidates must supply completed reference forms from three persons who can verify some of the metric activities listed by an applicant as part of his/her backup data for qualification. In South Carolina, the CMS/CAMS candidate must have a reference form from his/her immediate supervisor, the school districts superintendent and Dr. Don M. Jordan, Eastern Director of USMA.
REFERENCE FORM AND MAILING INSTRUCTIONS

After filling in the application form:

1. Refer to the three persons you have named on the application form as individuals who can verify your participation in the metric activities you have listed to show you qualify for certification as a metric specialist. For S.C. educators, use immediate supervisor, Co-Teacher, district superintendent, Principal and Dr. Don M. Jordan.

Fill in the top half of one of the Reference Forms (included in this document) for each person you list as a reference, ensuring you put a date on the line that tells the reference person the deadline for his/her sending the filled-in form to USMA CMS Program headquarters. South Carolina educators follow their instructions.

2. Collect all the backup data you can find which shows your involvement in the metric activities you listed on your application, for verifying your qualifications as a metric specialist. For S.C. educators, include the number of years of teaching mathematics and/or science courses and at what level.

Points are based upon an applicant's proof of involvement (on a full-time or part-time basis) in metric activities such as the following:

a. Company, school or other on-the-job service as metric coordinator, member of a metric committee, work on metric projects, teaching metrics, etc.
b. Participation (as instructor/officer/attendee) in metric workshops, conferences, classes, society/association/club, metric work, or similar activities.
c. Serving as a metric speaker, author of metric article/books/brochures/other published works.
d. Other projects, programs, enterprises, undertaking, etc., where SI metric is involved.

* Evidence of the applicant's metric activity participation should be submitted. Educators should list courses taught and number of years of teaching experience and at what level.

SUGGESTED PROCEDURE FOR STRUCTURING APPLICATION

1. On a separate sheet of paper, make a list of all the various types of metric activities in which you have participated, noting the date for each.

   a. If the listed activities show involvement in use of the everyday SI metric unit and you have not been using many of the derived/supplementary SI units, check the CMS box on the application.
   b. If the listed activities show involvement in both everyday SI units and the derived/supplementary units (in engineering/scientific work or in teaching these SI units), and you want to be certified as a Certified Advanced Metrication Specialist, check the CAMS box.

2. Use the list you made to fill in the application form fully, giving the metric participation items, with most recent items listed first, as indicated on the application form.

   Be sure to key each backup item to the number on the application form block to which it pertains. Do not enclose a job resume in lieu of filling in the application form, as this will cause your application to be returned for proper completion.

3. Follow instructions. If questions arise, call or write the S.C. CMS Director, Don M. Jordan.

A CMS applicant does not have to be a member of USMA to become a certified metrical specialist, and being a part of USMA does not automatically confer CMS status. For non-members, however, qualifying for a CMS certificate and paying the non-member fee includes a one-year membership in USMA.
CERTIFICATION FEES AND CERTIFICATE DETAILS

All candidates will pay a fee, which has been reduced to only $25.00.

Successful applicants will receive

- A wallet-sized card, indicating he/she is a Certified Metrication Specialist.
- A certificate, bearing the USMA gold seal and showing the expiration date of the certification, which indicates he or she is a qualified metric specialist.
- A successful candidate can receive a handsome replica of the certificate, embossed on a stained-walnut base, ready for hanging, for an additional fee of $35 to $70.

USMA will enter the successful CMS/CAMS applicant's name on its Certified Metrication Specialist list, which will be made available to employers or anyone showing a legitimate reason for requiring such a list.

Certification will be awarded for a 3-year period, after which re-certification may be obtained by complying with USMA CMS re-certification requirements.

CATEGORIES OF METRIC SPECIALIST CERTIFICATION

Individuals may be certified in one of two categories:

a. Certified Metrication Specialist (CMS). Requires knowledge of the commonly used SI metric units and symbols plus the rules for using these everyday units properly.

b. Certified Advanced Metrication Specialist (CAMS). Requires knowledge of (1) the commonly used SI units and symbols; (2) the SI technical (derived/supplementary) units and symbols; and (3) SI usage rules. Also requires an ability to use SI units in making engineering/scientific calculations.

Note:
Where you do not have backup data for an item, provide the name, address and telephone number of an individual who can verify your participation in that metric activity.

3. Mail the filled-in application form with your backup data and your check (if applicable) or money order for $25.00 (made out to USMA CMS Program) to Don Jordan, South Carolina Academy of Science, Room 323 Sumwalt, University of South Carolina, Columbia, SC 29208.

EXAMINATION DETAILS

After the CMS Examiner’s review and checkout of the applicant’s qualifications has shown he/she is qualified to take the certification test, an Examination Guide is issued to the applicant. This guide contains instructions on taking the examination and includes samples of types of questions to be answered for the applicable (CMS or CAMS) test. In South Carolina, an educator need only call Dr. Don M. Jordan at 777-7007 with the names of two references--his or her immediate supervisor and the district superintendent--at least one week in advance.

S.C. educators can take the exam by appointment with Dr. Don M. Jordan or at one of the Meetings of the South Carolina Academy of Science (SCAS); South Carolina Science Council (SCSC); or The South Carolina Council of Teachers in Mathematics (SCCTM). Candidates may arrange to take the exams at any one of several sites throughout SC simply by calling Don Jordan.

College/university test sites:

Coastal Carolina College, Conway
College of Charleston, Charleston
SC State University, Orangeburg
Converse College, Spartanburg
Furman University, Greenville
Plus others

Presbyterian College, Clinton
Francis Marion University, Florence
Clemson University, Clemson
Winthrop College, Rock Hill
USC, Columbia

The applicants must notify Dr. Jordan of his/her intention to take the test so arrangements can be made.
HOW ARE CREDIT POINTS ALLOCATED?

Based upon the backup data on metric activity/education involvement submitted by the CMS/CAMS applicant’s reference individuals, the CMS Board Examiners will allocate credit points for the applicant.

Points awarded will be based on a table that lists the number of points.

NOTE: The “points” table is not available to applicants because it must be used with a “weighting” system to allow for complexity of the activity/experience/education submitted and the length of time involved in each undertaking.

NOTIFICATION OF EXAMINATION RESULTS

Each CMS/CAMS applicant who has taken the certification exam will be notified he/she has passed the examination when that individual receives his/her certificate. Those who do not pass the test will be notified via a letter, which will include suggestions for further study before taking the next examination. Copies of their failed/passed examinations will not be available to those who took the examination.

Names of the successful candidates will be added to the U.S. Metric Association official Certified Metrication Specialist list, their names will be published in the USMA Newsletter, and a general news release will be sent to the news media giving the names of those who have been certified. In addition, S.C. educators’ names will be published in both the SCJAS Newsletter and the SCAS Newsletter and will be forwarded to the State Board of Education and the Commission on Higher Education.

FAILURE TO PASS EXAMINATION

If an applicant fails to pass the examination, arrangements may be made to take the next scheduled test upon payment of an additional $10 fee (to cover administrative costs) and by the applicant’s notifying the CMS Board that he/she desires to re-take the test. Names of those scheduled to take an examination or those who failed an examination will not be published or disseminated. S.C. educators will make these arrangements with Dr. Don M. Jordan and must pay a $5.00 fee.

APPLICANT NON-QUALIFYING APPEALS PROCEDURE

The CMS Board will give an applicant every possible opportunity to supply additional data if information supplied with a CMS application is not sufficient to qualify the applicant for certification.

However, if an applicant must be denied a certificate, he or she must submit a written justification to the CMS Board, giving any extenuating circumstance. This will be reviewed by a CMS Appeals chairman. A hearing will be held, and a final decision will be made by the Board.

EMPLOYER COORDINATION

Employers are invited to encourage employees to apply for certification via this program. Upon request of an employer, USMA will provide any employer with a list of certified metrication specialists, including the date of certification.

An employer desiring to certify a group of employees as metrication specialist may arrange for this by contacting USMA Headquarters, 10245 Andasol Avenue, Northridge, CA 91325

Superintendents and science and mathematics supervisors who desire to certify a group of faculty or administrators in their district should make arrangements with Dr. Don M. Jordan, South Carolina Academy of Science, Rm. 323 Sumwalt, University of South Carolina, Columbia, SC 29208, phone (803) 777-7007, FAX (803)777-4396 & website: www.cas.sc.edu/cse/jordan.
South Carolina

EXAMINATION STUDY GUIDE
FOR
U.S. METRIC ASSOCIATION (USMA)
CERTIFIED METRICATION SPECIALIST
AND
CERTIFIED ADVANCED METRICATION SPECIALIST
PROGRAMS

Instructions  *  Procedures  *  Sample Questions

January 2012
EXAMINATION PREPARATION

The USMA Certified Metrication Specialist (CMS) and Certified Advanced Metrication Specialist (CAMS) examinations are based on a version of the metric system known as SI (for Le Systeme International d’Unites, or International System of Units, as it is known in the United States). Guidance and rules to be observed by those taking the examinations will be found in the American Society for Testing & Materials metric guide:  


NOTIFICATION OF RESULTS

Eighty percent (80%) of the test items answered correctly constitute a passing grade.

Each Candidate shall be notified within 45 days after the examination date whether he/she passed or failed. At this time the certificate will be forwarded, with a wallet-sized identification card, to those passing the test. Successful candidates’ names will be placed on an appropriate USMA official certified metrication specialist list, which will be available to employers and schools upon request. In addition, S.C. educators’ names will be published in the SCJAS Newsletter, SCAS Newsletter, SCC Newsletter, and SCCTM Newsletter and will be forwarded to the State Board of Education and the Commission on Higher Education.

FAILURE TO PASS

Names of those who fail to pass the examination will be kept confidential. An applicant who fails to pass the test may take the next scheduled test upon payment of an additional $10 administrative fee if applicable.

RE-CERTIFICATION

Certification is valid for three years and may be renewed after that time, as explained on the USMA CMS Re-certification Guide which will be made available to all certified metric specialists just before their certification dates expires. Re-certification will be based on an accumulation of points via various metric activities of the candidate for re-certification (points for attending metric classes or conferences; making metric speeches; writing metric articles that are published; serving on metric committees, etc.). Therefore, each certified metric specialist should keep detailed records of all of his/her metric activities.
INSTRUCTIONS AND SAMPLE QUESTIONS

Regarding the U.S. Metric Association Examination for the Certified Metriction Specialist (CMS) and the Certified Advance Metriction Specialist (CAMS) Program

Examinations for two types of metric certifications will be given.

CERTIFIED METRICATION SPECIALIST examination which verifies that the applicant is familiar with SI units and symbols that are very commonly used in everyday life, is capable of using them properly, and can make simple calculations for everyday situations with the units.

CERTIFIED ADVANCED METRICATION SPECIALIST examination verifies that the applicant can use the everyday SI units correctly and also is familiar with the technical/scientific SI units. This test is oriented towards engineers, educators, scientists and others who work in technical or scientific fields.

EXAMINATION TIME AND PLACE

Certification shall be given as frequently as required by the number of qualifying candidates. The CMS board will announce in the USMA NEWSLETTER the dates, times and locations of the examinations. Also, South Carolina candidates will be notified by mail and SCJAS Newsletter.

Examinations in South Carolina will be scheduled at the SC Science Council workshop in October, Winter workshop in February, and the annual meeting of SCAS. Examinations can also be scheduled by request to Dr. Don M. Jordan at USC, College of Arts & Sciences, E-mail: Jordan@gwm.sc.edu, Phone: 777-7007.

WHAT TO BRING TO THE EXAMINATION

Required:
1. Some form of legal identification that bears a photograph of yourself (a valid drivers license, a company badge, etc.)
2. No. 2 pencils and erasers
3. Calculator

Optional:
You may bring a hand held calculator of any type and a small, linear measuring device, if you wish. (Scratch paper will be provided by USMA Test Administrator.)

EXAMINATION CONTENTS DESCRIPTION

<table>
<thead>
<tr>
<th>Examination</th>
<th>Approximate Questions</th>
<th>Time Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMS Examination</td>
<td>Approximately 100</td>
<td>2 hours</td>
</tr>
<tr>
<td></td>
<td>multiple choice</td>
<td></td>
</tr>
<tr>
<td>CAMS Examination</td>
<td>Approximately 150</td>
<td>3 hours</td>
</tr>
<tr>
<td></td>
<td>questions</td>
<td></td>
</tr>
</tbody>
</table>
EXAMINATION QUESTION EXPLANATION
The following examples of questions comprising the examination should be reviewed. Instructions given with the examples are identical to those instructions that will be given when you take the test. Note that each question is followed by a number of answer choices, each labeled with a lowercase letter (a, b, c, etc.).

Suggested procedure:
- First select what you feel is the correct answer
- On the answer sheet, find the row of answer "bubbles or other" adjacent to the question numbered. CAREFULLY AND COMPLETELY blacken the space that contains the letter you have selected as the correct answer.
  EXAMPLE: If you have selected the letter c as the answer to a question, here is how your answer should look:
  1.  a  b  ■  d  e
- Do not fill in more than one bubble for each question because this will make the answer incorrect. If you change your mind about an answer, completely erase the darkened bubble and darken the bubble you feel gives the correct answer. This applies also in questions where multiple answers are called for. For example, if answers 12, 13, and 14 are contained in one compound question, use each one of the answer selections for that group of questions only once.

MAKING NOTES DURING THE EXAMINATION
DO NOT WRITE ON THE EXAMINATION PAPER. Scratch paper will be provided for this purpose.

DURATION OF THE EXAMINATION
Ample time has been allocated for completing this examination. However, for efficiency purposes, it is suggested that you skip the questions where you are not sure of the answers. Complete the exam, then go back to the more difficult questions.

EXAMPLES OF QUESTIONS THAT WILL BE INCLUDED IN THE CMS EXAMINATION

I. Multiple choice questions with five answer selections.
   1. All of the following symbols are correctly written except:
      a. millimeter mm  The correct answer is c
      b. centimeter cm
      c. ampere A
      d. watt w
      e. milliliter mL
      1.  a  b  ■  d  e
   2. Among the following, the best price unit is:
      a. 500 g / $1.25  The correct answer is b
      b. 1 kg / $2.35
      c. 750 g / $1.85
      d. 1.5 kg / $3.60
      e. 900 g / $2.30
      2.  a  ■  c  d  e

II. Questions with multiple blanks requiring two or more answers, with five answer selections.
    3 & 4. If you jog 4 kilometers in 1 hour, how far can you jog in 4 hours? (3)_____km or (4)_____m
       a. 8  e. 1600
       b. 16,000  f. 160
       c. 16  g. 800
       d. 8000
       3.  a  b  ■  d  e
       4.  a  ■  c  d  e
EXAMPLES OF THE TYPES OF QUESTIONS THAT WILL BE INCLUDED IN THE CAMS EXAMINATION

I. Multiple choice questions with five answer selections.
1. Given:  1 lbf = 4.4 N
           1 in. = 25.4 mm

   Convert 35 psi to the SI equivalent
   The correct (rounded) answer is __________
   a. 2.4 x 10 kPa  
   b. 2.4 MPa
   c. 2.4 Pa 
   d. 2.4 x 10^7 N/m^2
   e. 2.4 x 10^2 kPa

   1. a  b  c  d  e

2. One of the following derived units is not expressed correctly. It is ________
   a. Wh 
   b. J/m/K
   c. m•s^{-1}
   d. mm/s
   e. W•h

   The correct answer is b

   2. a  b  c  d  e

II. Questions with multiple blanks requiring two or more answers with more than five answer selections.
3.4. Combining two base units, the (3) __________ and the second, gives the derived unit for acceleration. It is correctly represented by the symbol (4)__________.
   a. Kilometer  
   b. m/s  
   c. m•s^2  
   d. km/s^2  
   e. meter

   The correct answers are 3 is e & 4 is c

   3. a  b  c  d  e
   4. a  b  c  d  e

NOTE: For any questions you might have regarding the exam, you may write or call:

Dr. Don M. Jordan College of Arts and Sciences/ Rm. 323 Sumwalt, USC Columbia S.C. 29208 Ph: (803) 777-7007, E-mail: djordan@sc.edu
Practice Questions for the National Certified Metric Exam

1. A trip of 63 kilometers is equivalent to _________________ meters.
   (a) 630  (b) 6300  (c) 63 000  (d) 630 000  (e) 6.3

2. How many of the following symbols are written incorrectly?
   Unit / Symbol
   (1) kilowatt / kW  (2) megametre / mm  (3) centigram / cg
   (4) kilometer / km  (5) ampere / A  (6) milliliter / mL
   (7) cubic decimeter / dm$^3$  (8) liter / L  (9) joule / J  (10) watt / W
   (a) 0  (b) 1  (c) 2  (d) 3  (e) 4

3. The amount of substance is measured by the SI unit, _________________.
   (a) pascal  (b) coulomb  (c) BTU  (d) mole  (e) Newton

4. Of the following pairs of units, the pair listed as _________________
   Are both smaller than the meter?
   (a) millimeter and kilometer  (b) hectometer and centimeter
   (c) centimeter and decimeter  (d) centimeter and kilometer
   (e) decameter and micrometer

5. A nickel has a mass of about _________________
   (a) 100 g  (b) 500 g  (c) 1 hg  (d) 1 mg  (e) 5 g

6. The SI base unit for time is the _________________
   (a) day  (b) week  (c) month  (d) second  (e) hour
7. If a family drinks one litre of coke each day, then the family will drink approximately __________________ mL in one week.
   (a) 7 000 mL  (b) 49 mL  (c) 0.7 mL  (d) 700 mL  (e) 70 mL

8. The Thickness of a dime is approximately ___________________________
   (a) 0.1 mm  (b) 5 mm  (c) 0.01 cm  (d) 0.01 mm  (e) 1 mm

9. The _________________________ is the SI unit usually used for body measurements and clothing sizes in metric countries.
   (a) decameter  (b) decimeter  (c) millimeter  (d) centimeter  (e) none of the above

10. The SI derived unit, ________________________________, replaces the pressure cooker’s pounds per square inch unit.
    (a) kilogram  (b) Newton  (c) kilopascal  (d) mole  (e) Joule

Answer Key

<table>
<thead>
<tr>
<th>Question #</th>
<th>Answer</th>
<th>Question #</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C</td>
<td>6</td>
<td>D</td>
</tr>
<tr>
<td>2</td>
<td>B</td>
<td>7</td>
<td>A</td>
</tr>
<tr>
<td>3</td>
<td>D</td>
<td>8</td>
<td>E</td>
</tr>
<tr>
<td>4</td>
<td>C</td>
<td>9</td>
<td>D</td>
</tr>
<tr>
<td>5</td>
<td>E</td>
<td>10</td>
<td>D</td>
</tr>
</tbody>
</table>
Application Form

I hereby apply for certification as a metrciation specialist in the following category:

☐ Certified Metrciation Specialist

(check one)

☐ Certified Advanced Metrciation Specialist

Have you been appointed the CMS specialist from your school district? (Check one)

[ ] yes  [ ] no  [ ] I would like to be

(Please print or type all data required on this application)

Name ___________________________ Telephone ( ) ______________

House No. & Street (or Rural Delivery Address)

Home Address ____________________________

_______________________________________________________________

City State Zip Code

Business Address ___________________________ Telephone ( ) ______________

Employer or Company Name

_______________________________________________________________

Number Street City State

E-mail Id: ________________________________

Job Title ___________________________ USMA Member? Yes ☐ No ☐

*PROFESSIONAL/PRACTICAL EXPERIENCE

(List most recent first. Covers such items as on-the-job use of metric system, making metric speeches conducting metric workshop classes published articles/documents etc.) In each block, list employment which covers the period during which you are submitting metric experience/education obtained, even though this experience may not be job-related.

NOTE: You may expedite processing your application by including copies of your backup materials which show you participated in various metric activities you list; but label each piece of backup material with the block number to which it pertains. This backup data might be a copy of a program where you were a speaker, copy of a published article you authored, an announcement that you were appointed a metric chairman, etc. These materials will be retained in your file, so please do not request their return. You may also add sample material you teach in your class, etc.
*Optional for South Carolina Science and Mathematics Educators.

BLOCK 1
From __________________ to __________________ Business Title ____________________________________________

Employer _____________________________________________________________________________________

Address __________________________ City/State __________________________ Zip ______________

Immediate Supervisor & Title _____________________________________________________________________

Provide details on the separate sheet, with the data headed: BLOCK 1

BLOCK 2
From __________________ to __________________ Business Title ____________________________________________

Employer _____________________________________________________________________________________

Address __________________________ City/State __________________________ Zip ______________

Immediate Supervisor & Title _____________________________________________________________________

Provide details on the separate sheet, with the data headed: BLOCK 2

BLOCK 3
From __________________ to __________________ Business Title ____________________________________________

Employer _____________________________________________________________________________________

Address __________________________ City/State __________________________ Zip ______________

Immediate Supervisor & Title _____________________________________________________________________

Provide details on the separate sheet, with the data headed: BLOCK 3

BLOCK 4
From __________________ to __________________ Business Title ____________________________________________

Employer _____________________________________________________________________________________

Address __________________________ City/State __________________________ Zip ______________

Immediate Supervisor & Title _____________________________________________________________________

Provide details on the separate sheet, with the data headed: BLOCK 4. (For additional items, continue numbering them BLOCK 6, BLOCK 7, etc. on the separate sheet(s) and list the activities in the order given within these blocks, then describe metric activities.)
List all types of training or education that involves the metric system. In giving details for each item (school or organization giving the training; instructor name; address where this education/training may be verified by CMS Examiners, etc.), provide details on a separate sheet of paper, keying each one to the Academic/Training number where the specific item is listed in the following box.

<table>
<thead>
<tr>
<th>METRIC COURSES, WORKSHOPS, CLASSED CONFERENCES, Etc.</th>
<th>LOCATION</th>
<th>FROM</th>
<th>TO</th>
<th>ACADEMIC/TRAINING NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

[To list additional metric activities in support of your qualifications to become certified, continue listing them on the separate sheet(s), labeling them as Academic/Training No. 5, 6, etc. If you have backup materials as proof of your participating in these metric activities, please enclose copies (which will not be returned). These might consist of a certificate verifying you completed a metric class or workshop; official school or college records and description of a course where you used the metric system; or any documentation regarding metric training you received. Be sure to label each piece of backup data with the number of the Academic item to which it refers.]

REFERENCES

Provide information on three metric authorities who know you and can verify your involvement in metrication activities, as you have described on this application form. Send one of the three included reference forms to each of the three persons given as a reference.

1) Name __________________________________ Telephone ( ) ______________________
   Company/Employer __________________________________________________________
   Business Title Immediate Supervisor
   Address __________________________ City & State __________________________ Zip code

2) Name __________________________________ Telephone ( ) ____________
   Company/Employer __________________________________________________________
   Business Title District Superintendent
   Address __________________________________________________________ City & State __________________________ Zip Code

3) Name Dr. Don M. Jordan __________________________________ Telephone(803) 777-7007
   Company/Employer University of South Carolina
   Business Title USMA Eastern Director
   Address Rm. 323 Sumwalt/College of Arts and Sciences, University of South Carolina
   City & State Columbia SC 29208
For S.C. Educators please list the following references

1. Immediate Supervisor
2. District Superintendent
3. Dr. Don M. Jordan USMA Eastern Director

I hereby attest that all data in this application is valid and that I have withheld no information that might be detrimental to me when the CMS Board evaluates my qualifications for being certified as a metrication specialist. Further, I authorize the board to make any queries which are necessary to verify my credentials for certification. I agree to abide by the decision of the USMA CMS Board.

Print name _____________________________

Date of application ______________________  Signature ________________________________

FEES: $50 for U.S. Metric Association (USMA) member [must be U.S. currency]

$65 for nonmember (includes 1-year paid-up membership in USMA) [must be U.S. currency]

** In the state of South Carolina under the guidance of Dr. Don Jordan fees for some candidates recommended by their school superintendent are waived. All other candidates will have to pay the reduced fee of $25.00.

PROCEDURES FOR APPLYING:

Complete this form, filling in all applicable items, and mail with remittance to cover appropriate fee [in U.S. currency] to:

Dr. Don M. Jordan
Rm. 323 Sumwalt
C/O College of Arts and Sciences
Univ. of South Carolina
Columbia S.C. 29208
Ph. (803) 777-7007

(Make checks or money orders [U.S. currency] payable to USMA CMS Program)

(Do not write in this box)

USMA CMS Board CHECKOUT RECORD

USMA CMS Board decision: ☐ Approved ☐ Denied

Certificate Number _____________________________  Date: ________________________________
REFERENCE FORM

for applicant to send to one of the three persons given as references on the CMS application form

The person filling in this form should mail it directly to:
USMA certified Metrication Specialist Program.
Dr. Don Jordan, College of Arts and Sciences, USC Columbia, SC 29208

___________________________________________
Name of applicant (print or type)

___________________________________________
Signature of Applicant

Street and Number

City State Zip Code

THIS PART SHOULD BE COMPLETED BY PERSON GIVEN AS REFERENCE

1. GENERAL BACKGROUND
I have personal knowledge of this applicant's metric activities from ___________ to ___________.
(Use month and year to best of your knowledge)

From personal knowledge of applicant's metric work and general capabilities, I would rate him/her as:

<table>
<thead>
<tr>
<th></th>
<th>SUPERIOR</th>
<th>EXCELLENT</th>
<th>VERY GOOD</th>
<th>ADEQUATE</th>
<th>BELOW PAR</th>
<th>POOR</th>
<th>DON'T KNOW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity to accept responsibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quality of work</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Application of technical knowledge</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Attitude</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Judgement</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Do you consider him/her qualified to be certified as a metrication specialist?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
<th>NO REMARKS</th>
<th>DO NOT KNOW</th>
</tr>
</thead>
</table>

My relationship with him/her has been:
Employer ___ Co-worker ___ Reviewed Work ___ Associate ___
Supervisor ___ Indirect ___ Other: (Explain) __________________________

Are you related to this applicant by blood or marriage? Yes ___ No ___ If yes, explain __________________________

APPLICATION: Below this, fill in name/address of the person to whom you are sending this Reference form

I have filed with the USMA Certified Metrication Specialist Program to be certified as a metrication specialist, and have listed you as someone who will verify my involvement in metric activities. I would greatly appreciate your returning this form (completely filled in) to the CMS Program address given at the top of this sheet, no later than ________________ to expedite processing of my application.

date to be filled in by CMS applicant

Thank you for your assistance and cooperation.

___________________________________________
Date_________________

Name of applicant (print or type)

Signature of Applicant

Street and Number

City State Zip Code

_____________________________________________________________________________
I have personal knowledge of this applicant’s qualifying metric work or experience as follows:

<table>
<thead>
<tr>
<th>DATES</th>
<th>JOB TITLE</th>
<th>EMPLOYER</th>
</tr>
</thead>
<tbody>
<tr>
<td>FROM</td>
<td>TO</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Projects he/she worked on:

<table>
<thead>
<tr>
<th>KIND OF PROJECT</th>
<th>DESCRIPTION</th>
<th>DURATION AND LEVEL OF RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Which activities of the applicant do you feel qualify him/her to be certified as a metrication specialist?

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

3. REMARKS

The CMS Board would appreciate any additional or amplifying information you can provide regarding the applicant’s metric or general-work experience and capabilities, plus his/her limitations (if any):
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Your Title: __________________________
Your Firm: __________________________ Signature __________________________

Date: __________________________

NOTE: Types of metric activities that will help qualify the applicant who gave you as a reference include the following:

On-the-job projects where the metric system was used; metric classes or training taken or taught; metric articles, papers, documents published or presented; metric workshops, conferences, or other metric activities participated in or conducted.

Mail this to: USMA CMS Program
c/o Dr. Don Jordan, College of Arts and Sciences, Room 323 Sumwalt, USC, Columbia, SC 29208
<table>
<thead>
<tr>
<th>Name</th>
<th>School/Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sherry Bailey (301)</td>
<td>Spring Valley High School</td>
</tr>
<tr>
<td>Ms. H. W. Patel (324)</td>
<td>Orangeburg-Wilkinson H.S.</td>
</tr>
<tr>
<td>Ms. Rosemary Wicker (325)</td>
<td>Upper Sav. M &amp; S Hub</td>
</tr>
<tr>
<td>Dean Cannavan (326)</td>
<td>Aiken SC 29803</td>
</tr>
<tr>
<td>Tom Partridge (327)</td>
<td>Summerville SC 29485</td>
</tr>
<tr>
<td>Zeddie Boyd (328)</td>
<td>Harleyville SC 29448</td>
</tr>
<tr>
<td>Martha Lee Boswell (329)</td>
<td>Manning High School</td>
</tr>
<tr>
<td>Linda Fuller Brown (330)</td>
<td>Caughman Rd. Elementary</td>
</tr>
<tr>
<td>Helen R. Ellis (331)</td>
<td>Manning Primary School</td>
</tr>
<tr>
<td>Paige D. Graham (332)</td>
<td>Garmany School</td>
</tr>
<tr>
<td>Janet M. Hayden (333)</td>
<td>Batesburg-Leesville Middle</td>
</tr>
<tr>
<td>Ben A. Wadsworth (334)</td>
<td>Addlestone Hebrew Acad.</td>
</tr>
<tr>
<td>Venie Spencer (335)</td>
<td>Caughman Rd. Elementary</td>
</tr>
<tr>
<td>Dawn P. Allen (336)</td>
<td>Holy Hill Primary School</td>
</tr>
<tr>
<td>Margaret Ann Paul-Cocharan (337)</td>
<td>S. Kilborne Elementary</td>
</tr>
<tr>
<td>Angela Blair (338)</td>
<td>John Ford Middle School</td>
</tr>
<tr>
<td>Christine Randolph (317)</td>
<td>Calhoun County H.S.</td>
</tr>
<tr>
<td>Melissa Woodard (339)</td>
<td>Kingstree SC 29556</td>
</tr>
<tr>
<td>Sharon L. Valentine (340)</td>
<td>Ashland KY 41101</td>
</tr>
<tr>
<td>Diana Z. Stafford (341)</td>
<td>Christ Church Episcopal</td>
</tr>
<tr>
<td>Kimberly J. Carter (342)</td>
<td>McCorey-Liston Elementary</td>
</tr>
<tr>
<td>Frances P. Dantzler (343)</td>
<td>Lexington Middle School</td>
</tr>
<tr>
<td>Ruth S. Glowacki (344)</td>
<td>Rosewood Elementary</td>
</tr>
</tbody>
</table>

( ) certificate number

For information contact: Dr. Don Jordan, Center for Sci Ed, College of Arts & Science, Sumwalt, University of South Carolina, 1212 Green St, Columbia, SC 29208 Ph: 803/777-7007 FAX 777-4396, e-mail: djordan@sc.edu
### Certified Metric Specialists for South Carolina

Sponsored by South Carolina Academy of Science and United States Metric Association
Coordinated with U.S. Department of Commerce, South Carolina Department of Education,
and the South Carolina Commission on Higher Education

<table>
<thead>
<tr>
<th>Name</th>
<th>School/Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Joe Mitchener (366)</td>
<td>Edenton, NC 27932</td>
</tr>
<tr>
<td>Dianne Earle (367)</td>
<td>Moore, SC 29369</td>
</tr>
<tr>
<td>John Pugh (368)</td>
<td>Prosperity, SC 29127</td>
</tr>
<tr>
<td>Steve Witowich (369)</td>
<td>Hilton Head Island, SC 29928</td>
</tr>
<tr>
<td>John Romansky (370)</td>
<td>Anderson, SC 29625</td>
</tr>
<tr>
<td>Mark Musselman (371)</td>
<td>Alston Middle School</td>
</tr>
<tr>
<td>Sondra Wieland (372)</td>
<td>Heathwood Hall Episcopal</td>
</tr>
<tr>
<td>Loretta A. Denko (373)</td>
<td>Barnwell, SC 29812</td>
</tr>
<tr>
<td>Jody Penland (374)</td>
<td>Laurens, SC 29360</td>
</tr>
<tr>
<td>Catherine Lyrick (375)</td>
<td>Lake Wylie, SC 29710</td>
</tr>
<tr>
<td>H. Blackowicz (376)</td>
<td>Andrews, SC 29510</td>
</tr>
<tr>
<td>Dawn Pursley (377)</td>
<td>Rock Hill, SC 29732</td>
</tr>
<tr>
<td>Anita Husbands (378)</td>
<td>Newberry High School</td>
</tr>
<tr>
<td>James Bailey (379)</td>
<td>McCormick High School</td>
</tr>
<tr>
<td>Diallo Cummings (408)</td>
<td>Augusta, GA</td>
</tr>
<tr>
<td>Rebecca Fahrni (411)</td>
<td>Taylors, SC</td>
</tr>
<tr>
<td>James Wheeler (414)</td>
<td>Camden, SC</td>
</tr>
<tr>
<td>Joy Lynch (417)</td>
<td>Manning Elementary School</td>
</tr>
<tr>
<td>Lisa Hardy (420)</td>
<td>Sevier Middle School</td>
</tr>
<tr>
<td>Ann Carbone (423)</td>
<td>Crayton Middle School</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Kathey D. Mays (380)</td>
<td>Newberry High School</td>
</tr>
<tr>
<td>Howard Pierce (381)</td>
<td>Clinton Elementary</td>
</tr>
<tr>
<td>Janice Murray-Gamble (382)</td>
<td>Williamsburg County School</td>
</tr>
<tr>
<td>Robert Schiferl (383)</td>
<td>Columbia, SC 29212</td>
</tr>
<tr>
<td>John Daniel Wicker (384)</td>
<td>Newberry College</td>
</tr>
<tr>
<td>Massimo Malossini (385)</td>
<td>Waccamaw High School</td>
</tr>
<tr>
<td>Deidre Culbret (386)</td>
<td>Greenwood, SC 29646</td>
</tr>
<tr>
<td>Shanise N. Brown (387)</td>
<td>Hand Middle School</td>
</tr>
<tr>
<td>Linda Jackson (388)</td>
<td>Caughman Rd. Elementary</td>
</tr>
<tr>
<td>Bobbi Sue Wrenn (389)</td>
<td>Southeast Middle School</td>
</tr>
<tr>
<td>Kimrey Smith (390)</td>
<td>St. Andrews Middle School</td>
</tr>
<tr>
<td>Roger Skillman (391)</td>
<td>Anderson County Alternative School</td>
</tr>
<tr>
<td>Randolph Brooks (392)</td>
<td>Dreher High School</td>
</tr>
<tr>
<td>Michael J. Kramer (393)</td>
<td>Batesburg Leesville</td>
</tr>
<tr>
<td>Gary Dubose (409)</td>
<td></td>
</tr>
<tr>
<td>Julia Lacey (412)</td>
<td>Columbia, SC</td>
</tr>
<tr>
<td>Celeste Gay (415)</td>
<td></td>
</tr>
<tr>
<td>Stephanie Wells (418)</td>
<td>Manning Junior High School</td>
</tr>
<tr>
<td>Jackson Akwiembi (421)</td>
<td>Olympia Learning School</td>
</tr>
<tr>
<td>Rene Roberts (424)</td>
<td>Crayton Middle School</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Heather E. Nix (394)</td>
<td>Airport High School</td>
</tr>
<tr>
<td>Delbill O. Calalo (395)</td>
<td>Fairfield Central High School</td>
</tr>
<tr>
<td>Cynthia Graybill (396)</td>
<td>Lexington, SC 29073</td>
</tr>
<tr>
<td>Jonathan Dailey (397)</td>
<td>Newberry College</td>
</tr>
<tr>
<td>Floyd W. Dinkins (399)</td>
<td>Taylor Elementary</td>
</tr>
<tr>
<td>Christina Pegues (400)</td>
<td>Summit Parkway Middle</td>
</tr>
<tr>
<td>Kendrick Kerr (401)</td>
<td>Pine Ridge Middle School</td>
</tr>
<tr>
<td>Carrie Simpson (402)</td>
<td>W.A. Perry Middle School</td>
</tr>
<tr>
<td>Jane Perry (403)</td>
<td>Summit Parkway Middle</td>
</tr>
<tr>
<td>Natalia Comsa (404)</td>
<td>Kelly Mill Middle School</td>
</tr>
<tr>
<td>Barabara Soblo (405)</td>
<td>E. L. Wright Middle School</td>
</tr>
<tr>
<td>Tammy M. Howell (406)</td>
<td>White Knoll High School</td>
</tr>
<tr>
<td>Michael Leonard (407)</td>
<td>Columbia, SC</td>
</tr>
<tr>
<td>Chris Reliford (410)</td>
<td>Condor Elementary School</td>
</tr>
<tr>
<td>Anne Wyndham (413)</td>
<td>Columbia, SC</td>
</tr>
<tr>
<td>Pat Griffith (416)</td>
<td>Manning Elementary School</td>
</tr>
<tr>
<td>Dawn Young (419)</td>
<td>Columbia, SC</td>
</tr>
<tr>
<td>Erica Campbell (422)</td>
<td>Alcorn Middle School</td>
</tr>
<tr>
<td>Kevin Fletcher (425)</td>
<td>W.A. Perry Middle School</td>
</tr>
</tbody>
</table>

( ) certificate number

For information contact: Dr. Don Jordan, Center for Sci Ed, College of Arts & Science, Sumwalt, University of South Carolina, 1212 Green St, Columbia, SC 29208 Ph: 803/777-7007 FAX 777-4396, e-mail: djordan@sc.edu
I believe that one of the reasons for poor scores made by U.S. students in international tests lies in the fact that they do not have the advantage of being able to calculate in the metric system, which is much simpler and easier to use. Students from countries in which the metric system is the standard do well on such tests. Research studies in the 1970s found that six to eighteen months of elementary arithmetic could be virtually eliminated from educational curriculums by the simple adoption of the metric system. What the Nation is doing is recycling the problem by not making metric training a rigorous part of the teacher education curriculum. This means if a new teacher is not knowledgeable of the metric system they will not teach it. We hope to improve this with our efforts and with your help.

Don Jordan
SOME BASIC RULES FOR USE AND WRITING OF SI SYMBOLS AND UNITS/
Nolte of Canada
============================================================================

(1) Symbols and Prefixes are the same in all languages.

(2) Symbols are written in lower case, except when the unit is derived from a proper name.

\[
\begin{align*}
m &= \text{metre} & \Omega &= \text{ohm (el. resistance)} & \text{Wb} &= \text{weber (magnetic flux)} \\
s &= \text{second} & H &= \text{henry (inductance)} & C &= \text{coulomb (ci. charge)} \\
g &= \text{gram} & Hz &= \text{hertz (frequency)} & S &= \text{siemens (ci. conductance)} \\
A &= \text{ampere} & \text{Pa} &= \text{pascal (pressure)} & K &= \text{kelvin (thermodyn.temperature)} \\
W &= \text{watt} & \text{lx} &= \text{lux (illumination)} & \text{cd} &= \text{candela (luminous intensity)} \\
V &= \text{volt} & \text{lm} &= \text{lumen (luminous flux)} & \text{mol} &= \text{mole (amount of substance)} \\
J &= \text{joule(energy)} & N &= \text{newton (force)} & F &= \text{farad (ci. capacitance)} \\
\end{align*}
\]

Exception: L = litre (ℓ), to avoid any confusion with the figure 1 when writing 1 (one) or 1

(3) Prefixes and symbols are printed in Roman (upright) type. No spacing allowed between prefixes and units. e.g. km - cm - ng (not: km - mol - m s - km - n g - c-m)

(4) Symbols are never pluralized. e.g. 65 g (not: 65 gs); 15 km (not: 15 kms)

(5) Never use a period after a symbol (except at the end of a sentence).

\[\text{e.g. m (not: m.); kg (not: kg.; mL (not: mL.)}\]

(6) Never begin a sentence with a symbol or prefix.

\[\text{e.g. The new symbol for kilogram is kg (not: kg is the symbol for...)}\]

(7) Preference should be given to decimal notation over the use of fractions.

\[\text{e.g. Use 3.25 \% rather than 3 1/4 \%; 0.5 km rather than 1/2 km}\]

However, you would still say: I walked about 3 km in half an hour. (not: in 0.5 h)

(8) Always use a zero (0) before a decimal marker, when value is less than one (1). e.g. 0.63 (not: .63)

(9) There is always a space between the last digit of a number and the first letter of the symbol. e.g. 25 kg (not: 25kg); 6.7 km (not: 6.7km); 273.15 K (= 0°C) With (Celsius) temperature, however, there is no space. e.g.22°C (not: 22° C or 22 °C)

(10) Do not use dot (period) as the multiplication symbol in conjunction with numbers,

\[\text{---but rather the symbol } x\]

\[\text{e.g. 5x7; 13 x 8 (not: 5.7 or 13.8)}\]

(11) Never use compound prefixes. e.g. 3 mg (not: 3 µkg — microkilogram)

(12) Use spaces instead of comas to put digits into easily reading blocks of three.

\[\text{e.g. 3 407 359.38 (not: 3,407,359.38)}\]

However, this does not apply to years, telephone numbers, street numbers, etc.

\[\text{e.g. 1985 (not: 1 985); “4711” cologne (not: “4 711”); Tel. 259-9990(not: 259-9 \quad 990).}\]

Note: This avoids confusion, since in some foreign countries the comma is used instead of the period for the decimal marker, and the period is used instead of the comma to divide digits into groups of three.

(13) Only one unit shall be used to designate a quantity.

\[\text{e.g. 5.36 m (not: 5 m, 36 cm); 3.7 kg (not: 3 kg, 700 g)}\]
(14) An oblique stroke ( / ) is always used with symbols rather than the word “per”. e.g. km/h (not: km per h). However: kilometre per hour (not: kilometre/hour, when writing units in full).

(15) When writing a time, always start with the largest unit. Use the 24-hour system.

<table>
<thead>
<tr>
<th>Year</th>
<th>Month</th>
<th>Day</th>
<th>Hour</th>
<th>Minute</th>
<th>Second</th>
</tr>
</thead>
<tbody>
<tr>
<td>1984</td>
<td>03</td>
<td>06</td>
<td>18</td>
<td>21</td>
<td>08</td>
</tr>
</tbody>
</table>

becomes: 1984-03-06 18:21:08

Note: Separate time in colons (:), not in periods (.), unless you use decimal fractions of a unit.

(16) When pronouncing SI units, always use accent on first syllable.

e.g. kilometre, centimetre, Celsius, second, megahertz, millimetre, nanogram etc.

1.8 μm (= 1800 mm) will be pronounced micrometre, but the micrometer is a precision instrument.

A barometer, a thermometer, a speedometer are all measuring instruments. Note the difference in spelling!

(17) Never hyphenate a numeral. e.g. Do not write: The population of Canada is about 25-000 000.

(18) When indicating a specific physical quantity, the numeral and symbol should be shown on the same line, not separated on two different lines.

e.g. Do not write: From Toronto to Montreal the distance is 550 km

when traveling by car.

SI stands for: Le Système International d’Unités (The International System of Units)

(19) The choice of the appropriate multiple of an SI unit is governed by the application. The multiple should be chosen so that the numerical values will be between 0.1 and 1 000 when practical. e.g. 3.94 m - instead of 0.003 94 km

(20) Most single units will be written in one word.

e.g. centimetre, millimetre, kilogram, kilowatt (not: centi metre, kilo gram etc.)

(21) Always place the symbol behind the numeral.

e.g. 15.7 km - 370 g - 350 mL (not: km 15.7 - g 370 - mL 350)

Note: This rule does not apply to the monetary system, because the latter is not ruled by SI. You still would write: $17.30 — nkr 48.50 — DM 42.00 — £ 296.00 etc.

(22) Temperature will be expressed in “degrees Celsius” with the symbol °C (not: centigrade or degrees C).

Temperature measured below the (water) freezing point will be symbolized with a minus (–) symbol.

e.g. – 4°C (not: minus 4°C or M4°C or 4°C minus)

Temperature above the freezing point will be without a plus (+) symbol.

e.g. 2°C (not: +2°C); 5.7°C (not: +5.7°C); 0°C (not: -0°C or +0°C), but -0.4°C

(23) In text, symbols are to be used when associated with a number. When no numbers are involved, the unit is to be spelled out.

e.g. The area of the room is 250 m². - The area of the room is measured in square metre

(24) A number and a symbol should never be separated by an adjective.

(Do not write: You get 200 free km with your car rental fee.) However, you may write: You get 200 Free kilometers with your ..., or: You get 200 km free with your car rental fee
(25) If a presentation in dual values is unavoidable (as in the present stages of conversion) give preference to the metric value, followed by imperial units in parentheses.

e.g. 20 kg (44 lbs.) - 5.7 m² (61.36 sq.ft.)

(26) Former units of area and volume will be changed as follows:

e.g. square metre (formerly sq.m.) now becomes m² (pronounced “square metre”, not: “metre square”). Similarly, cubic centimetre (formerly c.c. or cu.cm.) is now cm³

Note: Former symbols such as sec.; hr.; cc.; h.p. should be discontinued.

(27) Use appropriate units wherever possible. e.g. 23 mm rainfall - 7 cm snowfall - 6 mm plywood - 17.34 m² room size - 13 740 mm front size [in construction blueprints] - 190 x 190 a 390 mm concrete block - 24 x 36 mm film - 3.6 m³ sand - 40 kg cement bag - 500 g butter - 700 ml coke bottle - 150 mL toothpaste - 52.7 L gasoline - 20 m/s = 72 km/h - 40.5 ha farmland (= 405 000 m² = 100 acres) - Toronto has an area of abt. 620 km² - a Touch Tone Telephone button has an area of 1 cm² - a litre (L) of water has a volume of 1 dm³ (cubic decimetre) (= 10 x 10 x 10 cm) and a mass of one kilogram (kg) - the mass of a bee’s wing is abt. 50 µg (= 0.000 05 g) - the human body temperature is abt. 37°C

SOME COMMON PREFIXES

<table>
<thead>
<tr>
<th>Name</th>
<th>Symbol</th>
<th>Meaning</th>
<th>Multiplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>giga</td>
<td>G</td>
<td>one billion</td>
<td>1 000 000 000</td>
</tr>
<tr>
<td>mega</td>
<td>M</td>
<td>one million</td>
<td>1 000 000</td>
</tr>
<tr>
<td>kilo</td>
<td>k</td>
<td>one thousand</td>
<td>1 000</td>
</tr>
<tr>
<td>hectar</td>
<td>h</td>
<td>one hundred</td>
<td>100</td>
</tr>
<tr>
<td>deca</td>
<td>da</td>
<td>ten</td>
<td>10</td>
</tr>
<tr>
<td>deci</td>
<td>d</td>
<td>one tenth of</td>
<td>0.1</td>
</tr>
<tr>
<td>centi</td>
<td>c</td>
<td>one hundredth of</td>
<td>0.01</td>
</tr>
<tr>
<td>milli</td>
<td>m</td>
<td>one thousandth of</td>
<td>0.001</td>
</tr>
<tr>
<td>micro</td>
<td>µ</td>
<td>one millionth of</td>
<td>0.000 001</td>
</tr>
<tr>
<td>nano</td>
<td>n</td>
<td>one billionth of</td>
<td>0.000 000 001</td>
</tr>
</tbody>
</table>

The above synopsis has been summarized by Mr. KARL—BERNHARD NOLTE (Certified Advanced Metrication Specialist), U. S. METRIC ASSOCIATION, INC., Former member of the SPEAKERS BUREAU OF THE METRIC COMMISSION, CANADA. It may be reprinted in whole or in part without permission but suitable credit must be given. Reproduction peruse, avec mention de source.

We give a special Thanks to: KARL B. NOLTE, CAMS from Toronto, Ont. /Canada, who designed these pages.
Going Metric is easy and is seeping into the U.S. language. Metric is here to stay.
By Don M. Jordan, University of South Carolina

“In truth, metrics has seeped into the U.S. vernacular beyond the plastic soda bottle” (says Edward M. Eveld, Knight Ridder Newspapers). It is perfectly acceptable to speak of the 100 meter racer in the Olympics or the local 5K run for cancer research. People are happy to buy 35 mm film and talk about the 4.0 liter engine in their car. Fat and fiber come in grams, sodium in milligrams, computer speeds in megahertz, and even wine and spirits come in metric sizes only. Watts, volts, and amperes are metric units. The metric system is the language of science and medicine. If you want to go to college, you better take chemistry in high school... Chemistry is 100% metric.

Soon you may see product labeling only in metric.


One can make a relationship between each everyday metric unit and something physical. For example: Centimeter: the diameter of the colored part of your eye. Meter: the height of a door knob in your home, the length of a baseball bat. Gram: a little more than the weight of a paper clip, three raisins, or Sweet’N Low packet. Decimeter: The length of an ordinary wall receptacle. Square Decimeter: the size of a slice of bread. And so on ... Note: No relationship to the customary units is made. You do not want to mix the units. So I would never say a meter is about a yard.

The Four Main Reasons Why the US Should GO METRIC.

1. The SI Metric System was scientifically developed.
   Example: All units stem from seven basic units. (1) Meter - length, (2) Kilogram - mass, (3) Second - time, (4) Ampere – electric current, (5) Kelvin or Celsius - temperature, (6) Mole – amount of substance, (7) Candela – luminous intensity

2. Ease of computation. Try converting 29 mi to rods to yards to feet to inches - compare with converting 29 km to hectometers to meters to decimeters to centimeters. The metric system is based on decimal arithmetic, just like dollars and cents. Once learned, it’s simpler to use and less prone to error. Adopting the metric system is a good deal for Education. Metrification increases both efficiency and quality and will help ensure that American students stay technologically competitive with their foreign counterparts.

3. Economic & Trade reasons.
   Most major U.S. industries - including the automobile, construction equipment, machine tool, electronics, soft drink, liquor, pharmaceutical and health care industries - are primarily or completely metricated. Since 1994, billions of dollars of federal, state and local metric construction projects of all kinds have been built using the metric system. We only need to make the change once. The benefits are perpetual.

4. This is a METRIC WORLD (Universal Language). If the US completely adopts the Metric System, it will be the first time since the dawn of civilization that the world will have one language of measurement. Imagine if we could do this with English or Spanish. The metric system is the international system of measurement - 94 percent of the people on earth use it all the time.
   Note: In 1988, Congress made the metric system the preferred system of measurement in the United States.

Dr. Don Jordan, University of South Carolina, Eastern Director of the United States Metric Association.

Note at the site: www.cas.sc.edu/cse/jordan you can find the following: Under Metric then see Puzzles and games: Measurement Word Search; Measurement Crossword puzzler; Vocabulary Challenge; NIST Metric Pyramid; The Big Match Up; My Name Card; , Metric Book Mark. These are the same as found at www.nist.gov/kids. Many others.
Some Guidelines and Points on How Metric Should be Taught

This document was prepared by 22 teachers grades K-8 from 15 different school districts in South Carolina during a graduate course (SMED 769 “Mathematics for Science Teachers”) offered by the University of South Carolina. To show their commitment to this document, the teachers have fully endorsed these guidelines, provided their signatures with it at that time:

1. **CURRICULUM**
   Metrics will be taught in all subject areas.

2. **TEXTBOOKS**
   Textbooks for all subject areas will use metrics. Mathematics textbooks contain customary references to other measuring systems.

3. **TEACHERS**
   There will be a mandatory in-service training for SI-Metric literacy. Teachers must pass a standard test developed by teachers for the State of South Carolina in the SI Metric System. The teacher must pass the test with 80% proficiency and the test can be repeated.

4. **MATERIALS**
   The following materials should be provided:
   - Metric rulers in cm and mm (Use rulers that have only metric scale units on them)
   - Metric units
   - Metric tapes (150 cm and 20 m tapes)
   - Balance scales and metric mass sets (1 balances scale per 5 students)
   - Graduated cylinders 10, 25, 50, 100, 250, 500, and 1 000 mL
   - Graduated beakers 50, 100, 250, 500, and 1 000 mL
   - Celsius Thermometers
   - Metric measuring cups and spoons
   - Platform metric spring scale 1 per glass
   - Metric model of cm$^3$, dm$^3$, and m$^3$, models for display
   - Metric games (AIMS and GEMS versions made by South Carolina Teachers grades K-8)
   - Supplementary written materials for class activities
   - Metric wall charts
   - Simple metric tables of units

5. **PREFIXES**
   Teach prefixes nano, micro, milli, centi, deci, deka, hecto, kilo, mega, and giga (Do not use very large or very small prefixes in the early grades.)

6. **KEY UNITS TO EMPHASIS**
   - Length: mm, cm, dm, m, and km
   - Mass: mg, g, kg, and Mg or t
   - Volume: m$^3$, dm$^3$, cm$^3$
   - Capacity (fluid measure): L and mL
   - Area: $\text{are}$ and hectare
   - Temperature: Celsius
   - Velocity: m/s and km/h

7. **INSTRUCTION**
   Teach metrics in every grade all year long.

8. **PARENTAL INVOLVEMENT**
   Involve parents in the metric effort through an explanation of why we teach metric, training, and designing homework assignments that include the parents.
Some Guidelines and Points on How Metric Should be Taught

9. **TIME**
   Use the 24 hour clock when teaching time

10. **CLASSROOM**
    Metric charts, signs, height chart in cm and displays should be set up.

11. **CONVERSIONS**
    Teach metric by itself. Make no English-unit comparison. Teach no conversion factors. Teach how to coexist and cope with standard units and metric units rather than teaching conversions from one system to the other.

12. **RELATIONSHIPS**
    Stress the relationships between the monetary system (a decimal system) and metric system. Stress the relationship between the meter, liter and gram.

13. **COOPERATIVE LEARNING**
    Use cooperative learning techniques for the teaching of metric. Teach by actively involving students.

14. **HISTORY, RATIONALE AND JUSTIFICATION TO METRIC**
    Teach a brief history – Why metric began, where it began, and where metric is being used. Teach the rational “Why teach metric”: Refer to the Trade Act of 1988 and the executive order President Bush signed in July of 1991. Note the number of products that you use in your daily life that are metric.

15. **METRIC AUTHORITY AT YOUR SCHOOL**
    Select one member of the faculty to be the metric authority of the school. Each school district should have at least one CERTIFIED METRIC SPECIALIST.
1. A bathing suit made out of 1 dm$^2$ of the material would be
   (a) decent
   (b) indecent

2. A person who is 110 cm tall and has a mass of 220 kg would be better suited to be a
   (a) center for the Miami Heat
   (b) doorstop for the governor’s office door

3. A sphere with a mass of 2000 mg would be
   (a) Princess Winifred’s pea
   (b) Cinderella’s carriage
   (c) Babe Ruth’s baseball

4. 40,000 km would be the equator of
   (a) the earth
   (b) the moon
   (c) Mars

5. A distance of 1 km would be
   (a) the distance from Columbia to Aiken
   (b) a stroll down the garden path
   (c) a walk off a pirates plank

6. If you drank a liter of whiskey, you would
   (a) pass the breath test
   (b) have a lamp shade on your head
   (c) be pushing up daisies

7. The width of Jimmy Carter’s smile is about
   (a) 1mm
   (b) 1cm
   (c) 1dm

8. If your nose is 20 cm long, you are probably
   (a) an English bulldog
   (b) Jimmy Durante
   (c) Pinocchio’s uncle

9. The month is January, the temperature is 32 °C. The place is
   (a) Boston
   (b) Tahiti
   (c) Atlanta

10. The temperature is 5° C and you are swimming. You are probably a
    (a) penguin
    (b) goldfish
    (c) Amazon water snake

11. A rug of 200 m$^2$ would best cover
    (a) a living room floor
    (b) the Braves’ home ballpark
    (c) a tennis court

12. In a 100 L aquarium, you would most likely put
    (a) Moby Dick
    (b) The shark in *Jaws*
    (c) A pregnant guppy

13. If you drive 90 km in 1 hour, you would be
    (a) racing at the Atlanta Speedway
    (b) plowing a corn field
    (c) Caught in rush-hour traffic
    (d) driving to grandmother’s house

14. A white sphere with a diameter of 4 cm would
    (a) be head of a snow person
    (b) be Arnold Palmer's golf ball
    (c) be a bleached watermelon
Answer the following True or False:  **Circle One**

1. A liter contains 1,000 smaller units called milliliters.
   True or False

2. A liter has a Volume of 1,000 cubic centimeters.
   True or False

3. If we convert 6,543,219 meters, to kilometers we get 6,543,219 km.
   True or False

4. Nanoscience is the study and development of materials and structures in the range of 1 nm (10^{-9} m) to 100 nanometers (100 x 10^{-9} m = 10^7 x 10^{-9} = 10^{-2} x 10^{-9} = 10^{-7}) and the unique properties that arise at that scale.
   True or False

5. An angstrom X is within the nanoscale but not the subatomic scale.
   True or False

End of True/False

Answers: 1. T  2. F  3. F  4. T  5. F  6. (c) 7. (d) 8. (b) 9. (e) 10 (c)

Answer the following Multiple Choice Questions:  **Circle One** answer for each question.

6. A vitamin C tablet has a mass of 500 mg. That is the same as ____.
   (a) 5 g  (b) 0.05 g  (c) 0.5 g  (d) 0.5 kg  (e) 

7. The length of a pencil would probably best be measured in ____.
   (a) milligrams  (b) meters  (c) decameters  
   (d) centimeters  (e) micrometers

8. The unit of volume that is the same as one cubic decimeter is the ____.
   (a) meter  (b) liter  (c) gram  
   (d) hectometer  (e) none of these

9. Determine the order of magnitude difference in the sizes of the radii for Atoms (10^{-10} meter) compared with neutrons (10^{-15} meter).
   (a) Order 4  (b) Order 2  (c) order 12  
   (d) Order 6  (e) none of these

10. How long has it been legal to use the metric system in the U.S?.
    (a) 1958.  
    (b) 1975  
    (c) 1866  
    (d) 1921. 
    (e) None of these.

The end
The South Carolina Academy of Science

SC Metric Week October 7 – 13, 2012, Governor’s Proclamation

October 1, 2012

Dear District Leader and/or Math & Science Coordinator:

Celebrating Metric Week in South Carolina 2012 (October 7 – 13 this year) is very important for grades K-12. An announcement at each school in your district, and encouragement of metric system activities during and after Metric Week, would be an excellent idea. (Some easy-to-use ideas on celebrating Metric Week are available online at: www.cas.sc.edu/cse/jordan or www.metric.org.)

As you know, companies (which will eventually employ many of our students) are gradually producing products to metric system standards. This means that the jobs of tomorrow will require employees to be able to use metric units.

In addition, I believe that one of the reasons for poor scores made by U.S. students in international tests lies in the disadvantage that they do not have the knowledge to easily work with metric system units - a knowledge that the competing students from the rest of the nations of the world possess. A research study in the 1970s showed that from 6 to 8 months of elementary arithmetic could be eliminated from educational curriculums by the simple adoption of the metric system.

We now have over two hundred teachers and administrators certified as Metric Specialists in our Certification Program for South Carolina. These individuals serve as metric resource persons and may help you develop activities as we celebrate Metric Week. Also, a teacher or administrator who plans to become a Certified Metric Specialist may reach me by phone at (803) 777-7007 or email djordan@sc.edu (Center for Science Education, College of Arts & Sciences, Sumwalt Rm. 323 / Columbia, SC 29208).

The certification is recommended and approved by the South Carolina Academy of Science (SCAS) and coordinated with the State Department of Education and the Office of Metric Programs at the National Institute of Standards & Technology, USC Department of Commerce. Special thank you goes to Governor Nikki R. Haley for her support of this worthwhile endeavor.

Sincerely,

Don Jordan

www.scacadscience.org or www.cas.sc.edu/cse/jordan under metric for information on CMS.

Check out the USMA & National Institute of Standards (NIST) Metric Programs at www.metric.org & www.nist.gov/kids It will be FUN! and others at: www.cas.sc.edu/cse/jordan click on Metric

Teachers- these sites have something for all grades!
WHEREAS, the metric system is a uniform system of measuring in units of ten; and

WHEREAS, because most countries use the metric system and all international trade is conducted using metric measurements, it is essential that our young people be educated in the metric system to ensure their future success in the global economy; and

WHEREAS, research suggests that adopting the metric system in the United States would improve student performance on international tests and reduce the time spent teaching elementary arithmetic in our schools; and

WHEREAS, National Metric Week calls attention to the educational and economic benefits of using the metric system.

NOW, THEREFORE, I, Nikki R. Haley, Governor of the Great State of South Carolina, do hereby proclaim October 7-13, 2012, as

STATE METRIC WEEK

throughout the state and encourage all South Carolinians to learn more about the metric system.

NIKKI R. HALEY
GOVERNOR
STATE OF SOUTH CAROLINA
SUGGESTED YEAR-ROUND METRIC ACTIVITIES

TO START DURING

SOUTH CAROLINA METRIC WEEK

OCTOBER 7 - 13, 2012

1. Have a school Open House or Parents’ Night sponsored by the Science and Mathematics Departments and include a session on “Why we need to teach metric first”.

2. Devise a Metric Fair for your school with all metric events. Create a Metric Contest, i.e - Crossword Puzzles. Have awards for the winners.

3. Write articles for the school or local newspaper promoting the use of metric measurement.

4. Have the Science and Math Departments plan a metric in-service session for the school faculty.

5. Metric Survey -- Conduct a survey of the student body and families of students to determine:
   - What people know about the metric system.
   - How people feel about the ongoing conversion to metric.
   - Reasons given in favor of conversion.
   - Objections given by those opposed to conversion.

6. Metric Center -- Collect and catalog recent, significant articles, books and pamphlets on the Metric System to serve as reference materials.

7. Shopping Assignments -- Choose a product line such as food, cosmetics, drugs, hardware, medical devices or sports equipment, and shop for items in that product line which carry labels or descriptions in metric units. Report findings to the class.

MULTIDISCIPLINARY PROJECTS/ACTIVITIES

8. ART -- Design posters and bulletin boards to illustrate the Metric System. Make up cartoons to illustrate the humorous aspects of metric conversion. Make a mural of the history of the Metric System. Create Metric Songs. Most art supplies are produced in metric.

9. ENGLISH -- Write a glossary of metric terms for the average person working with metrics for the first time. Prepare a series of essays for the school or local newspaper on the advantages of the ongoing metric conversion in the U.S. Have a “Metric Bee” using words taken from a dictionary of metric terms.

10. HISTORY AND SOCIAL STUDIES -- Prepare and give an illustrated talk on the history of weights and measures in the U.S. or another country of your choice. Write a brief biographical sketch and description of James Watt, Andre Ampere, Gabriel Moulton, John Quincy Adams or Napoleon. Make a map of the school using metric scale.

11. HOME ECONOMICS -- Research how foreign cooks measure food quantities in metric units. Then find a metric recipe (or make one) and have students prepare it. Take body measurements in metric units. Determine size with a metric pattern chart. Research how clothing is sized in some of the countries already using metric. Ask the lunch room staff to create a “Metric Meal” and have your students prepare signs with metric slogans beside each food item.

12. PHYSICAL EDUCATION -- Have a Metric Field Day, with track and field events using the Metric System. Check with AIMS (Activities Integrating Math & Science) for suggestions.

13. INDUSTRIAL ARTS -- Measure the standard pieces of lumber such as a 2x4, 1x6, etc., in metric units. What would the nominal dimensions be in the Metric System? Develop a set of plans for a birdhouse, etc., and then build the item, using only metric measuring devices.
14. DRIVER’S TRAINING -- Convert mileage, distances, and highway signs to metric units. Research what conversion the Department of Transportation now accepts. Write questions that could be included in a state driver’s test to evaluate a driver’s knowledge of the metric units that are used in motoring.

15. ME IN METRIC – Ask the students to explore how metric measurements relate to their own bodies.

Check out the United States Metric Association Web-site at www.metric.org where you will find many links to metric information. One of the best would be the "Metric Guide" for teachers which can be found about halfway down the home page in the teacher/educators section.

Check out the National Institute of Standards (NIST) Metric Programs at www.nist.gov/kids

Did you know that..?
- Metric minimizes the likelihood of error.
- Metric does not have the numerous conversion factors of other systems.
- Metric has one unit for a quantity.
- Metric is legal, logical and preferred.
- Six months to two years of elementary arithmetic could be eliminated with the adoption of SI-Metric.
- IBM during metric conversion reduced fastener part numbers from 38,000 to 4,000.
- One bottling industry reduced its container sizes from 53 to 7.
- You would weigh 82 kilograms instead of 180 pounds.
- Public Law 103-227 of March 31, 1994, asserts that mathematics and science education, including the metric system of measurement, will be strengthened throughout the system, especially in the early grades.
- All major science and education organizations have encouraged the United States to fully adopt the metric system as the language of measurement.
- The National Association of Academies of Science and the United States Metric Association support our efforts promoting the metric system and metric training for teachers.

METRIC FACTS

- English is the international language of business.
- Metric is the international language of measurement.

😊 The Metric System – How to teach young people what they need to know!

1. Teach using only the Metric System.
2. Use rulers and measuring tools that have only metric scale units.
3. Teach measurement and physical quantities using materials and examples that students can see and touch.
4. Select, estimate, compare and use appropriate units to measure:
   - length (meter/centimeter); mass (kilogram/gram); volume (liter/milliliter); temperature (degree Celsius)
5. Teach by actively involving the students in measuring activities.
6. Universities and Colleges that educate elementary school teachers should teach the system and how to use it. Very little time should be given to the Customary System. Teachers must know how to teach the Metric System and feel confident by doing so.
7. The change to the metric system is for all people and all disciplines (not just science, engineering and math).

What South Carolina Needs:

A Certified Metric Specialist in each of the over 1,500 Schools in South Carolina. See www.cas.sc.edu/cse/jordan under Metric for more information

If you want to know how to become a Certified Metric Specialist, write or email Dr. Don M. Jordan / Center for Science Education / College of Arts & Science / Sumwalt Rm. 323 / USC Columbia, SC / 29208 djordan@sc.edu / 803 777 7007

Mark your calendars now for October 7 - 13, 2012, and incorporate Metric Week Activities into your teaching year-round!

Metric Week in South Carolina is sponsored by the South Carolina Academy of Science, Founded in 1924 & The Center for Science Education at USC
Across

1. One ____________ is about the width of a paper clip
4. A ____________ (symbol) is about 2 1/5 pounds
6. Liquids are measured in ____________
7. Thousand decigrams equal one ____________ (symbol)
9. Greek prefix meaning one million
11. Ten ____________ (symbol) equal one centiliter
12. Symbol for deciliter
13. The ____________ is approx. equal to the liter
15. A ____________ consists of a hundred meters
21. Area may be measured in ____________ centimeters
22. The ____________ is the basic unit for time
23. One ____________ (symbol) equals 0.01 meter

Down

1. Celsius scale used to be called the ____________ scale
2. In metric system, a unit is ____________ times larger than the next smaller unit
3. A ____________ is approximately 1/25 of an inch
5. One kilogram equals one ____________ grams
8. A ____________ is about 5/8 of a mile
10. One ____________ is about the weight of 2 paper clips
14. Symbol for kilometer ____________
16. Waters boils at 100 ____________
17. Latin prefix meaning one thousandth
18. Volume can be measured in ____________ meters
19. Seven ____________ units form the foundation of the metric system
20. Forty centimeters equal ____________ decimeters
THE
U.S. METRIC ASSOCIATION INC.
HEREBY RECOGNIZES

__________________________________________________

AS A
CERTIFIED METRICATION SPECIALIST

Having satisfied the
Examiners of the Board through educational
Experience and demonstrated ability has met
the certification standards established
by the U.S. Metric Association

__________________________
CHAIRMAN, CERTIFICATION BOARD

__________________________
VICE CHAIRMAN, CERTIFICATION BOARD

Write your name here as you want it to appear on your certified Metric Specialist Certificate.