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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Manufacturing |
| **Course Name** | Welding I |
| **Lesson/Unit Title** | Using a Ruler |
| **TEKS Student Expectations** | **130.363. (c) Knowledge and Skills**  (3) The student applies academic skills to the requirements of welding.  (A) The student is expected to demonstrate effective communication skills with individuals from varied cultures such as fellow workers, management, and customers  (B) The student is expected to demonstrate mathematical skills to estimate costs  (C) The student is expected to demonstrate technical writing skills related to work orders  (D) The student is expected to apply accurate readings of measuring devices  (E) The student is expected to use appropriate tools to make accurate measurements  (F) The student is expected to compute measurements such as area, surface area, volume, and perimeter |
| **Basic Direct Teach Lesson**  (Includes Special Education Modifications/Accommodations and  one English Language Proficiency Standards (ELPS) Strategy) | |
| **Instructional Objectives** | **Performance Objective:**  Upon completion of this assignment, the student will be able to read markings on a ruler and use the marks appropriately.  **Specific Objectives:**  Apply basic math skills to learn proper use of measurement tools  Demonstrate proper measurement techniques  Complete calculations of adding and subtracting whole numbers  Create a drawing using proper measurement techniques |
| **Rationale** | Through this lesson, students will identify what each of the marks on a ruler means for successful use of measuring instruments. |
| **Duration of Lesson** |  |
| **Word Wall/Key Vocabulary**  *(ELPS c1a, c, f; c2b; c3a, b, d; c4c; c5b) PDAS II (5)* |  |
| **Materials/Specialized Equipment Needed** | Instructional Aids:   * Using a Ruler Test * Using a Ruler Worksheet * Types of Rulers Handout   Materials Needed:   * One ruler per student * Items to be measured during test   Equipment Needed:   * Computer & monitor |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | Correct measurement is a key to fabrication. In order to correctly measure an item, the student must be able to read a ruler. The ruler is the key to measurement. |
| **Direct Instruction \*** | 1. Students should take notes on their own paper    1. Terms       1. Whole number       2. Sum       3. Difference       4. Graduations       5. Fraction       6. Area       7. Perimeter    2. Types of Rulers       1. Fractional       2. Decimal       3. Metric    3. Steps for Reading a Ruler       1. Choosing a type       2. Lining up       3. Pulling across       4. Counting units       5. Recording results 2. Guided Practice 3. Independent Practice 4. Review 5. Test   *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  NONE |
| **Guided Practice \*** | Ask the students to draw a shape on their paper that resembles the top of their desk/table. Pass out rulers to the students. Using the ruler, the students are to measure the top of the desk (question them on what mathematical terms they are applying here—length, width, area). After making each measurement, record the calculation on the drawing.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  *NONE* |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | Pass out class copies of “Whole Numbers worksheet.” The students are to complete the activities during class (this could be a homework assignment if the Instructor chooses). This sheet can be taken for a grade.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  NONE |
| **Lesson Closure** | Check for mastery/understanding by having students partner-check the measurements taken on the desk activity. Allow time for questions anyone may have. |
| **Summative/End of Lesson Assessment \*** | Mastery of at least 70% of test. Instructor should gather several items to place one per testing station. Students rotate from station to station to complete the measurement at that location and record their calculations on the test sheet. Instructor should ensure that the items gathered could be measured using only whole numbers. If the items do measure exactly to a whole number, the Instructor may wish to provide some direction on rounding so that the students could round the measurements to the nearest whole number.  *Individualized Education Plan (IEP) for all special education students must be followed. Examples of accommodations may include, but are not limited to:*  NONE |
| **References/Resources/**  **Teacher Preparation** | GTAW Student Material Booklet Mid-America Vocational Curriculum Consortium (1984)  Practical Problems in Mathematics for Welders (Schell & Matlock, 1975) |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** |  |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | For those students who need remediation, a re-teach and review session will reinforce the topics of concern. The remediation will need to be tailored to the individual needs of the student. An enrichment activity would be to give the students an item that requires measurement using fractions to challenge them toward the next study topic. |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)