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| **TEXAS CTE LESSON PLAN**  [www.txcte.org](http://www.txcte.org) | |
| **Lesson Identification and TEKS Addressed** | |
| **Career Cluster** | Agriculture, Food and Natural Resources |
| **Course Name** | Mathematical Applications in Agriculture, Food, and Natural Resources |
| **Lesson/Unit Title** | Double Plowing – working a field together |
| **TEKS Student Expectations** | **130.5. (c) Knowledge and Skills**  (4) The student performs mathematical calculations used in agriculture, food, and natural resources. The student is expected to:  (A) add, subtract, multiply, and divide whole numbers, fractions, and decimals in calculations related to agriculture, food, and natural resources  (B) apply mathematical skills such as measurement, conversion, and data analysis needed for agriculture, food, and natural resources  (7) The student demonstrates mathematical knowledge and skills required to solve problems related to animal systems and related career opportunities. The student is expected to:  (B) demonstrate knowledge of algebraic applications related to animal system calculations such as ration formulation using the Pearson Square, percent homozygosity, heritability, USDA grades, gene frequency, cost per unit of nutrient, and weaning weight ratio |
| **Basic Direct Teach Lesson**  **With Special Education Modifications/Accommodations and**  **one English Language Proficiency Standards (ELPS) Strategy** | |
| **Instructional Objectives** | **The students will be able to:**   * Write equations to answer a question; * Use symbols to represent unknowns; and, * Formulate an equation modeled by a rational function and solve. |
| **Rationale** | Provide careers in agriculture, food, and natural resources.  Also, encourages the students to apply mathematics to problems arising in everyday life, society, and the workplace. |
| **Duration of Lesson** | Teacher’s Discretion |
| **Word Wall/Key Vocabulary**  *(ELPS c1a, c, f; c2b; c3a, b, d; c4c; c5b) PDAS II (5)* | Rational function |
| **Materials/Specialized Equipment Needed** | **Materials:**   * Graphing calculator * Double Plowing worksheet (Attached) |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | How long will it take to plow a field if I work with someone else? |
| **Direct Instruction \*** | * Present the problem * What is the question? * What do you know? * What facts are missing? * Set up the problem using a rational equation using work rate, time, and one job * Solve and verify the answer   *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 \*** | *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 \*** | *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** |  |
| **Summative/End of Lesson Assessment \*** | *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** | * Algebra to Go, Geometry To Go, Math At Hand * Texas A&M AgriLife Extension Service * IMS Materials, Texas A&M University * Texas Education Agency curriculum resources * *Mathematics for Agriculture*, Betty Rogers, Interstate Publishers * When Are We Ever Gonna Have to Use This, Hal Saunders TI Agrimath Curriculum, Texas Instruments * TI Agrimath Curriculum, Texas Instruments |
| **Additional Required Components** | |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | **Mathematics**  I. C.1.c  II.C.1a  VII.A.1  VIII  IX  X |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** | Double Plowing worksheet (Attached) |
| **Writing Strategies**  **Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication**  **90 Second Speech Topics** |  |
| **Other Essential Lesson Components** | |
| **Enrichment Activity**  (e.g., homework assignment) | * How can this problem be applied in an agricultural setting? * How long will it take if three farmers are working together? |
| **Family/Community Connection** |  |
| **CTSO connection(s)** |  |
| **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)