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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** | Pounds and Pounds of Pecans – Estimating Production |
| **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  (C) find solutions to problems related to agriculture, food, and natural resources by calculating percentages and averages  (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:**   * Connect equation notation with function notation * Solve a quadratic equation * Evaluate a function at a specified point in its domain |
| **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)* | Quadratic equation  Function notation f(x) |
| **Materials/Specialized Equipment Needed** | **Materials:**   * Graphing Calculator * Teacher Key – Work Sheet (Attached) |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | How many pounds of pecans can an acre of trees produce? |
| **Direct Instruction \*** | * Present the problem * What is the question? * What do you know * What facts are missing? * Solve using the functional notation given 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 \*** | How do the following variables affect productivity?   * Fertilizer, herbicide, pesticide * Equipment costs * Diseases * Water availability * Market value of crops Varieties of pecans * Rainfall and other weather conditions * Tree maturity   *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.1.a  VII.A.1.a  VII.A.2.a  VII.B.1.a  VII.C.1.b  VIII  IX  X |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** | Teacher Key – Work Sheet (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? |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | * SkillsUSA * FFA |
| **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)