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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** | Determining Breakeven Points for Floral Arrangements |
| **TEKS Student Expectations** | **130.10. (c) Knowledge and Skills**  (7) The student demonstrates mathematics knowledge and skills to solve problems related to plant systems and career opportunities. The student is expected to:  (A) use mathematic operations and knowledge of relationships to solve problems inherent to plant systems such as the calculation of crop yields, crop loss, grain drying requirements, grain weight shrinkage, germination rates, greenhouse heating, and cooling and fertilizer application rates |
| **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 * Formulate a system of linear equations in two unknowns and solve the system * Use a table to make conjectures |
| **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)* | Break-even point  System of linear equations |
| **Materials/Specialized Equipment Needed** | **Materials:**   * Graphing calculator * Working the Problem - Worksheet (Attached) * Various examples of floral designs * Costs for various examples of floral designs |
| **Anticipatory Set**  (May include pre-assessment for prior knowledge) | How many baskets must I sell to begin making a profit? |
| **Direct Instruction \*** | * Present the problem * What is the question? (Break‐even point) What do you know? * What facts are missing? * Set up the problem using 2 variables as a system of linear equations. Solve and verify the answer. * Extend question and answer to a table.   *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**  (A.1) C, (A.3) A, (A.5) C, (A.8) A, (A.8) B |
| **Recommended Strategies** | |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy**  **Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** | Working the Problem - 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 many baskets do I need to sell to reach a target goal? * What can I do to alter my expenses? * What can I do to improve my profit? |
| **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)