Kathy Cox, State Superintendent of Schools

Title: The Pre-nuptial Agreement (embedding mathematics in CTAE)
Grade: 10, 11, 12, 9
Designers: Pam Fails

Unit Development Template

Introduction

Unit Title

The Pre-nuptial Agreement (embedding mathematics in CTAE)

Unit Annotations

Business Law includes a large unit on contracts. This unit includes contracts for areas such as mortgages, leases, ecommerce, and services. Real up-to-date documents are used that apply to students' present and future lives. Student work includes problem solving and math problems related to real life scenarios and situations associated with contracts.

Grade(s)

- 9
- 10
- 11
- 12

Subject(s)

Math / Mathematics 1

Career Technical & Agricultural / Business & Computer Science / Small Business Development / Legal Environment of Business (BCS-LEB)

(Optional) Approximate Duration of Unit

2 weeks on a seven period day schedule

Unit Author

Pam Fails (Georgia Standards)

(optional) Additional Author(s) and their Email Address(es)

Christopher Lee, CTAE (BCS) Teacher, clee@meriwether.k12.ga.us Michael Perry, Exceptional Education (Math) Teacher, mperry@meriwether.k12.ga.us Genola Johnson, Instructional Lead Teacher, genjohnson@meriwether.k12.ga.us

Unit Focus Standards

Unit Focus Standards

MM1A1. Students will explore and interpret the characteristics of functions, using graphs, tables, and simple algebraic techniques.

a. Represent functions using function notation.
b. Graph the basic functions $f(x) = x(n)$, where n = 1 to 3, f(x) = √x, f(x) = |x|, and f(x) = 1/x.
c. Graph transformations of basic functions including vertical shifts, stretches, and shrinks, as well as reflections across the x- and y-axes.
d. Investigate and explain the characteristics of a function: domain, range, zeros, intercepts, intervals of increase and decrease, maximum and minimum values, and end behavior.
e. Relate to a given context the characteristics of a function, and use graphs and tables to investigate its behavior.
f. Recognize sequences as functions with domains that are whole numbers.
g. Explore rates of change, comparing constant rates of change (i.e., slope) versus variable rates of change. Compare rates of change of linear, quadratic, square root, and other function families.
h. Determine graphically and algebraically whether a function has symmetry and whether it is even, odd, or neither.
i. Understand that any equation in x can be interpreted as the equation $f(x) = g(x)$, and interpret the solutions of the equation as the x-value(s) of the intersection point(s) of the graphs of $y = f(x)$ and $y = g(x)$.

Unit Focus Standards

MM1D1. Students will determine the number of outcomes related to a given event.

a. Apply the addition and multiplication principles of counting.
b. Calculate and use simple permutations and combinations.

Unit Focus Standards

MM1P1. Students will solve problems (using appropriate technology).

a. Build new mathematical knowledge through problem solving.
b. Solve problems that arise in mathematics and in other contexts.
c. Apply and adapt a variety of appropriate strategies to solve problems.
d. Monitor and reflect on the process of mathematical problem solving.

Unit Focus Standards

MM1P2. Students will reason and evaluate mathematical arguments.

a. Recognize reasoning and proof as fundamental aspects of mathematics.
b. Make and investigate mathematical conjectures.
c. Develop and evaluate mathematical arguments and proofs.
d. Select and use various types of reasoning and methods of proof.

Unit Focus Standards

MM1P4. Students will make connections among mathematical ideas and to other disciplines.

a. Recognize and use connections among mathematical ideas.
b. Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
c. Recognize and apply mathematics in contexts outside of mathematics.

Unit Focus Standards

MM1P5. Students will represent mathematics in multiple ways.

a. Create and use representations to organize, record, and communicate mathematical ideas.
b. Select, apply, and translate among mathematical representations to solve problems.
c. Use representations to model and interpret physical, social, and mathematical phenomena.

Unit Focus Standards

BCS-LEB-4 The student identifies rights and responsibilities of contract negotiations.

a. Differentiates among the ways that a contract can be disrupted (i.e., fraud, non-disclosure, misrepresentation, mistake, duress, and undue influence).
b. Explains a minor's right to void a contract and identify people who lack contractual capacity.

Unit Focus Standards

BCS-LEB-5 The student analyzes the importance of sales regulations.

a. Describes the Uniform Commercial Code (UCC) and explains why the UCC has been adopted by the states.
b. Applies the UCC to appropriate areas of business operations.
c. Identifies various types of warranties and describes how each of the warranties may be excluded or modified.
d. Lists and explains the remedies of the seller and buyer when a sales contract has been breached.
e. Defines the statute of limitations and describes when the time period of this statute usually begins and ends in a sales transaction.

Unit Complementary Standards

National / Local Standards / Industry / ISTE

(Recommended) National / Local Standards / Industry / ISTE

Literacy: As a part of the culminating performance project, students are required to write a prenuptial agreement contract.

Understanding and Goals

Unit Enduring Understandings

Students will be able to recognize and create valid contracts in documents and from situations created from real-life. Students will be able to understand how all elements of a contract come into play in several different real life circumstances where no “paper” contract exists. Students will understand how high school mathematics is used in business.

Unit Essential Questions

What is a contract?
What are the three main elements of a contract?
What is the statute of frauds?
What kinds of conditions will create an invalid contract?
How can algebra assist in the analysis of the validity and effectiveness of contracts?

(Recommended) Pre-Requisite Knowledge & Skills / Current Unit Knowledge & Skills

Assessment & Instruction

Formative Assessments for Learning

- Post-test - A helpful way to find out whether your students have mastered the basic knowledge and skill levels required.
- Pre-test - A helpful way to find out whether your students meet the basic knowledge and skill levels required to learn your materials.

Describe the Assessments

Describe the Assessment(s)

The pre and post-tests for Legal Environment of Business consist of constructed response, combined method, and essay that assess both math and business concepts.
Attachment: LEB Math Pretest, LEB Math Unit Test, LEB Pretest, LEB Unit Test

The pre and post-tests for Math1 consist of constructed response to assess mathematics concepts.
Attachment: Math I Pretest, Math I Post-test

Assessment(s) Attachment

(Optional) Attachment
Uploaded file: LEB Math Pretest.doc

(Optional) Attachments (Typically a Rubric or Checklist)

(Optional) Attachment
Uploaded file: LEB-math Unit Test.doc

(Optional) Attachments (Typically a Rubric or Checklist)

(Optional) Attachment
Uploaded file: LEB pretest.doc

(Optional) Attachments (Typically a Rubric or Checklist)

(Optional) Attachment
Uploaded file: LEB posttest.doc

(Optional) Attachments (Typically a Rubric or Checklist)

(Optional) Attachment
Uploaded file: Math 1 Pretest.doc

(Optional) Attachments (Typically a Rubric or Checklist)

(Optional) Attachment

Uploaded file: Math 1 Post-test.doc

(Optional) Attachments (Typically a Rubric or Checklist)

Instructional Planning

Instructional Planning

The Math teacher will spend approximately two days at the beginning of each different applicable section (i.e. linear vs. quadratic equations, data analysis, graphing functions, etc.) interspersing problem sets acquired from CTAE content. In addition, the math teacher uses real life situations, samples of contract documents and specialized calculator programs (like online amortization tables and child support formulas) to help students see that algebra really is important in day-to-day activities and has an effect on people's lives. The CTAE teacher uses terms like "formulas, variables, range, median, etc." when describing the necessary information needed to be gathered &/or processed in class for the pre-nuptial project. There are parts that will be returned to during the year (stock market game, check writing, etc.).

Instructional Planning Attachment

(Optional) Instructional Planning Attachment

Uploaded file: ctae-math-unitdescription[1] enhanced.ppt

Materials and Equipment / Homework Extensions

Materials and Equipment

Computers for word processing and research

(Optional) Homework Extensions

Students are given three scenarios in which they must a) describe how each of the six (6) major requirements of a contract are fulfilled (or exempted if unnecessary) and b) create a copy of the proposed contract, with appropriate acceptance features.

Attachment – Homework Extensions

(Optional) Attachment – Homework Extensions

Uploaded file: LEB probs.doc

Culminating Unit Performance Task

(Optional) Culminating Unit Performance Task

Mock Prenup

Culminating Unit Performance Task Description/Directions/Differentiated Instruction

Students choose a famous person of the opposite sex and create a Prenup prior to the planned marriage. Students can pick a time in the future for the marriage, so that they can have time to obtain a job to provide and income for purchasing a car and other possessions. There are several categories of important property and possessions each student must list for both parties and decide how each is to be dealt with in the divorce (child support, alimony, pensions, vacation houses, royalties, etc.). Students will also create the information for themselves and their chosen spouse for a time in the future (5 to 10 years). The information to be included for both parties in the "Prenup" must include income, major possessions (house, car, checking accounts), and any information regarding child support and/ or alimony requests.

(Optional) Attach Rubric or Checklist for Unit Performance Task

---

(Optional) Attachment - May be Student Directions or other attachment

Uploaded file: Divorce Law and strategies.doc

(Optional) Attach Student Handout or other attachment

(Optional) Attachment – May be Teacher Directions or other attachment

Student Work Sample Title / Description

(Optional) Student Work Sample Title / Description

Attachment - Student Work Sample

(Optional) Attachment - Student Work Sample

Uploaded file: Student work sample.doc

Teacher Commentary Title / Description

(Optional) Teacher Commentary Title / Description

Attachment - Teacher Commentary

Language of the Standards

(Optional) Language of the Standards

CTAE teacher uses terms like "formulas, variables, range, median, etc." when describing the necessary information needed to be gathered &/or processed in class. Math teacher uses real life situations and samples of documents and specialized calculator programs (like online amortization tables and child support formulas) to help students see that algebra really is important in day-to-day activities and has an effect on people's lives._

Unit Resources

(Optional) Web Resources

www.google.com, www.Yahoo.com , (for searches about sample prenuptial agreement, "spouse" information, typical financial information to use)

http://www.gafamilylawblog.com/2007/02/10_strategies_t.html

http://www.gafamilylawblog.com/2007/03/separate_or_mar.html

http://www.gasupreme.us/pdf/s07a0134.pdf

http://sworrall.typepad.com/georgia_family_law/2007/04/dividing_the_pr.html

http://sworrall.typepad.com/georgia_family_law/2007/04/property_divisi.html

http://sworrall.typepad.com/georgia_family_law/2007/04/equitable_divis.html

http://sworrall.typepad.com/georgia_family_law/2007/04/definition_of_e.html

http://sworrall.typepad.com/georgia_family_law/2007/04/georgia_propert.html

http://sworrall.typepad.com/georgia_family_law/2007/05/specific_assets_3.html

http://sworrall.typepad.com/georgia_family_law/2007/05/specific_assets_4.html

http://sworrall.typepad.com/georgia_family_law/2007/05/checklist_divid.html

http://sworrall.typepad.com/georgia_family_law/2007/05/separate_or_non.html

http://sworrall.typepad.com/georgia_family_law/2007/06/your-spouses-hi.html

---

(Optional) Ancillary Materials

(Optional) What 21st Century Technology was used in this Unit Development Template?

- Web Site(s)

(Optional) Notes and Reflections

CTAE/Math teachers have exchanged ideas (mostly through email) to try to determine the best course of action and narrowing the types of problems and vocabulary that should be used in each class. Because of the difference in the schedules of the classes, it was decided that the Math section would be treated as a review of prior lessons and as review for EOCT.

This unit was developed in response to the reauthorization of the Carl Perkins legislation which requires CTAE teachers to embed the instruction of rigorous academics into CTAE courses. The CTAE teacher paired with a mathematics teacher who served as a consultant to help find embedded high school mathematics and to serve as support in the instruction of the embedded mathematics. The CTAE teacher served as a consultant to the mathematics teacher as he/she prepared mathematics lesson plans in which students applied mathematics to real-world, authentic CTAE projects. For more information about the eight-step unit development process, please contact Leslie Carson at leslie.carson@sreb.org. For information about the actual instruction of this project unit, please contact the additional unit authors listed above.