Math-in-CTE Lesson Plan

Technical Mathematics

Lesson Title:	A Quick Review of Reality Store	Lesson #3
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Technical Area:	Business
CTE Concept:	Maintain a Monthly Budget
Math Concepts:	Addition, Subtraction, Multiplication and Division Operations

CCSS Math Practices and Standards:

CC.K-12.MP.4	Model with mathematics
CC.K-12.MP.5	Use appropriate tools strategically
CC.3.OA	Solve problems involving the four operations, and identify and explain patterns in arithmetic.
CC.7.EE	Solve real-life and mathematical problems using numerical and algebraic expressions and equations.
CC.5.NBT	Perform operations with multi-digit whole numbers and with decimals to hundredths.

Lockport Township High School College and Career Application's Department Student Goal and Standard:

Goal: Apply problem-solving techniques.

Standard: Apply math and reading principles to problem-solving.

Lesson Objective:	**Demonstrate what life might be like at the age of 25.**
Supplies Needed:	**Reality Store Card** **Reality Store Cups** (married v. unmarried; spouse's occupation; number of children—based on marital status) **Calculator**

THE "7 ELEMENTS"	**TEACHER NOTES** (Plus Answer Key)
1. **Introduce the CTE lesson.** a. Today we are going to review the front side of the **Reality Store card**, (which is what the freshmen complete prior to entering the Reality Store event). b. Make sure you have a career choice in mind. c. After receiving the **yellow Reality Store card**, write down your name and career choice; however, do not proceed until further instructions are given.	a. Quick review of the importance of **maintaining a monthly budget**.

2. Assess students' *math awareness* as it relates to the CTE lesson. a. What might life be like at the age of 25? b. What factors might affect one's budget? c. What might a 25-year-old have to budget for? d. At your age, what do you have to budget for?	As these are open-ended questions, the answers will vary.
3. **Work through the math example *embedded* in the CTE lesson.** Students record the **gross yearly income** from Career Cruising. a. After recording the gross yearly income, they **calculate** the **gross monthly income**. (NOTE: Round to the nearest dollar.) b. **Calculate** the **monthly withholdings** by **multiplying** the gross monthly income by 33%. c. **Calculate** the **net income.** (gross income – monthly withholdings) d. Then, students choose from a cup as to whether or not they are married or single and if they have kids. (NOTE: Both "married" and "single" students can have zero, one, or two children.)	Walk around to make sure the students writing the correct code and give feedback, as needed.
4. **Work through *related, contextual* math-in-CTE examples.** Married students pull their spouse's occupation and gross monthly income from a cup. From there, the student **calculates** his/her spouse's **monthly withholdings** and **net income**. *(Note:* Some students may pull a blank occupation piece, which means his/her spouse is unemployed.)	After a few minutes, go over an example calculation for net income to ensure the students have the right answer.
5. **Work through the *traditional math* examples.** Students **calculate** the **income** for Reality Store, which is the amount used for the monthly budget. a. **Add** the student's net income and the spouse's net income. The total is the **combined** net income. b. **Multiply** the **combined net income** by 5%, which will be automatically put into savings. c. **Calculate** the income for Reality Store by **subtracting** savings from the combined net income.	Walk around to make sure the students are following the directions and give feedback, as needed. Afterwards, go through an example calculation for the Reality Store income.

6. **Students demonstrate their understanding.** Students create a program that allow a freshman to go through Reality Store. a. Read and follow the given directions carefully.	Provide an example of what the program might to look like. Additionally, walk around to make sure students are working and help them, as needed.
7. **Formal assessment**. The formal assessment takes place once the students are finished with the program through the use of a **rubric**. (Note: The program is the final project for the class.) Source of Formal Assessment Items: Sample release and retired items from ACT, ACT COMPASS (including Joliet Junior College (JJC) Sample Release Items), ACT Explore, ACT WorkKeys, Illustrative Mathematics, JJC CAD Dual Credit proprietary test items, Career Cruising, National Automotive Technicians Education Foundation (NATEF), National Assessment of Educational Progress (NAEP), Partnership for Assessment of Readiness for College and Careers (PARCC), Trends in International Mathematics and Science Study (TIMSS), and teacher-constructed test items.	Notes: Students upload the program to their folder on the Google drive for periodic feedback. Points within the rubric determine whether or not the students used the correct math techniques throughout the program.