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| **TEAM Lesson Plan Template** | |
| Teacher: Dr. Amanda Niedzialomski | |
| Subject/Grade: Algebra 2 / Trigonometry, High School | |
| Lesson Title: Trigonometry Decoder (Activity for Trigonometry on the Unit Circle Lesson) | |
| **STANDARDS** | **Identify what you intend to teach.** State, Common Core, ACT College Readiness Standards and/or State Competencies; Enduring Understandings and Essential Questions. |
| **SMP1**. Make sense of problems and persevere in solving them.  **SMP2**. Reason abstractly and quantitatively.  **SMP5**. Use appropriate tools strategically.  **SMP8**. Look for and express regularity in repeated reasoning.  **M3.F.TF.A.1b, P.F.TF.A.2**  **A2.F.TF.A.1.b** Understand and use radian measure of an angle.  **a.** Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.  **b.** Use the unit circle to find *sin* θ, *cos* θ, and *tan* θ when θ is a commonly recognized angle between 0 and 2π. | |
| **OBJECTIVE(s)/Sub-Objectives** | **Connect prior learning to new learning.** Clear, Specific, Observable, Demanding, High Quality, Measurable, Aligned to Standard(s), and Integrated with other subjects, build on prior student knowledge  Student-Friendly (I Can Statement) |
| I can find trigonometric function values for all integer multiples of and between 0 and 2. | |
| **MATERIALS AND RESOURCES** | **Content-related:** Clearly supports lesson objective(s); rigorous & relevant; Incorporates multimedia & resources beyond the textbook. |
| **Activities & Materials**  \_x\_ Game: space for students to move around to 20 stations; 20 posters with exercise;  \_x\_ Encoded message worksheet; \_x\_ Key fact notecard (optional)  Do not use Calculators  **What if the technology is not working?** Only pencils and paper are needed  **Routine for distributing materials** Place posters around the room in advance; pass out worksheets | |
| **ACCOMMODATIONS/ADAPTATIONS** | **Learning styles and interests.** Anticipate learning difficulties, regularly incorporate student interests & cultural heritage; differentiate instructional methods. |
| **Modifications/Plans for Diverse Learners**  **Differentiation**  **----- Content ----- Process -----Product ----- Tiered Assignments ----- Flexible Grouping**  **----- Learning Centers \_\_\_\_ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Accommodations**  **\_\_\_ Preferential Seating \_\_\_ Extended Time \_\_\_ Small Group \_\_\_ Peer Tutoring**  **\_\_\_ Modified Assignments \_\_\_ Other**  **Early Finishers:** | |

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| **MOTIVATING STUDENTS/ANTICIPATORY SET** | **“Hook”: Engage students’ attention and focus on learning.** Personally meaningful and relevant. |
| We are going to play a game. | |
| **INSTRUCTIONAL PROCEDURES** | **Step-by-Step Procedures-Lesson Sequence: Basic to Complex.** Lesson includes visuals, modeling, logical sequencing and segmenting (beginning, middle, ending); essential information; concise communication; grouping strategies; differentiated instructional strategies to provide intervention & extension; seamless routines; varied instructional strategies; key concepts & ideas highlighted regularly. |
| ***Introductio*n**  Remember, we have learned that we only need to know the trig function values at from memory – the unit circle definition of sine and cosine allows us to determine the values of the trig functions at the other angles we have learned without memorizing them. Today we will play a decoder game to practice our trigonometric function skills.  **Motivating Students**  \_x\_ Game \_x\_ Review  **Presenting Instructional Content**  \_x\_ Guided Practice  ***Instructional strategies:***  **Modeling and Guided Practice *–***  Pass out worksheets. Have everyone write their name on their worksheet. Make sure that the floor is clear for students to walk around.  Notice the 20 posters around the room. Who can find the first one? ( *Allow a student to find the words “Start Here.”* ) Does everyone see where to start? What letter is on the first poster? ( *G* ). So the letter G appears as the first letter in the table on your worksheet. When you solve the problem on the “Start Here” poster, you will find the answer on some other poster. The letter on that poster becomes the second letter on your worksheet and goes in the blank marked 2. The answer to the second question appears on the poster with the third letter, and so on.  Once you know which letter goes with which number, then you can decode the message. Once you decode the message, take it to the turn in table. The first person to correctly decode the message gets \_\_\_\_\_\_\_\_\_\_\_ (a small prize or privilege ).  If you need to get up to see a problem or answer, that is OK. Be careful walking around the room. Watch where you are going.  **Check for Understanding (CFU) –**  ***What am I doing for students that progress at different rates?***  ***What do I do if they get it?***  ***What do I do if they don’t get it?*** | |
| **QUESTIONING/THINKING/PROBLEM SOLVING (embedded throughout)** | **Balanced mix of question types.** Utilizes Blooms Taxonomy/Webb’s Depth of Knowledge; high frequency; purposeful & coherent; require active responses; balance based on volunteers/non-volunteers, ability, & gender; lead to further inquiry & self-directed learning.  **Implement four types of thinking (Analytical, Practical, Creative, & Research-based) & Teach/Reinforce problem-solving types**. Provide opportunities for students to generate ideas & alternatives; analyze, evaluate & explain information from multiple perspectives& viewpoints. |
| **Questioning**  **Knowledge:**  What is ? What is ? What is ? What is ? What is ?  In which quadrant is the terminal side of the angle?  **Comprehension:**  Can you draw the angle in standard position?  In this quadrant, what is sine (the y-coordinate) positive or negative?  In this quadrant, what is cosine (the y-coordinate) positive or negative?  In this quadrant, what is tangent (the y-coordinate) positive or negative?  **Application:**  **Analysis:**  **Synthesis:**  **Evaluation:**  **Thinking*(NOTE: Clearly identify where you will use each of these in your lesson; do not just check the box!)***    \_\_ **Practical** –***Students use/apply/implement real life scenarios***  \_\_ **Creative**– ***Students Create/design/imagine/suppose***  \_\_ **Analytical** – **Students analyze /compare contrast/evaluate/explain**  \_\_ **Research-based** – ***Students explore/review variety of ideas, models, solutions to a problem***  **\*What am I going to do to give Ss opportunity to?**  **1. Generate variety of ideas:**  **2. Analyze problems from multiple viewpoints:**  **Problem Solving *Note: Teach 2 or more types of problem solving (NOTE: Clearly identify where you will use each of these in your lesson; do not just check the box!)***  \_\_\_ **Abstraction (ex: Take 1 piece out – still make association) \_\_\_ Categorization**  **\_\_\_ Drawing conclusions/Justifying Solutions \_\_\_ Predicting Outcomes (If; Then)**  **\_\_\_ Observing and Experimenting \_\_\_ Improving Solutions (ex: Better Way)**  **\_\_\_ Identifying Relevant/Irrelevant Information**  **\_\_\_ Generating Ideas \_\_\_ Creating and Designing** | |

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| **GROUPING** | **Maximize student understanding & learning** Varied group composition (race, gender, ability, & age); clearly understood roles, responsibilities & group work expectations; accountability for group & individual work; student opportunities for goal setting, reflection & evaluation of learning. |
| * Students will work individually. | |
| **ASSESSMENT** | **Formative and/or summative assessment.** A variety of assessments, including rubrics, measure achievement of objectives and informs instruction. |
| ***Assessments:***  **\_x\_ Game worksheet** provides formative assessment  **\_\_\_ ThinkLink Probe \_\_\_ Study Island \_\_\_ Teacher Made Test \_\_\_ Unit/Chapter Test \_\_\_ Project \_\_\_ Quiz**  **\_\_\_ Group Assignment \_\_\_ Study Guide \_\_\_ Oral Presentation \_\_\_ Graphic Organizer \_\_\_ Exit Ticket**  **\_\_\_ Journal \_\_\_ Questions/Answers**  **\_\_\_Teacher Observation *(thumbs up/thumbs down, etc.)*\_\_\_ Solution to Real World Problem**  **\_\_\_ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  *\****Students should achieve \_\_\_\_\_% mastery of this objective: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | |
| **CLOSURE** | **Reflection/Wrap Up.** Summarizing, reminding, reflecting, restarting, connecting. |
| * ***Review/Summary:*** Keep practicing your trigonometric ratio calculations for these familiar angles. * ***Preview for next lesson: link what they did to day with where they are going next.*** * ***Upcoming assignments: remind them of any upcoming assignments.***   ***Today we…. Turn to your partner and…. Let’s review our I Can statements……***  ***Here is your exit ticket for today…..***  **Follow-up Activities/Extension *These may be designed to create a longer or more intense lesson. For example, if the class is able to cover the material in a lesson much faster than expected, extensions may prove helpful. Extensions may also be useful in various parts of a lesson where the teacher (and class) decides they should spend more time on a skill or topic.***  ***Reflection: You must reflect on every lesson you teach.*** | |

**NOTES:**

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