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| **PVREC COURSE ONE** |
| Unit One: Tools For Success |
| State Standards:  **Standard:** Students will understand algebraic concepts and applications.  **9-12 Benchmark**.**A.1**: Represent and analyze mathematical situations and structures using algebraic symbols.  **Performance Standards:**  **9-12.A.1.1** Use the special symbols of mathematics correctly and precisely. [+/-/\*/div, delta, absolute value, equal to, not equal to, <,>, pi, exponents]  **9-12.A.1.2** Classify and use equivalent representations of natural, whole, integer, rational, irrational numbers and complex numbers, and choose which type of number is appropriate in a given context.  **9-12.A.1.3** Determine the relative position on the number line and the relative magnitude of integers, decimals, rationals, irrationals, and numbers in scientific notation.  **9-12.A.1.4** Explain that the distance between two numbers on the number line is the absolute value of their difference.  **9-12.A.1.6** Simplify numerical expressions using the order of operations, including integer exponents.  **9-12.A.1.19** Use the four basic operations (+, -, ×, ÷) in contextual situations with numbers in scientific notation, and express the results with the appropriate number of significant figures.  **Standard:** Students will understand geometric concepts and applications.  **9-12 Benchmark G.1:** Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.  **Performance Standards:**  **9-12.G.1.1** Understand that numerical values associated with measurements of physical quantities must be assigned units of measurement or dimensions; apply such units correctly in expressions, equations and problem solutions that involve measurements; and convert a measurement using one unit of measurement to another unit of measurement.  9-12.G.1.5 Use definitions in making logical arguments.  **9-12 Benchmark G.2**: Specify locations and describe spatial relationships using coordinate geometry and other representational systems.  **Performance Standards:**  **9-12.G.2.1** Identify the origin, coordinate axes, and four quadrants on the Cartesian coordinate plane, and draw and label them correctly.  **Standard:** Students will understand how to formulate questions, analyze data, and determine probabilities.  **9-12 Benchmark D.2:** Select and use appropriate statistical methods to analyze data and make predictions.  **Performance Standards:**  **9-12.D.2.1** Distinguish measurement data from categorical data, and define the term *variable*.  **9-12.D.2.2** Explain the meaning of *univariate* and *bivariate* data. |

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| **Literacy Strategies**  (Check all that apply.) | **Habits of Success**  (Check one per unit.) | **Multiple Intelligence Areas** | |
| √ Admit/Exit slips   * Graphic organizer   √ Know/Want to Know/Learn chart (KWL)  √ Open-response questions  √ Double-entry/Two-column notes  √ Retelling  √ Reflection   * Jigsaw reading   √ Anticipation guide   * RAFT (Role/Audience/Format/Topic) * Interactive reading guide * Concept definition maps * Frayer model * Visual prediction guide * Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | √ Create relationships  √ Teamwork, responsibility, effective communication)  √ Study, manage time, organize  √ (Organization, time management, study skills)  √ Improve reading/writing skills  √ (Use reading and writing to learn strategies)  √ Improve mathematics skills  √ (Estimate, compute, solve, synthesize)   * Set goals/plan * (Set goals, plan, monitor progress) * Access resources * (Research, analyze, utilize)   √ USE OF TECHNOLOGY | √ Logical/Mathematical   * Spatial   √ Musical  √ Bodily—Kinesthetic   * Interpersonal * Intrapersonal   √ Naturalist   * Linguistic | |
| ASSESSMENTS: | | |
| Pre-Assessment: | | |
| Daily/Weekly: (Included on daily activities plans) | | |
| Post-Assessment: | | |

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| **Daily Lesson Plans—WEEK ONE** | | |
| **DAY ONE** | | |
| **Learning Objective:**   1. Based on the mathematical concepts presented in Donald Duck in Mathmagicland, students will be able to identify mathematical symbols and various mathematics applications that can be found in the real-world by correctly providing 8 examples on their Ticket out the Door. (A.1.1) | | |
| **Strategy** | **Time** | **Activity** |
| Bell work | 5 | Writing Prompt: What math related activities did you do this summer? |
| Introduction/Engage | 5 | Introduce Donald Duck Video |
| Building Background Knowledge | 30 | Donald Duck in Mathemagics Land  Video available at: <http://www.bcdb.com/cartoon_video/4226-Donald_In_Mathmagic_Land.html> |
| Closure | 5 | Exit Pass: 6 Items from the video and 2 from the summer that are math related. |
| **DAY TWO** | | |
| **Learning Objective:**   1. Based on information and examples to communicate the Golden Ratio, students will use measurement and ratios to determine the length of the Statue of Liberty’s right forearm within two inches of error. (G.1.1, A.1.2, D.2.1) | | |
| **Strategy** | **Time** | **Activity** |
| Bell work | 5 | Read History of Golden Ratio; write a GIST |
| Introduction/Engage | 5 | Discuss the Golden Ratio & article |
| Learning Groups | 10 | Measure top of head to nose and nose to chin; tip of finger to first joint and tip of finger to middle joint; top of head to waist and top of head to floor |
| Discussion | 5 | Collect class data and determine the Golden Ratio |
| Learning Groups | 10 | Given the length of the Statue of Liberty’s nose, determine the length of her forearm. |
| Discussion | 5 | What did you discover? Compare results, discuss errors in calculations, accuracy |
| Closure | 5 | Exit pass: 3-2-1  3 things you liked about today’s class  2 things you had trouble with  1 new thing you learned |
| **DAY THREE** | | |
| **Learning Objective:**   1. Based on previous knowledge students will be able to define key math terms when given definition and vice versa by completing Jeopardy graphic organizer with at least 80% accuracy. (8 out of 10 terms) (A.1.1, A.1.2) | | |
| **Strategy** | **Time** | **Activity** |
| Bell work | 5 | On the piece paper provided, brainstorm as many math vocabulary terms you can recall from last year. (Even if you don’t know the definition) |
| Engage | 5 | Each student read two terms off their sheet, no repeats, write on post-it and put on board |
| Classification of words | 10 | Sort the vocabulary and review definitions |
| Graphic Organizers | 5 | Prepare Jeopardy template with categories and points (students) |
| Technology | 15 | Term Jeopardy |
| Closure | 5 | Exit Pass: use three terms properly in a sentence. |
| **DAY FOUR** | | |
| **Learning Objective:**   1. Based on a structured TI 84 scavenger activity students will be able to successfully complete 4 out of 5 computations on a Ticket out the Door. (A.1.19, A.1.6) | | |
| **Strategy** | **Time** | **Activity** |
| Bell work | 5 | Choose and sign for your calculator, identify 3 functions (other than basic math) that the calculator can do. (i.e. graphing, tables, ect) |
| Introduction/Engage | 5 | Discuss proper use of technology. Calculator is a tool, not a recreational device. Explain why we are doing the scavenger hunt. |
| Learning Groups | 25 | In pairs, have the students help each other to complete the scavenger hunt sheet. |
| Assessment | 5 | 5 problems that emphasize Order of Operations (teacher created) |
| **DAY FIVE** | | |
| **Learning Objective:**   1. See all previous. | | |
| **Strategy** | **Time** | **Activity** |
| Bell work | 5 | Practice calculator problems (3 teacher created) |
| Introduction/Engage | 5 | Review week’s lessons, brainstorm what they remember. |
| Assessment | 30 | Reflection from the week’s lessons. Write an essay that summarizes each day’s activities and what you learned. Be specific and take your time. Graded by 6-trait writing rubric for grammar and conventions. |
| Closure | 5 | Exit Pass: list as many classifications of numbers that you can recall. |

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| **Daily Lesson Plans—WEEK TWO** | | | | |
| **DAY ONE** | | | | |
| **Learning Objective:**   1. Given a Venn Diagram and a list of numbers, the students will classify correctly 8 out of 10 numbers and justify their classifications based on knowledge acquired during the lesson. | | | | |
| time | strategy | | activity | |
| 5 | Bell ringer | | * Describe 4 math symbols from the previous lesson (first week)   -draw with three words description-foldable? | |
| 20 | * Review of the different classifications of numbers. (Be sure to include 0) | | * Use of sticky notes to classify the numbers in a Venn diagram | |
| 15 | Cooperative Learning:   * Practice with a partner | | * Work with a partner to classify the given numbers and justify the answers. | |
| 5 | Summary :   * What new ideas have you learned today? | | * Open discussion/ sharing | |
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| **DAY TWO** | | | | |
| **Learning Objective:**   1. Given various units of measurements, the students will convert them to appropriate required units and to get 4 out of 5 numbers based on the knowledge acquired. | | | | |
| Time | Strategy | | Activity | |
| 5 | Bell ringer | | Survey:  Let the students tell their height and their weight ( in any units) | |
| 15 | Discussion with Demonstration | | * Demonstrate the Steps in converting units by the scientific method   Conversion Table | |
| 25 | Practice teams: (3 members in a team) | | * Measure each member’s height in inches and convert the result in feet, centimeters and in meters. * Measurement Station Activity—teachers will determine the number of stations needed for their individual classrooms (based on class size); teachers then will select one object for students to measure at each station. In addition, a conversion problem will be at each station so that students have to convert to a variety of measures. See the Measurement Station Summary Sheet. | |
| 5 | Ticket out the door | | * List the distance from   their home to school in miles and convert it to feet, inches, meter, km | |
| **DAY THREE** | | | | |
| **Learning Objective:**   * Students shall Collect a set of data from a simple experiment and differentiate categorical from experiment data | | | | |
| time | | strategy | | activity |
| 5 | | Bell ringer | | Give a list of 5 numbers applying conversion of units |
| 20 | | Survey | | * Collect data on the number of hours spent for sleeping, studying, watching television * Write the result in a chart and graph |
| 15  5 | | Discussion  Ticket out the door | | Discuss the difference of measurement data from categorical data  Give at least 2 example of your daily activities that will show the difference between measurement data and categorical data |
| **DAY FOUR** | | | | |
| **Learning Objective:** | | | | |
| time | | strategy | | activity |
| 5 | | Bell ringer | | Give a list of 5 numbers applying conversion of units |
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| **Daily Lesson Plans—WEEK THREE** | | | | | | |
| **DAY ONE** | | | | | | |
| **Learning Objective:**  Based on the Leslie’s Human Graph or roping off, the students will be able to identify the origin, coordinate axes, and label the four quadrants with 100% accuracy on their ticket out the door. (G.2.1) | | | | | | |
| TIME | ACTIVITY | | | | PROCESS | |
| 5 minutes | Bell ringer | | | | Draw and label a number line with negative, 0, and positive numbers | |
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| 5 minutes | Introduction | | | | Demonstrate Axes and quadrants | |
| 30 minutes | Learning activity | | | | Human graph or roping off activity | |
| 5 minutes | Closure | | | | Ticket out the door / drawing quadrant and labeling quadrants | |
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| **DAY TWO** | | | | | | |
| **Learning Objective:**  Using PEMDAS or other pattern for order of operations , Kagan Line up or OOOps, the students will be able to simplify numerical expressions on four out of five problems on exit slip. (A.1.6) | | | | | | |
| TIME | | ACTIVITY | | PROCESS | | |
| 5 minutes | | Bell ringer | | Particular problem and compare answers and strategies | | |
| 15 minutes | | Introduction | | Review PEMDAS and /or song | | |
| 20 minutes | | Learning activity | | Kagan Line Up or OOOps games | | |
| 5 minutes | | Closure | | Exit Slip: Four out of five problems | | |
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| **DAY THREE** | | | | | | |
| **Learning Objective:**  Based on “Power of Ten” video and card game, the students will be able to demonstrate order of operations by successfully demonstrating to another student and the teacher a given problem. (A.1.1, A.1.6) | | | | | | |
| TIME | ACTIVITY | | | | PROCESS | |
| 5 minutes | Bell ringer | | | | Explain and give an example the order of operations. | |
| 5 minutes | Introduction | | | | Video with guided questions<http://www.youtube.com/watch?v=C946u0ItznM>  best on youtube because you can make it full screen. | |
| 30 minutes | Learning activity | | | | Card game with problems using sets with order of operations done which they must match up. (See the document—Card Problems for Order of Operations) | |
| 5 minutes | Closure | | | | Think, Ink, Pair, Share on explaining the process on a particular problem | |
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| **DAY FOUR** | | | | | | |
| **Learning Objective:**  Based on review of order of operations and solving equations, the students will be able to solve two step equations as demonstrated by an ACE procedure explaining process on a given problem. (A.1.6) | | | | | | |
| TIME | | | ACTIVITY | | | PROCESS |
| 5 minutes | | | Bell ringer | | | Give a problem with two different solutions and have students pick the correct answer and explain reasoning |
| 10minutes | | | Introduction | | | Review of solving equations and order of operations |
| 25 minutes | | | Learning activity | | | Game using white boards or pair ups using 2 step equations |
| 5 minutes | | | Closure | | | ACE explaining steps on particular equation |
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| **DAY FIVE** | | | | | | |
| **Learning Objective:**  Based on physical tools and terms learned through unit, the students will be able to perform 80% accuracy on a summary assessment. | | | | | | |
| TIME | | | ACTIVITY | | | PROCESS |
| 5 minutes | | | Bell ringer | | | Classifying numbers problem |
| 10minutes | | | Introduction | | | Oral review |
| 30 minutes | | | Learning activity | | | Summary assessment |
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Reflections (for teachers to comment about changes after teaching the unit):