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| **PVREC COURSE ONE** | | | |
| Unit THREE: Hole in ONE | | | |
| 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.1.2** 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.1.7** Translate verbal statements into algebraic expressions or equations.  **9-12 Benchmark A.2:** Understand patterns, relations, functions, and graphs.  **Performance Standards:**  **9-12.A.2.3** Translate among tabular, symbolic, and graphical representations of functions and relations.  **9-12.A.2.13** Read information and draw conclusions from graphs, and identify properties of a graph that provide useful information about the original problem  **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.1.2** Find the area and perimeter of a geometric figure composed of a combination of two or more rectangles, triangles, and/or semicircles with just edges in common.  **9-12.G.1.9** Write geometric proofs, including proofs by contradiction, and perform and explain basic geometric constructions related to: theorems involving the properties of parallel and perpendicular lines, circles, and polygons; theorems involving complementary, supplementary, and congruent angles; theorems involving congruence and similarity; and the Pythagorean theorem.  **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.  **9-12.G.2.2** Determine the midpoint and distance between two points within a coordinate system and relate these  **9-12 Benchmark G.3:** Apply transformations and use symmetry to analyze mathematical situations.  **Performance Standards:**  **9-12.G.3.1** Use rigid motions (compositions of reflections, translations and rotations) to determine whether two geometric figures are congruent in a coordinate plane.  **9-12 Benchmark G.4:** Use visualization, spatial reasoning, and geometric modeling to solve problems.  **Performance Standards:**  **9-12.G.4.2** Solve problems involving complementary, supplementary, and congruent angles.  **Standard:** Students will understand how to formulate questions, analyze data, and determine probabilities.  **9-12 Benchmark D.1:** Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.  **Performance Standards:**  **9-12.D.1.1** Explain the differences between various methods of data collection  **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.2.9** Use linear patterns in data to make predictions.  **9-12 Benchmark D.3:** Understand and apply basic concepts of probability.  **Performance Standards:**  **9-12.D.3.1** Explain the concept of a random variable.  **9-12.D.3.2** Explain how the relative frequency of a specified outcome of an event can be used to estimate the probability of the outcome. | | | |
| **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** | | | | | |
| Benchmark:  **9-12.A.2.3** Translate among tabular, symbolic, and graphical representations of functions and relations.  **9-12.D.2.9** Use linear patterns in data to make predictions.  Learning Objective:  Assessment:  **Card Sort** | | | | | |
| **Strategy** | **Time** | | | **Activity** | |
| Bell work | |  |  | |
| Introduction/Engage | |  | Show current golf video from Internet or play mini golf game http://www.akidsmath.com/mathgames/golf.htm | |
| Explore/Review | |  | Simms Book 1--Flashback Activity 1 Introduction vocab. , notes cards, Groups, and expectation of unit. Review need to know concepts. | |
| Assessment | |  | KWL Chart-What do students know? | |
| Closure | |  | Homework: Flashback Activity 2 | |

**Unit Vocabulary\***

**Equilateral Triangle**

* **3 sided polygon**
* **60**° **central angles**
* **Sum of angles = 180**°
* **All sides are equal**

1. Polygon
2. Central angle
3. Congruent
4. Complimentary angles
5. Supplementary angles
6. Incoming angle
7. Outgoing angle
8. Point of reflection
9. Reflection
10. Perpendicular bisector
11. Coplanar

**\*Have students create note cards for each vocabulary term as it is introduced throughout the unit.**

**KWL –Know /Want to know/Learn Chart ( See Forms)**

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| **DAY TWO** | | | | | | | | |
| Benchmarks:  **9-12.A.2.3** Translate among tabular, symbolic, and graphical representations of functions and relations.  **9-12.D.2.9** Use linear patterns in data to make predictions.    Learning Objectives:   1. Identify regular polygons & central angles. 2. Use the relationship between the number of sides of a regular polygon and measure of its central angles.   Assessment:  Materials:   * Mirrors * Tape * Colored paper * Plain white paper * Protractor * Straightedge   From skeleton notes: Activity 1 (from Simms) Table to Graph page 4—sides vs. central angle  Use mirrors, construction paper to see polygon sides vs. central (hinge) angle, then input a table of this collected data and graph to see the relationship | | | | | | | | |
| **Strategy** | | | **Time** | | | | | **Activity** |
| Bell work | |  | | | | | Pair/share answers to Flashback Activity 2 | |
| Introduction/Engage | |  | | | | | Discussion questions (page 3) | |
| Explore/Review | |  | | | | | Reflect on This (see this document in the folder)  Module 1 / Activity 1(group work) Use Jigsaw reading  \*Use form for table 1-1 | |
| Assessment | |  | | | | | RAFT Letter—  Assignment: Pages 6 & 7 Problems 1.1 and 1.3 | |
| Closure | |  | | | | |  | |
| **DAY THREE** | | | | | | | | |
| Benchmark:  **9-12.G.4.2** Solve problems involving complementary, supplementary, and congruent angles.  **9-12.G.2.1** Identify the origin, coordinate axes, and four quadrants on the Cartesian coordinate plane, and draw and label them correctly.  Learning Objectives:   1. Use congruent, complementary, and supplementary angles relationships to make conjectures. 2. Use the relationships between the incoming and outgoing angles in the reflections of a light ray.   Assessment:  Materials:   * Graph paper * Fiberboard blocks (one per group) * Pushpins (two per group) * Rubber bands (one per group) * Flat mirrors (one per group) * Protractors (one per group) * Straightedge (one per group) | | | | | | | | |
| **Strategy** | **Time** | | | | **Activity** | | | |
| Bell work |  | | | |  | | | |
| Introduction/Engage |  | | | | Review Science Note (pg 10) | | | |
| Explore/Review |  | | | | Reflect on This  Module 1 / Activity 2  Exploration (pg 8)(groups)Use Jigsaw reading. | | | |
| Assessment |  | | | | Discussion(pg 10) | | | |
| Closure |  | | | | Discussion questions | | | |
| **DAY FOUR** | | | | | | | | |
| Days 3 and 4 are combined above | | | | | | | | |
| **DAY FIVE** | | | | | | | | |
| Benchmark:  **9-12.G.4.2** Solve problems involving complementary, supplementary, and congruent angles.  **9-12.G.2.1** Identify the origin, coordinate axes, and four quadrants on the Cartesian coordinate plane, and draw and label them correctly.  Learning Objectives:   1. Use congruent, complementary, and supplementary angles relationships to make conjectures. 2. Use the relationships between the incoming and outgoing angles in the reflections of a light ray.   Assessment:  Materials: | | | | | | | | |
| **Strategy** | | | | **Time** | | **Activity** | | |
| **Strategy** | | | | **Time** | | **Activity** | | |
| Introduction/Engage | | | |  | |  | | |
| Explore/Review | | | |  | | Complementary and supplementary angle problems game  (see memory card game in folder) | | |
| Assessment | | | |  | | Assignments 2.2, 2.3 | | |
| Closure | | | |  | | Homework – Flashback 3 | | |

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| **Daily Lesson Plans—WEEK TWO** | | |
| **DAY ONE, TWO and THREE** | | |
| Benchmark:  **9-12.A.2.13** Read information and draw conclusions from graphs, and identify properties of a graph that provide useful information about the original problem  **9-12.G.2.2** Determine the midpoint and distance between two points within a coordinate system and relate these  **9-12.G.2.3** Use basic geometric ideas (e.g., the Pythagorean theorem, area and perimeter) in the context of the Cartesian coordinate plane (e.g., calculate the perimeter of a rectangle with integer coordinates and with sides parallel to the coordinate axes, and of a rectangle with sides not parallel).  Learning Objectives:   1. Use a geometry utility to investigate various geometric relationships. 2. Relate constructions on a geometry utility to physical models of real phenomena. 3. Explain the perpendicular bisector relationships created by reflections in a line. 4. Explain the relationships between the coordinates of its image under a reflection in the x or y axis. 5. Explain the relationship between theorems and conjectures 6. Use correct notation for representing image points.   Assessment:  Materials:   * Tinted plastic reflectors * Straightedge | | |
| **Strategy** | **Time** | **Activity** |
| Bell work |  | Discuss Flashback Activity 3 |
| Introduction/Engage |  | How to use reflection to find shortest distance |
| Explore/Review |  | Reflect on This  Module 1 / Activity 3  Exploration 1, Discussion 1, Exploration 2, Discussion 2  Use Jigsaw reading.  Warm-up Page 18 |
| Assessment |  | Assignment 3.1, 3.3 (page 19): Application problem: distance to mailbox. Do it with and without coordinate system / split class debate pros and cons of which way is the best method. |
| Closure |  | Home work: Flashback 4 |

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| **Four and beyond…** | | | |
| Benchmark:  **9-12.G.4.2** Solve problems involving complementary, supplementary, and congruent angles.  **9-12.G.2.1** Identify the origin, coordinate axes, and four quadrants on the Cartesian coordinate plane, and draw and label them correctly.  Learning Objectives:   1. Use correct notation for representing reflected and double-reflected points 2. Identify the path that light follows when reflected in two mirrors. 3. Identify the coordinates of the image of a point reflected in both the x- and y-axes.   Assessment: Summary Assessment (see page 27 for additional ideas)  Materials:  Straightedge (one for group)  Flat mirror (Two for group)  Tape (one roll per group)  Graph paper (one sheet per group) | | | |
| **Strategy** | **Time** | **Activity** | |
| Bell work |  | Discuss Flashback 4 |
| Introduction/Engage |  | Using reflection across the x- and y-axis to find shortest distance. 2) Using double refection across x-and y-axis to find shortest distance. |
| Explore/Review |  | Exploration 1 P.21; Discussion 1 ;Exploration 2 P.23 Discussion 2  Use jigsaw reading. |
| Assessment |  | Warm-up P.24(1-2)  Assignment P.25(4.4, 4.5)  Complete KWL- What have Students Learned?  Summary Assessment (Page 27 of Course 1) |
| Closure |  | Project: Have students construct their golf courses using a variety of materials. Students can work in groups or build their own. See Form |

Recommendation sites:

1. Building plans: <http://www.thisoldhouse.com/toh/info/0,,20168465,00.html>
2. For Designs: http://www.backyardminigolf.eu/

WHAT’S Missing from Unit Skeleton

**G.1.2**

**Week 4**

Day 16 Simms Activity 1 Table to Graph pg 4 sides vs. central angle A.2.3, D.2.9

Use mirrors, construction paper to see polygons sides vs

Central (hinge) angel to table to graph & see relationship

Between angle and table

Day 17 Discussion Warm up 1.1 Determine central angle with formula A.2.3, D.2.9

1.4 Raft-Write a letter as a\_\_\_\_\_To a \_\_\_\_\_\_ Extension of question on page 7

for the general idea determine comp/supp for a given and make it into a raft.

Day 18 Activity 2 Exploration-Reflections (hands on activity with mirror across x axis) G.4.2, G.2.1

Day 19 Warm Up p. 11 create Complimentary Supplementary Angles Problem G.4.2, G.2.1

Identify as comp/sup/neither determine com/sup of angle

Find Your Complement or Supplement-Kagen p.158-Memory Game

w/ problem on one card answer on second.

Day 20 Periodic Assessment

**Week 5**

Day 21 Activity 3 Shortest path/distance [Map project], Exploration 2

Introduce by hand no technology-

Military examples/property description/aviation maps G.3.1, G.2.2, G.1.9

Day 22 Activity 3 Discussion 2 Warm Up p. 18

Parallel & - measure angles G.2.2, A.2.13, G.3.1

Day 23 Assignments 3.3 p. 19-Application problem-distance to mailbox G.2.2, A.2.13, G.3.1

Do it with and without coordinate system/split class debate

pros and cons of which way is the best method

Day 24 G.2.2, A.2.13, G.3.1

Day 25 Periodic Assessment

**Week 6**

Day 26 Review of fractions, random variable D 1.1, D. 2. 1, D.3.1 & D.3.2

Vocabulary (including categorical an measurement)

Day 27 Activity 2 Technology or Dice or number generator p. 41 D. 3.1 & D.3.2 Score card for putt putt

Day 28 Activity 2 Discussion and warm up assignment 1.4, 39 1.7 p. 41 A.1.2

Day 29 Activity 3 Exploration Math note p. 47,

Warm up assignment 3.4, 3.5 A.1.7

Day 30 Assessment

Teacher Reflections on the Unit: