## Geometry Lesson Plans Week \#22

Teacher: Ngoma Botumile A
Week of: 1/30-2/3/2017

Subject: Geometry
Grade: 10

## Day/Date: Monday/Tuesday 1/30/2017

Unit 14: Right Triangles and Trigonometry Students apply the Pythagorean Theorem to various real-world situations, develop a pattern for special right triangles, and apply properties of triangles to the study of right-triangle trigonometry.

Today's Objective: Students will use Pythagorean theorem and equilateral triangles to develop properties of the $30^{\circ}, 60^{\circ}, 90^{\circ}$ special right triangle.

## D. E. A. R: First 10 min of class.

1) As required school wide, points will be lost for lack of participation. See your D.E.A.R. download for this week.
2) No points for tardy students during D.E.A.R.

Warm-up: From warm-up table download
Agenda:

1. D.E.A.R.
2. Warm up solution
3. Check downloads week 22
4. $30^{\circ}, 60^{\circ}, 90^{\circ}$ special right triangle.
5. Special Right Triangles online Quiz https://www.ixl.com/math/geometry/special-right-triangles
6. AMC test Wednesday and Thursday ( 75 min )
7. Leave Your Binder in class for Binder check.

Homework: POW\#22, and HOW \#22,. Do not forget weekend study. Project Due Friday

Evaluation/Exit Ticket: Start Summary of what you have learned today at level " 0 " CHAMP. (Must include Vocab and Essential understanding/Guiding Questions from lesson plan for each day)

## TEKS:

See TEKS List below
ELPS: : C.3D, C.3H, C.3E, C.5G, C.1E, \& C.2H
( ELPS detail descriptions are posted in Class)
Vocabulary:

1) Special Right Triangle
2) Radical simplification
3) From Equilateral triangle to $30^{\circ}, 60^{\circ}, 90^{\circ}$ special right triangle.

## Essential Understanding/Guiding Questions:

1) How does the hypotenuse of a triangle of a $30^{\circ}, 60^{\circ}, 90^{\circ}$ special right triangle relate to the long leg?
2) What is the value of the Short leg in a $30^{\circ}$, $60^{\circ}, 90^{\circ}$ special right triangle when the long leg is 16 cm ?

Unit 14: Right Triangles and Trigonometry Students apply the Pythagorean Theorem to various real-world situations, develop a pattern for special right triangles, and apply properties of triangles to the study of right-triangle trigonometry.

Today's Objective: Students will Take sample AMC test to develop math completion skills.

## D. E. A. R: First 10 min of class.

1) As required school wide, points will be lost for lack of participation. See your D.E.A.R. download for this week.
2) No points for tardy students during D.E.A.R.

Warm-up: From warm-up table download

## Agenda:

1. D.E.A.R.
2. Warm up solution
3. AMC test

Homework: POW\#22, and HOW \#22,. Do not forget weekend study. Project Due Friday

Evaluation/Exit Ticket: Start Summary of what you have learned today at level " 0 " CHAMP. (Must include Vocab and Essential understanding/Guiding Questions from lesson plan for each day)

## TEKS:

See TEKS List below
ELPS: : C.3D, C.3H, C.3E, C.5G, C.1E, \& C.2H
( ELPS detail descriptions are posted in Class)

## Vocabulary:

1) Special right triangle
2) From Equilateral triangle to $30^{\circ}, 60^{\circ}, 90^{\circ}$ special right triangle.
3) Short leg, long leg, and hypotenuse.
4) From square and Isosceles right triangle to $45^{\circ}$, $45^{\circ}, 90^{\circ}$ special right triangle.

## Essential Understanding/Guiding Questions:

1) What does special right triangle mean to you?
2) How does special right triangles the $45^{\circ}, 45^{\circ}$, $90^{\circ}$ and the $30^{\circ}, 60^{\circ}, 90^{\circ}$ differ from each other?
3) What are the limitations of both Pythagorean theorem and special right triangle?

Unit 14: Right Triangles and Trigonometry Students apply the Pythagorean Theorem to various real-world situations, develop a pattern for special right triangles, and apply properties of triangles to the study of right-triangle trigonometry.

Today's Objective: Students will will work in pairs to solve math problems involved in math competitions such as UH math, Rice math contest, ACM, etc

## D. E. A. R: First 10 min of class.

1) As required school wide, points will be lost for lack of participation. See your D.E.A.R. download for this week.
2) No points for tardy students during D.E.A.R.

Warm-up: From warm-up table download

## Agenda:

1. D.E.A.R. ( Start your Problem solving: UH math 2016)
2. Teacher will specify Quiz problems
3. Class grade is based on your focus and quiz grade is based on your work.
4. All work must be done in the notebook, do not copy the problem but copy the graph if necessary, but specify your question, Test, and partner name.
5. Turn in your work in your dropbox folder before leaving the class.
6. If you are absent you still have to complete this work and turn in by 10:00 pm Friday.

Homework: POW\#22, and HOW \#22,. Do not forget weekend study. Project Due Friday

Evaluation/Exit Ticket: Start Summary of what you have learned today at level " 0 " CHAMP. (Must include Vocab and Essential understanding/Guiding Questions from lesson plan for each day)

## TEKS:

Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:
GEOM.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.
GEOM.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.
GEOM.1G Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

ELPS: : C.3D, C.3H, C.3E, C.5G, C.1E, \& C. 2 H
( ELPS detail descriptions are posted in Class)

## Vocabulary:

1) Based on contest question, list two

## Essential Understanding/Guiding Questions:

1) Write a note on your experience based on the question you solved today.

Math Contest: AMC
http://www.maa.org/math-competitions/amc-1012
UH Math Contests:
http://mathcontest.uh.edu/
Rice Univ. Math contest: http://www.ruf.rice.edu/~eulers/RMT.html

## Unit 13: Similarity

Students solve geometric problems involving similarity.

## Unit 14: Right Triangles and Trigonometry

Students apply the Pythagorean Theorem to various real-world situations, develop a pattern for special right triangles, and apply properties of triangles to the study of right-triangle trigonometry.

## Unit 15: Circle Measurement

Students apply properties of circles to determine the area of a sector and the length of an arc.

## Unit 16: Circles in the Coordinate Plane

Students write the equation of a circle and graph the circle in the coordinate plane.

## Unit 17: Circle Theorems

Students analyze and apply properties of tangents to a circle and the angles and polygons formed within.

## Cycle 4 Geometry TEKS

Similarity, Proof, and Trigonometry. The student uses the process skills in applying similarity to solve problems. The student is expected to:
(s) GEOM.7A Apply the definition of similarity in terms of a dilation to identify similar figures and their proportional sides and the congruent corresponding angles.
${ }^{\circledR}$ GEOM.7B Apply the Angle-Angle criterion to verify similar triangles and apply the proportionality of the corresponding sides to solve problems.
Similarity, Proof, and Trigonometry. The student uses the process skills with deductive reasoning to prove and apply theorems by utilizing a variety of methods such as coordinate, transformational, axiomatic and formats such as two-column, paragraph, flow chart. The student is expected to:
(s) GEOM.8A Prove theorems about similar triangles, including the Triangle Proportionality theorem, and apply these theorems to solve problems.
(S) GEOM.8B Identify and apply the relationships that exist when an altitude is drawn to the hypotenuse of a right triangle, including the geometric mean, to solve problems.
Similarity, Proof, and Trigonometry. The student uses the process skills to understand and apply relationships in right triangles. The student is expected to:
$®$ GEOM.9A Determine the lengths of sides and measures of angles in a right triangle by applying the trigonometric ratios sine, cosine, and tangent to solve problems.
® GEOM.9B Apply the relationships in special right triangles ( $300-600-90^{\circ}$ and $450-450-90^{\circ}$ ) and the Pythagorean Theorem, including Pythagorean triples, to solve problems.
Circles. The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. The student is expected to:
(s) GEOM.12B Apply the proportional relationship between the measure of an arc length of a circle and the circumference of the circle to solve problems.
(s) GEOM.12C Apply the proportional relationship between the measure of the area of a sector of a circle and the area of the circle to solve problems.
(S) GEOM.12D Describe radian measure of an angle as the ratio of the length of an arc intercepted by a
central angle and the radius of the circle.
Circles. The student uses the process skills to understand geometric relationships and apply theorems and equations about circles. The student is expected to:
(S) GEOM.12E Show that the equation of a circle with center at the origin and radius $r$ is $x^{2}+y^{2}=r^{2}$ and determine the equation for the graph of a circle with radius $r$ and center $(h, k),(x-h)^{2}+(y-k)^{2}=r^{2}$.

