Geometry 3: Applying Theorems

Week 1: Similar Polygons

Concepts:

- What is similarity
- Properties of similar polygons
- Similarity ratio
- Golden ratio

Activity: What is similarity https://www.cuemath.com/geometry/what-is-similarity/

Optional Homework: Research the golden ratio, peruse articles about it

Week 2: Similarity Continued

Concepts:

- Proving similarity:
    - Angle angle similarity postulate
    - SSS
    - SAS

Optional Homework:

https://www.khanacademy.org/math/geometry/hs-geo-similarity/hs-geo-triangle-similarity-intro/e/similar_triangles_1

https://www.khanacademy.org/math/geometry/hs-geo-similarity/hs-geo-triangle-similarity-intro/e/similar_triangles_2

Week 3: Pythagorean theorem

Concepts:

- Pythagorean theorem
- Pythagorean triples

Activity: Lots of practice problems using the pythagorean theorem

Optional homework:

http://jwilson.coe.uga.edu/EMT668/EMT668.Student.Folders/HeadAngela/essay1/Pythagorean.html Read about these proofs of the pythagorean theorem

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Week 4: Word problems

Concepts:

- Converse of pythagorean theorem
- Word problems with both

Activity: Practice- https://www.ixl.com/math/grade-8/pythagorean-theorem-word-problems

Optional Homework: Complete the practice problems from in class

Week 5: Intro Trig

Concepts:

- How to find Sine, Cosine, tangent using triangles and given angles
- 45-45-90 and 30-60-90 triangles

Activity:

https://www.khanacademy.org/math/geometry/hs-geo-trig/hs-geo-trig-ratios-intro/a/finding-trig-ratios-in-right-triangles

Optional homework:

https://www.khanacademy.org/math/geometry/hs-geo-trig/hs-geo-trig-ratios-intro/e/trigonometry_1

Week 6 Beginning circles

Concepts:

- Radius, diameter
- Tangents
- Archs
- Chords
- Length of tangent

Activity:

https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-area-circumference/v/parts-of-a-circle

http://jwilson.coe.uga.edu/emt725/ReviewCir/ReviewCir.htm

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Optional Homework:
https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-area-circumference/a/radius-diameter-circumference
https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-tangents/e/central--inscribed--and-circumscribed-angles

Week 7: Arcs

Concepts:

- Arc theorems
- Central angles
- Inscribed angles

Activity:
https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-inscribed-angles/a/inscribed-and-central-angles-proof
https://mathbitsnotebook.com/Geometry/Circles/CRAngles.html

Optional homework: challenge problems-https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-arc-length-deg/a/challenge-problems-arc-length

Week 8: Area of Circle

Concepts:

- Area of a circle
- Circumference of circle

Optional Homework: https://www.ixl.com/math/geometry/area-and-circumference-of-circles

Week 9: Area

Concepts:

- Area:
    - Rectangles
    - Squares

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- Triangles
- Polygons
- Parallelogram
- Trapezoids
- Rhombuses

Activity: longer video- https://www.youtube.com/watch?v=lcrls223oi4

Optional Homework:
https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-geometry-topic/cc-6th-area/v/area-breaking-up-shape Area of composite shapes
http://www.cimt.org.uk/projects/mepres/book7/bk7i9/bk7_9i5.htm
https://www.ixl.com/math/geometry/area-of-trapezoids

Week 10: Surface Area and Volume

Concepts:

- Surface area and volume of prisms and cubes

Activity:
https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/v/solid-geometry-volume
https://www.onlinemathlearning.com/prism-surface-area.html

Optional Homework:
https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-geometry-topic/cc-6th-surface-area/e/surface-areas

Week 11: Surface area and volume of Pyramids, cones, cylinders

Activity:
https://www.nthurston.k12.wa.us/cms/lib/WA01001371/Centricity/Domain/2539/Geometry_SA%20of%20Cones%20and%20Pyramids.pdf
https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/v/cylinder-volume-and-surface-area

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Optional Homework: https://www.ixl.com/math/geometry/surface-area-of-pyramids-and-cones
https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/e/solid_geometry

Week 12: Surface area and volume of spheres

Activity:

https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/v/volume-of-a-sphere

https://www.youtube.com/watch?v=WROccOAozXo

Resources

- https://www.cuemath.com/geometry/what-is-similarity/
- https://www.khanacademy.org/math/geometry/hs-geo-similarity/hs-geo-triangle-similarity-intro/e/similar_triangles_1
- https://www.khanacademy.org/math/geometry/hs-geo-similarity/hs-geo-triangle-similarity-intro/e/similar_triangles_2
- http://jwilson.coe.uga.edu/EMT668/EMT668.Student.Folders/HeadAngela/essay1/Pythagorean.html
- https://www.ixl.com/math/grade-8/pythagorean-theorem-word-problems
- https://www.khanacademy.org/math/geometry/hs-geo-trig/hs-geo-trig-ratios-intro/a/finding-trig-ratios-in-right-triangles
- https://www.khanacademy.org/math/geometry/hs-geo-trig/hs-geo-trig-ratios-intro/e/trigonometry_1
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- http://jwilson.coe.uga.edu/emt725/ReviewCir/ReviewCir.htm
- https://www.khanacademy.org/math/cc-seventh-grade-math/cc-7th-geometry/cc-7th-area-circumference/a/radius-diameter-circumference
- https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-tangents/e/central--inscribed--and-circumscribed-angles
- https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-inscribed-angles/a/inscribed-and-central-angles-proof
- https://mathbitsnotebook.com/Geometry/Circles/CRAngles.html
- https://www.khanacademy.org/math/geometry/hs-geo-circles/hs-geo-arc-length-deg/a/challenge-problems-arc-length
- https://www.ixl.com/math/geometry/area-and-circumference-of-circles
- https://www.youtube.com/watch?v=lcrls223oi4
- https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-geometry-topic/cc-6th-area/v/area-breaking-up-shape

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- http://www.cimt.org.uk/projects/mepres/book7/bk7i9/bk7_9i5.htm
- https://www.ixl.com/math/geometry/area-of-trapezoids
- https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/v/solid-geometry-volume
- https://www.onlinemathlearning.com/prism-surface-area.html
- https://www.khanacademy.org/math/cc-sixth-grade-math/cc-6th-geometry-topic/cc-6th-surface-area/e/surface-areas
- https://www.nthurston.k12.wa.us/cms/lib/WA01001371/Centricity/Domain/2539/Geometry_SA%20of%20Cones%20and%20Pyramids.pdf
- https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/v/cylinder-volume-and-surface-area
- https://www.ixl.com/math/geometry/surface-area-of-pyramids-and-cones
- https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/e/solid_geometry
- https://www.khanacademy.org/math/geometry/hs-geo-solids/hs-geo-solids-intro/v/volume-of-a-sphere
- https://www.youtube.com/watch?v=WROccOAozXo
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