Learning Works Charter School

Geometry A
Module 2

Student Name: _____ Teacher Name: _____

As you work through the chapters in your Geometry course, you will be encouraged to think and to make conjectures while you persevere through challenging problems and exercises. You will make errors – and that's okay! Learning and understanding occur when you make errors and push through mental roadblocks to comprehend and solve new and challenging problems.

Text: *Geometry Common Core*, Big Ideas, 2015

To ensure you are learning, you must show your work for all exercises.
YOU WILL NOT EARN CREDIT FOR ANSWERS WITHOUT WORK.

Chapter 2: Reasoning and Proofs (2.4-2.6)

_____ 2.4 Proving Statements about Segments and Angles: Read the lesson and complete exercises #1, 5-9 **all**, 11, 12, 13, 14, 17, 18, 26, 51, 52, 53

_____ 2.5 Proving Geometric Relationships: Read the lesson and complete exercises #1, 4, 7, 8, 11, 15, 17, 26

Students must complete the Chapter Review and Project with a teacher or tutor at school.

_____ Chapter Review (pages 116-118): Complete exercises #5-22 **all**

Chapter 3: Parallel and Perpendicular Lines (3.1-3.5)

_____ Maintaining Mathematical Proficiency (page 123): Complete exercises #4, 5, 6

_____ 10.1 Pairs of Lines and Angles: Read the lesson and complete exercises #1, 7, 8, 11, 12, 13, 14, 19, 30, 31

_____ 10.2 Parallel Lines and Transversals: Read the lesson and complete exercises #3-8 **all**, 13

_____ 10.3 Proofs with Parallel Lines: Read the lesson and complete exercises #3, 4, 5, 6, 13, 14, 16, 19

_____ 10.4 Proofs with Perpendicular Lines: Read the lesson and complete exercises #1, 3, 4, 11, 18, 23, 34-40 **all**

_____ 10.5 Using Parallel and Perpendicular Lines: Read the lesson and complete exercises #1, 3, 22, 23

Students must complete the Chapter Review and Project with a teacher or tutor at school.

_____ Chapter Review (pages 164-166): Complete exercises #1-13 **all**

_____ Complete the attached Project **(No project = No credit)**

Continued on next page

A teacher or tutor reviewed the Chapter Reviews and Project with the student.

Date: _____ Signature: _____

Grade

Geometry Project
Module 2: Parallel and Perpendicular Lines
Textbook Pages 123-168

Navajo Rugs

Navajo rugs use mathematical properties to enhance their beauty. How can you describe these creative works of art with geometry? What properties of lines can you see and use to describe the patterns?

Use the Internet or another source as directed by your teacher to find an image of a Navajo rug that contains parallel and perpendicular lines.

Part 1: Print the image and draw the *x*- and *y*-axes on the rug.

1. Identify at least one set of parallel lines and a transversal line. Draw the lines on the graph.
   a. Label one set of corresponding angles $\angle 1$ and $\angle 2$.
   b. Label an alternate interior angle to one of the angles as $\angle 3$.
   c. Label a pair of alternate exterior angles $\angle 4$ and $\angle 5$.
2. Find a pair of angles that look like they would be perpendicular. Draw the lines on the rug graph.
   a. Label a set of vertical angles with $\angle 6$ and $\angle 7$.
   b. Estimate the slopes of your two lines.
3. Select any set of lines or shape that you see in the rug pattern. Draw in the shape on the graph.

Part 2: Creating equations

4.

a. Find the equations of the two parallel lines you selected.

b. Explain the method you used to find the equations.

c. What is the slope of your two lines?

d. Are they really parallel?

e. How do you know?

5.

a. Find the equations of the two lines you selected that look perpendicular.

b. What are their slopes?

c. Are they perpendicular?

d. How do you know?

e. If they are not, what is the slope for a line that would be perpendicular to one of your lines?

Part 3: Summary

6. Use at least 3 of the concepts you learned in this chapter to describe your rug and an additional shape.