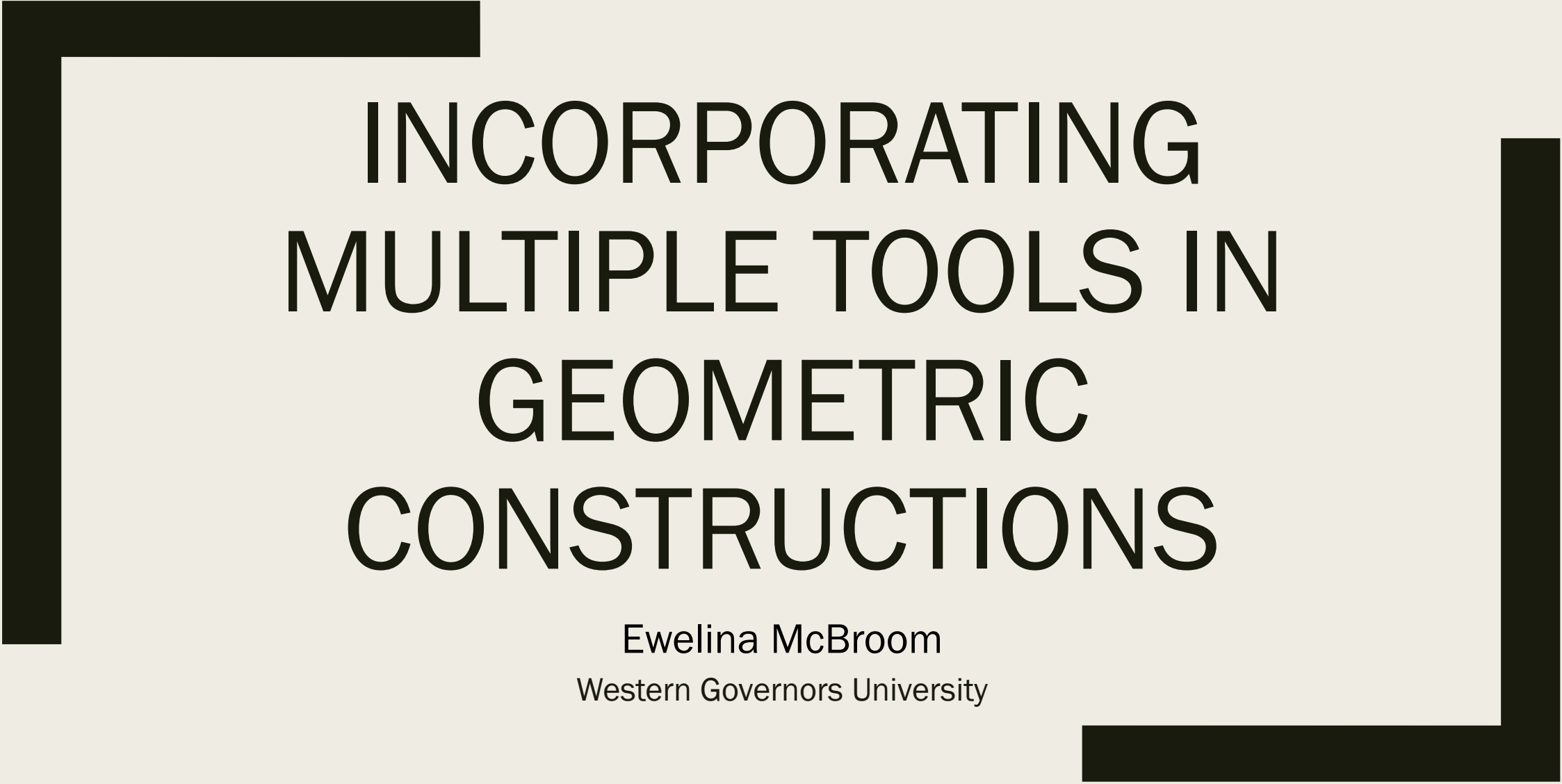


A thick black L-shaped frame surrounds the text. It starts at the top left, goes right, then down, then right again at the bottom right.

INCORPORATING MULTIPLE TOOLS IN GEOMETRIC CONSTRUCTIONS

Ewelina McBroom
Western Governors University

Today we will learn...

How to construct...

- perpendicular bisectors
- angle bisectors
- altitudes
- and medians of a triangle

Using three different tools:

- Mira



- patty paper

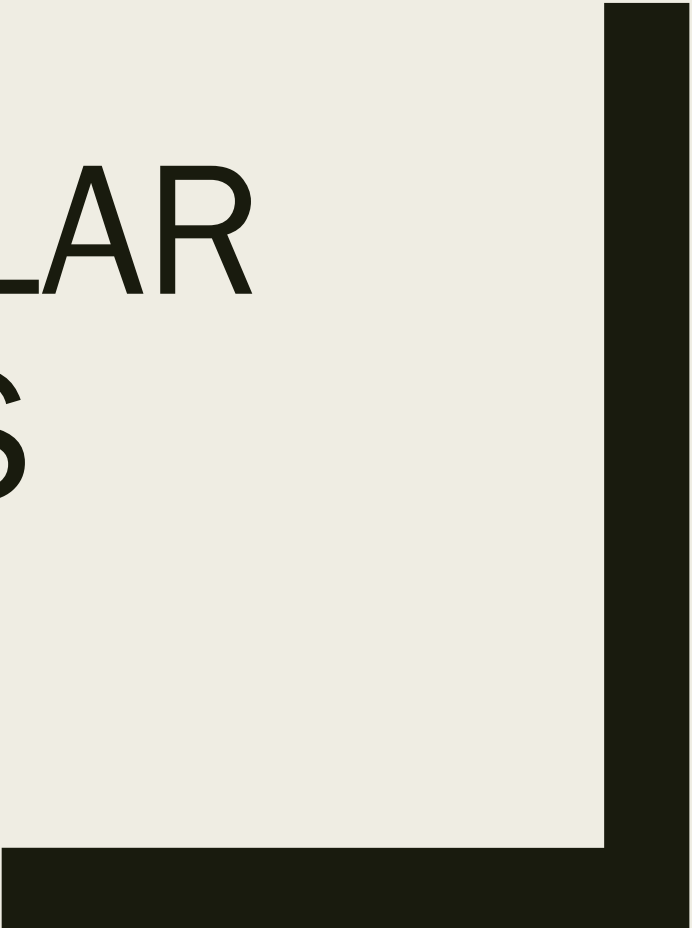


- GeoGebra



Getting started

- Take 4-5 pieces of patty paper
- Construct a scalene triangle on one piece of patty paper
 - *Copy this triangle to the remaining pieces*
 - *Make sure you always copy the original triangle*



PERPENDICULAR BISECTORS

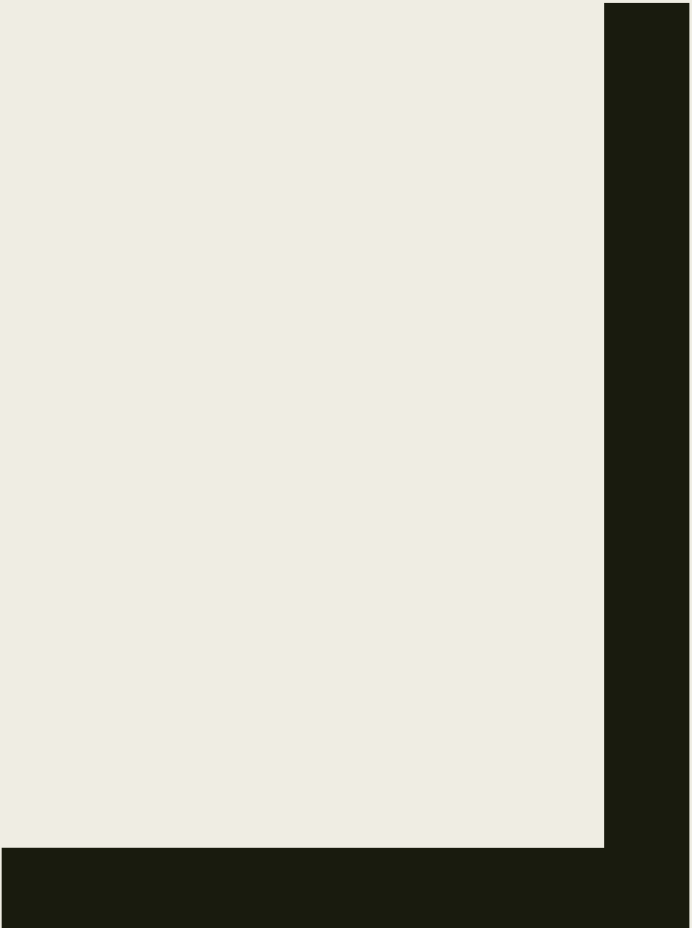


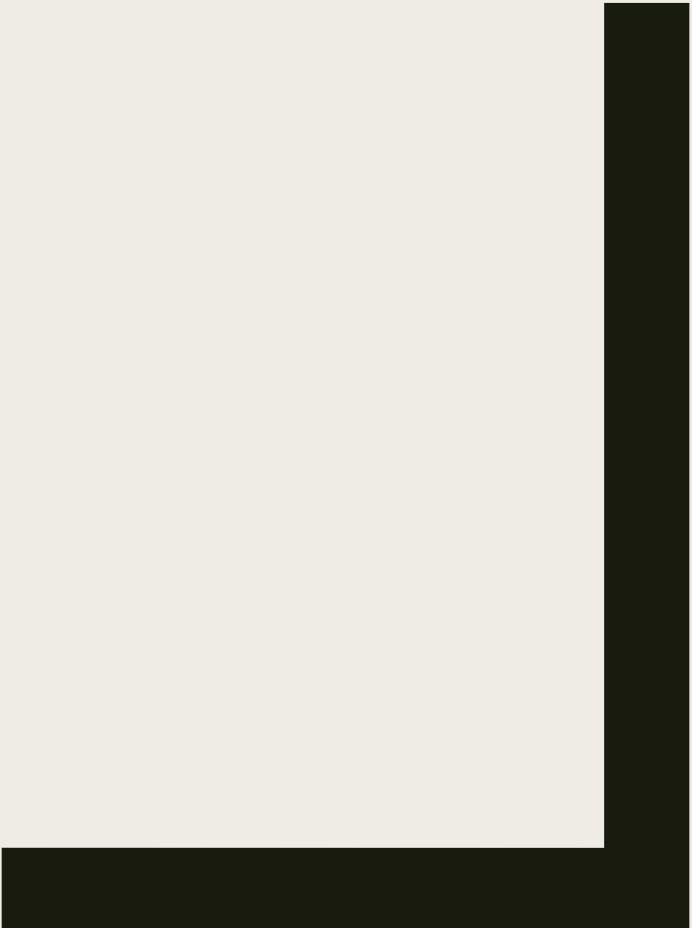
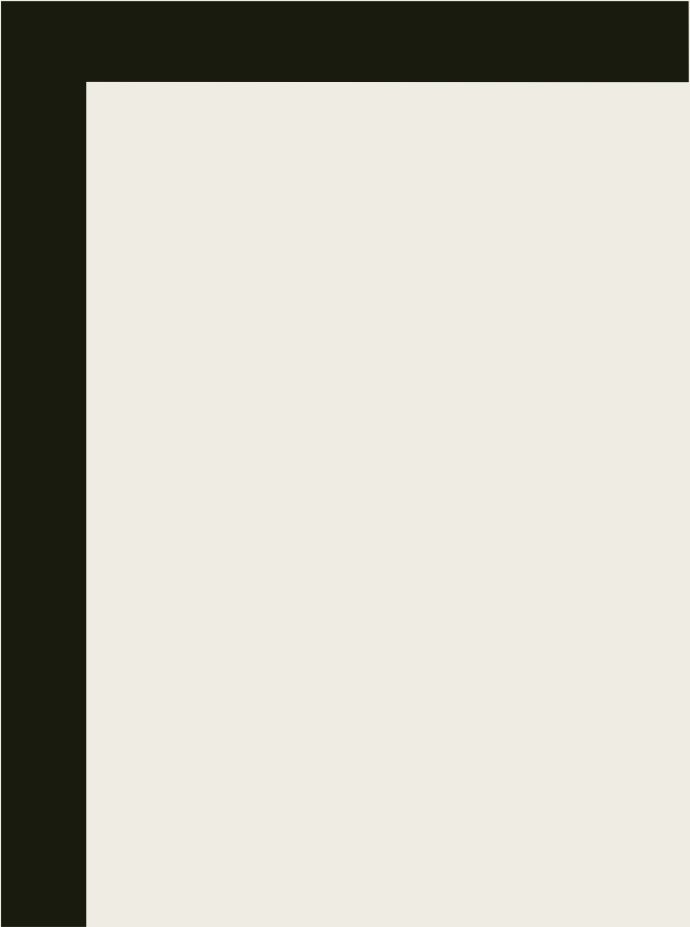
ANGLE BISECTORS





ALTITUDES





MEDIANS

Summary of findings

	Point of concurrency	Acute triangle	Right triangle	Obtuse triangle
Perpendicular bisectors	Circumcenter	On the interior	On the hypotenuse	On the exterior
Angle bisectors	Incenter	On the interior	On the interior	On the interior
Altitudes	Orthocenter	On the interior	On the right angle vertex	On the exterior
Medians	Centroid	On the interior	On the interior	On the interior

Putting it all together

- Copy all points of concurrency onto one paper
- Label each point
- What do you notice?
- The Euler Line
 - *orthocenter, centroid, and circumcenter are collinear for any triangle*
 - *the distance from the orthocenter to the centroid is twice the distance from the circumcenter to the centroid*

Thank you for your attention!!!

■ QUESTIONS???

■ Email: Ewelina.McBroom@WGU.edu