



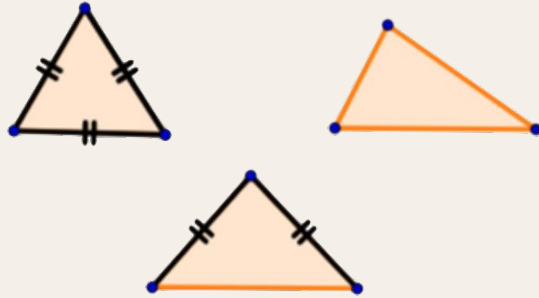
**Special
Segments
in Triangles**

Lesson Objectives

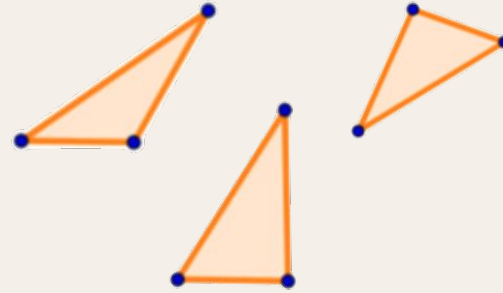
Students will be able to:

Investigate patterns to make conjectures about geometric relationships, including angles formed by parallel lines cut by a transversal, criteria required for triangle congruence, **special segments of triangles**, diagonals of quadrilaterals, interior and exterior angles of polygons, and special segments and angles of circles choosing from a variety of tools. (TEKS C.5.A)

Student Prior Knowledge



**Scalene, Isosceles, and
Equilateral Triangles**



**Right, Acute, and
Obtuse Triangles**

Lesson Outline

Engage

Warm Up

Students will review prior knowledge. (~10 minutes)

Explore

Activity

Students will create a foldable and use GeoGebra to learn about special segments. (~30 minutes)

Explain

Presentations

Students will present the definitions and sketches they came up with. (~20 minutes)

Elaborate

Game

Students will complete a sorting activity to test their knowledge of the special segments. (~25 minutes)

Evaluate

Exit Ticket

Students will complete an exit ticket to assess their understanding of the material presented in this lesson. (~5 minutes)

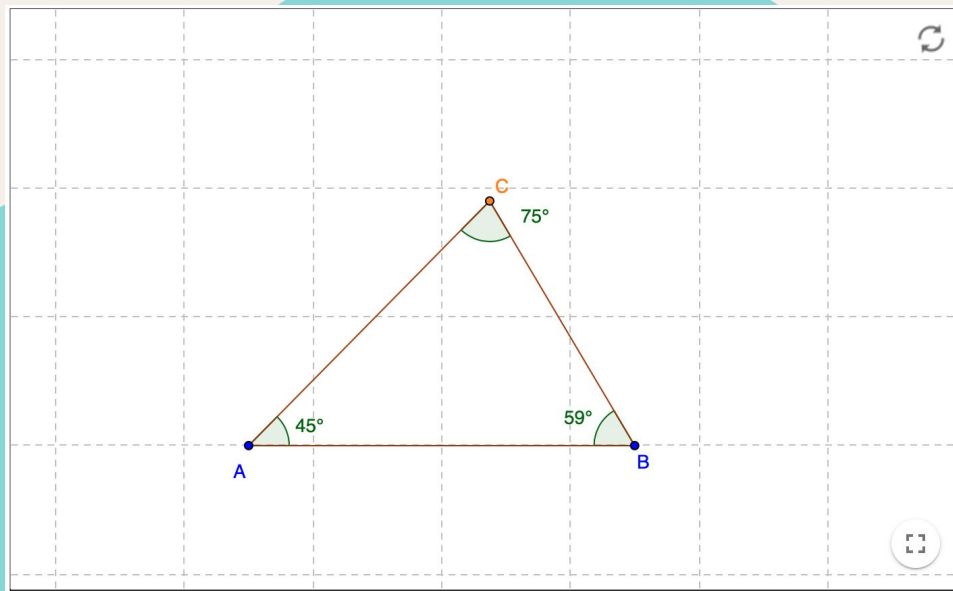
The background is a light cream color with several abstract shapes: a large orange shape in the top-left corner, a small teal triangle pointing right in the middle-left, a small orange triangle pointing down in the top-right, and a teal semi-circle in the bottom-right with a small red triangle pointing up from its edge.

Engage

•Warm Up•

What is an acute triangle?

Students will use GeoGebra to review what an acute triangle is and what a scalene, isosceles, and equilateral acute triangle looks like. They will have to make each of those three triangles and discuss with a partner the differences between the three.





Explore

•Activity•

Activity Outline

1. Students will be put into small groups (preferably groups of 4).
2. Students will cut out this foldable with four sections.
3. The labels for the four sections are Perpendicular Bisector, Angle Bisector, Median, and Altitude.
4. I will assign one of the special segments to each group.
5. Each group must use Geogebra to explore the special segment assigned to them and come up with a definition and picture. They will follow these instructions.
6. Each student will have one of four roles: Scribe, Artist, Leader, and Time Keeper. They may choose their role.
7. I will go around the classroom with a stamp to approve definitions and sketches or suggest improvements.



Group Roles



Leader

Makes sure that everyone in their group is on task.



Time Keeper

Keeps track of the time left for the group to finish.



Artist

Comes up with a sketch of the specific special segment assigned to their group.



Scribe

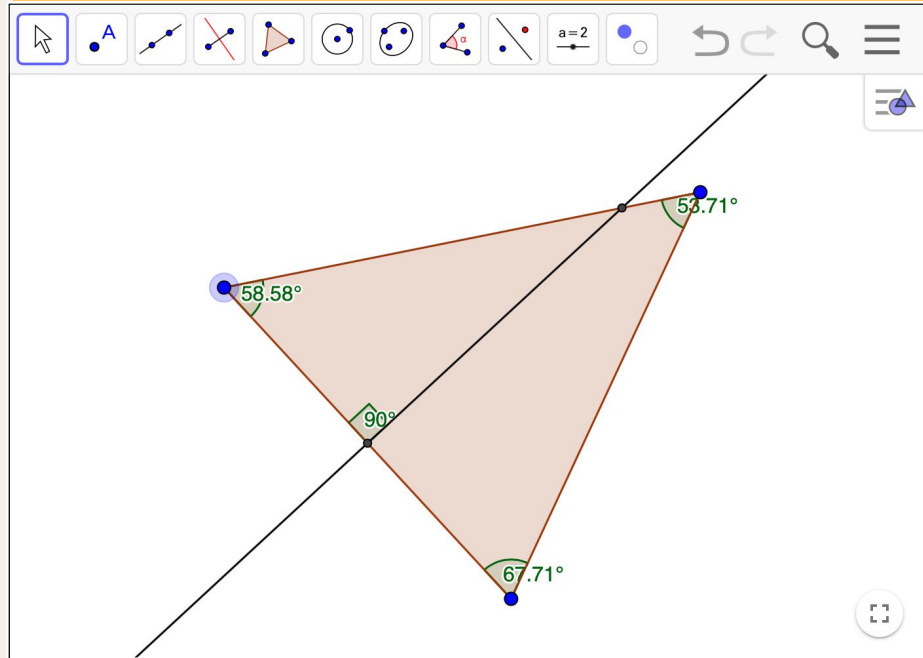
Takes notes of what their group discusses and writes the final definition.

Perpendicular Bisector

Students must explore the GeoGebra module, and then come up with a definition and sketch of a perpendicular bisector.

Definition must include:

- a line that intersects a line segment at its **midpoint** and is **perpendicular** to that line segment
- a point on the perpendicular bisector of a segment is **equidistant** from the endpoints of the segment

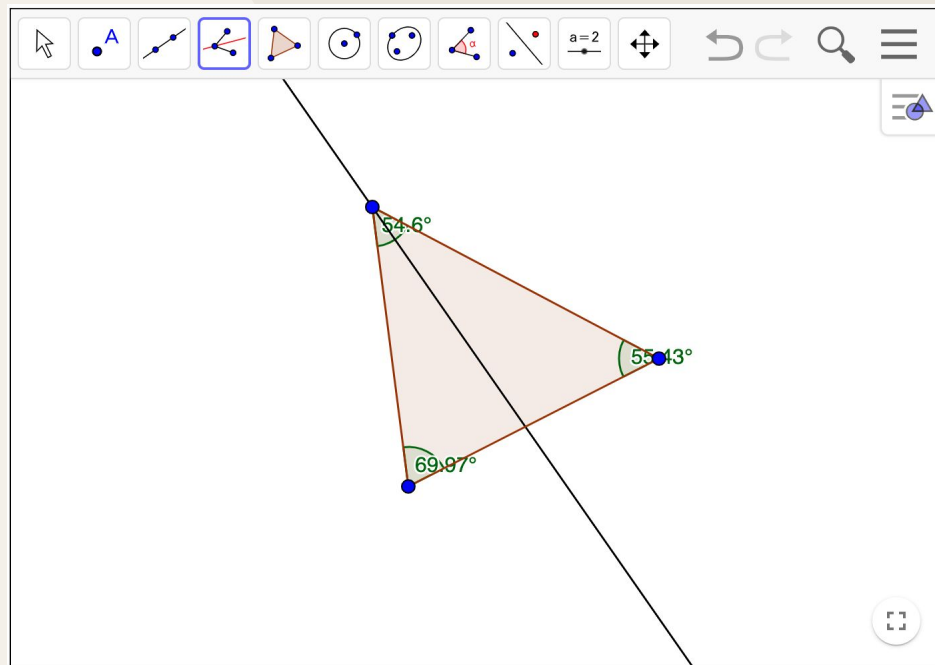


Angle Bisector

Students must explore the GeoGebra module, and then come up with a definition and sketch of an angle bisector.

Definition must include:

- a line that cuts an angle **exactly in half**
- a point on the bisector of an angle is **equidistant** from the sides of the angle

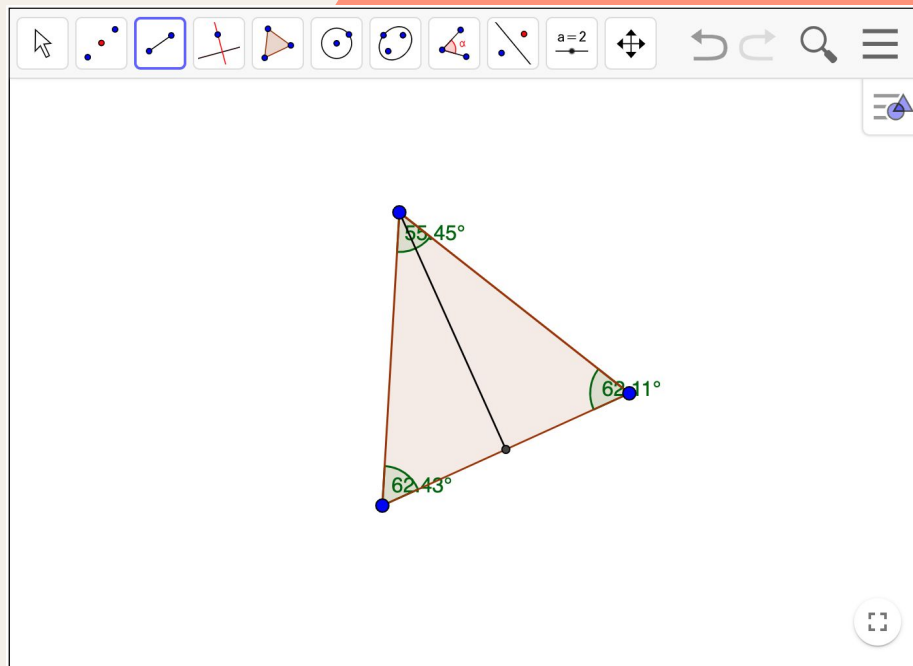


Median

Students must explore the GeoGebra module, and then come up with a definition and sketch of a median.

Definition must include:

- a line segment that joins a **vertex** and the **midpoint** of the opposite side

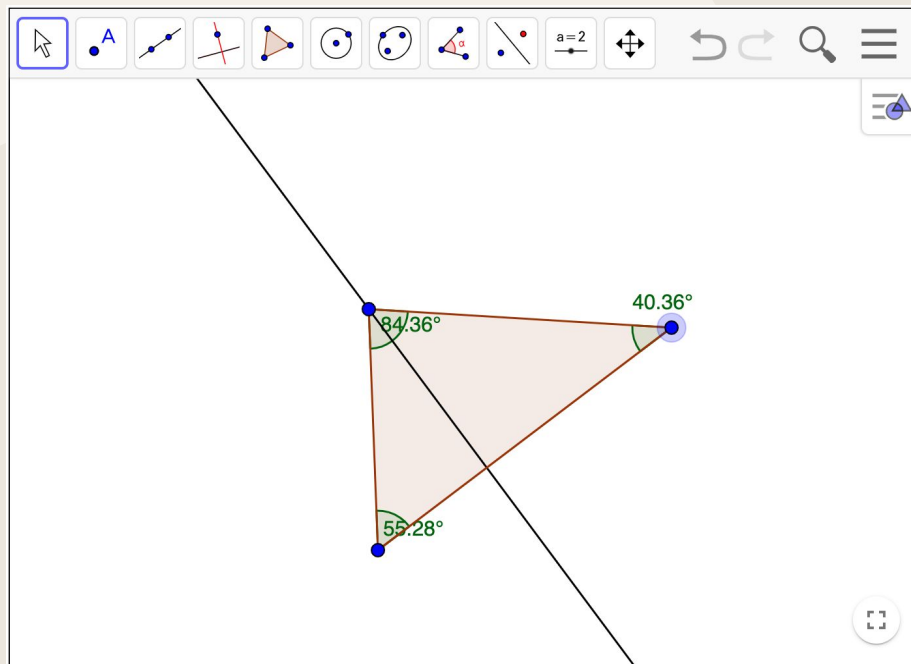


Altitude

Students must explore the GeoGebra module, and then come up with a definition and sketch of an altitude.

Definition must include:

- a line segment from a **vertex** and **perpendicular** to the opposite side
- the altitude is either inside, outside, or along one of the sides of a triangle depending on what type it is: right, obtuse, or acute



The background features several abstract shapes: a large orange circle in the center, a teal triangle pointing right in the upper left, a small orange triangle pointing left in the upper right, a teal triangle pointing right in the lower left, and a teal semi-circle in the lower right with a red triangle pointing left. The text is centered within the orange circle.

Explain

•Presentations•

Presentations Expectations

1. Each member of the original groups is responsible of being a representative of the special segment assigned to their group.
2. Students will be put into new groups that consist of one representative of each special segment.
3. Students will take turns sharing the definition and sketch of their special segment with the rest of their new group.
4. Students must fill in the information of the other special segments into their foldable.



The background features a light gray gradient with several abstract shapes: a large orange circle in the center, a teal triangle pointing right on the left side, a small orange triangle pointing up on the top right, a red triangle pointing down on the bottom right, and a teal semi-circle at the bottom right. A red wavy shape is visible in the top left corner.

Elaborate

•Game•

Sorting Activity

1. In their new groups, students will be tasked with completing a **sorting activity**.
2. They must be able to sort a set of triangles into ones with a perpendicular bisector, an angle bisector, a median, and an altitude.
3. They will write down the number of each triangle into one of the boxes on the **student answer sheet**.
4. I will call on students to share why their group sorted the triangles the way they did.
5. Students will be given a chance to redo the sorting of the triangles.



The background features a large central orange circle containing the text. Surrounding this are various abstract shapes: a red wavy shape in the top-left, a small teal triangle in the middle-left, a small orange triangle in the top-right, and a teal semi-circle with a red triangle in the bottom-right.

Evaluate

•Exit Ticket•

Checking for understanding

Students will complete this exit ticket to assess their understanding of the material presented in this lesson. It asks them to identify each special segment.



The image features a minimalist design on a light cream background. A large, teal-colored organic shape dominates the lower half, with the word "END" centered in a bold, dark blue, sans-serif font. To the right, a smaller, bright orange organic shape overlaps the teal one. Three small triangles are scattered: a yellow one in the upper left, an orange one at the top center, and a yellow one inside the orange shape on the right.

END