Activity 6 — Circumcenter and Incenter

Objectives

This activity is designed to help students recognize the following properties:

- ✔ *The perpendicular bisectors of a triangle have only one point of intersection, called the circumcenter.*

- ✔ *If a triangle is acute, then the circumcenter lies inside the triangle.*

- ✔ *If a triangle is obtuse, then the circumcenter lies outside the triangle.*

- ✔ *If a triangle is right, then the circumcenter lies on the triangle.*

- ✔ *The angle bisectors of a triangle have only one point of intersection, called the incenter.*

- ✔ *If a triangle is acute, then the incenter lies inside the triangle.*

- ✔ *If a triangle is obtuse, then the incenter lies inside the triangle.*

- ✔ *If a triangle is right, then the incenter lies inside the triangle.*

Vocabulary

triangle	perpendicular bisector
angle bisector	intersection
acute	right
obtuse	

Prerequisites

Students must understand how to:

- ✔ *Construct and label a triangle.*

- ✔ *Measure and label angles.*

- ✔ *Bisect an angle.*

Answers

5. *W* is inside the triangle.

7. If a triangle is acute, then the circumcenter lies inside the triangle.

9. *W* is outside the triangle.

11. If a triangle is obtuse, then the circumcenter lies outside the triangle.

13. *W* is on the triangle.

15. If a triangle is right, then the circumcenter lies on the triangle.

22. *W* is inside the triangle.

24. If a triangle is acute, then the incenter lies inside the triangle.

26. *W* is inside the triangle.

28. If a triangle is obtuse, then the incenter lies inside the triangle.

30. *W* is inside the triangle.

32. If a triangle is right, then the incenter lies inside the triangle.
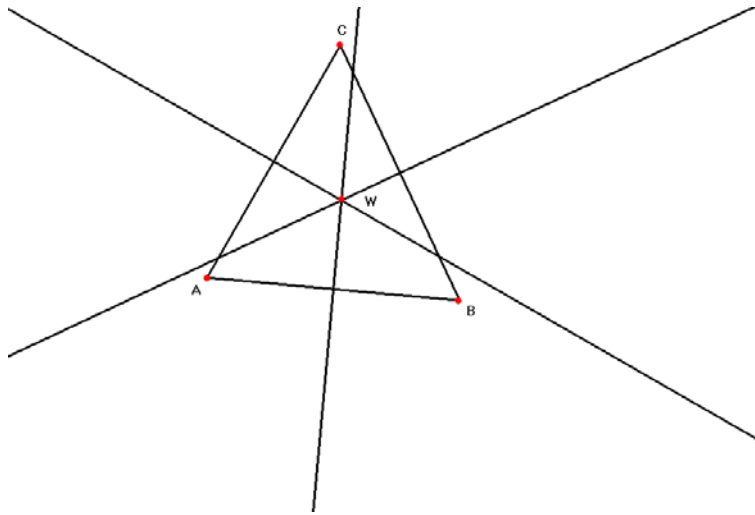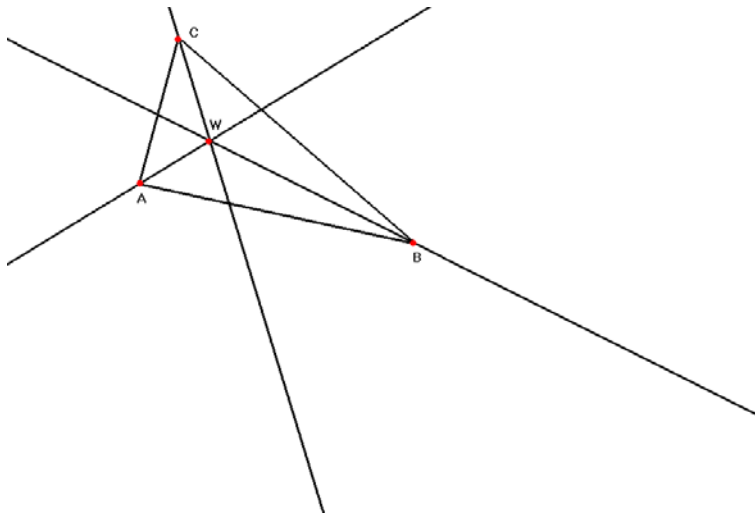
Figure A.4

Figure A.5