

# Polygon Measurement

Short-answer questions involving length, angle, and area.

## Careful Measurement with Eyeballs

Adjust the figures to fit the given conditions within **eyeball accuracy**. Enter the requested measurements.

Geogebra link: <https://tube.geogebra.org/m/gjf28er6>

**Problem 1** In figure above, when point  $C$  is adjusted so that  $BC$  is perpendicular to  $AC$ ,  $AC = \boxed{2.09}$ .

**Hint:** When two lines are perpendicular, they cross to create four congruent angles.

**Hint:** Use the corner of a piece of paper.

Geogebra link: <https://tube.geogebra.org/m/q32gyaud>

**Problem 2** In  $\triangle ABC$  above, move point  $D$  to make the following measurements. **Enter -1 if it is not possible.**

(a) When  $\overline{BD}$  is a median,  $AD = \boxed{2.25}$ .

**Hint:** A median is drawn from a vertex to the midpoint of the opposite side.

(b) When  $\overline{BD}$  is a angle bisector,  $AD = \boxed{2.78}$ .

**Hint:** An angle bisector cuts an angle in half. Focus near the vertex of the angle rather than near  $D$ .

(c) When  $\overline{BD}$  is a perpendicular bisector,  $AD = \boxed{-1}$ .

**Hint:** An perpendicular bisector cuts an segment in half and is perpendicular to it. **Enter -1 if it is not possible.**

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(d) When  $\overline{BD}$  is a altitude,  $AD = \boxed{6.46}$ .

**Hint:** An altitude contains a vertex and is perpendicular to the line containing the opposite side. **Enter -1 if it is not possible.**

Geogebra link: <https://tube.geogebra.org/m/a888zyw2>

**Problem 3** In  $\triangle ABC$  above, the height to base  $\overline{AC}$  is  $\boxed{3.585}$ .

**Hint:** You may move point  $D$ . A height is the length of an altitude, which must be perpendicular to the line containing the chosen base.

Geogebra link: <https://tube.geogebra.org/m/hta9hbuf>

**Problem 4** In  $\triangle ABC$  above, the height to base  $\overline{AC}$  is  $\boxed{3.511}$ .

**Hint:** You may move point  $D$ . A height is the length of an altitude, which must be perpendicular to the line containing the chosen base.