

# Measuring Interior Angles

Short-answer questions involving angles in triangles.

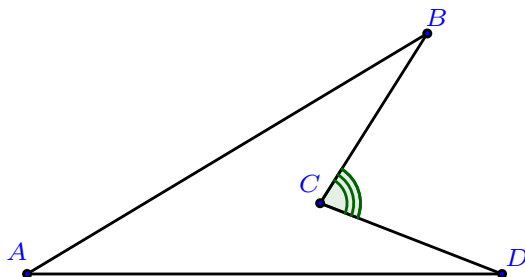
Geogebra link: <https://tube.geogebra.org/m/zrapvzpz>

**Problem 1** Measure the interior angles of quadrilateral  $ABCD$  above.

- (a)  $m\angle A = \boxed{31}$  degrees.
- (b)  $m\angle B = \boxed{26.74}$  degrees.
- (c)  $m\angle C = \boxed{281}$  degrees.
- (d)  $m\angle D = \boxed{21.25}$  degrees.
- (e)  $m\angle A + m\angle B + m\angle C + m\angle D = \boxed{360}$  degrees.

**Hint:** Be sure to measure interior angle as an amount of turning between the two sides of the angle.

**Problem 2** Use the measurements from the previous problem to answer the following questions:



- (a) The marked angle should measure  $\boxed{79}$  degrees.
- (b)  $m\angle A + m\angle B + m\angle D = \boxed{79}$  degrees.
- (c) What do you notice?

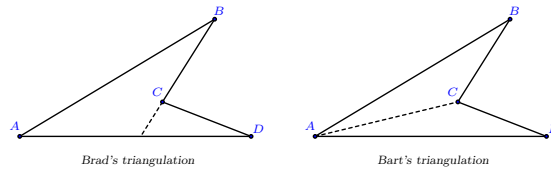
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Learning outcomes:  
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**Free Response:** **Hint:** They should be the same because, in both cases, adding the interior angle at  $C$  should give  $360^\circ$ .

**Problem 3** In order to reason about the sum of the interior angles, Bart and Brad each triangulated the figure as shown below.



Both Bart and Brad claim that because in a triangle the sum of the interior angles is  $180$  degrees, and this quadrilateral is cut into  $2$  triangles, the angle sum in this quadrilateral should be  $360$  degrees. What is your judgment about their reasoning?

**Multiple Choice:**

- (a) Both are reasoning correctly.
- (b) Only Brad is reasoning correctly.
- (c) Only Bart is reasoning correctly. ✓
- (d) Neither of them are reasoning correctly.

Explain your reasoning.

**Free Response:** **Hint:** In Bart's triangulation, the interior angles of the quadrilateral are composed only of interior angles of the triangles. But in Brad's triangulation, a new angle has been created with a vertex between A and D, and part of interior angle C has been lost.