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?*

Free Response: ***Hint:*** *They should be the same because, in both cases, adding the interior angle at C should give 360°.*

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

Learning outcomes:
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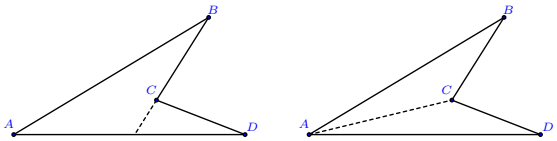

Brad's triangulation *Bart's triangulation*

Both Bart and Brad claim that because in a triangle the sum of the interior angles is $\boxed{180}$ *degrees, and this quadrilateral is cut into* $\boxed{2}$ *triangles, the angle sum in this quadrilateral should be* $\boxed{360}$ *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.*