Worksheet – Angle Properties in Polygons

1. Which equation gives the sum of the interior angles of a convex polygon?

   A. $S(n) = 180°(n - 1)$ **C.** $S(n) = 180°(n - 3)$

   B. $S(n) = 180°(n - 2)$ **D.** $S(n) = 180°(n)$

2. Which expression calculates the measure of an interior angle of a regular polygon?

   A. $\frac{180°(n - 2)}{n}$ **C.** $\frac{180°(n)}{n}$

   B. $\frac{180°(n - 1)}{n}$ **D.** $180°(n)$

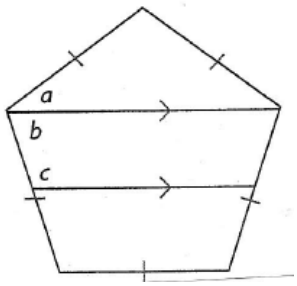
3. **a)** Determine the sum of the measures of the interior angles of a regular heptagon.

   b) Determine the measure of each interior angle of a regular heptagon.

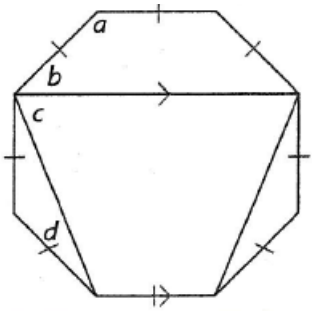
4. Determine the sum of the measures of the interior angles in a 16-sided convex polygon.

5. Kieran drew a 14-sided convex polygon. One of the interior angles measures 155°. Is it a regular polygon? Explain.

6. Determine the measures of angles a, b, and c.



7. Determine the values of a, b, c, and d. Show your work.



ANSWERS:

1. B
2. A
3. a. $S = 900^\circ$ b. $a = 128.6^\circ$
4. $S = 2520^\circ$
5. No. e.g., If the polygon is regular, interior angle measure = $\frac{180^\circ(14-2)}{14}$, or 154.3°. The interior angle measure should be 154.3°.
6. $\angle a = 36^\circ, \angle b = 72^\circ, \angle c = 108^\circ$
7. $\angle a = \frac{180^\circ(8-2)}{8}$

   $\angle a = 135^\circ$

   $2\angle d + 135^\circ = 180^\circ$

   $2\angle d = 45^\circ$

   $\angle d = 22.5^\circ$

   $\angle b + \angle c + \angle d = 135^\circ$

   $45^\circ + \angle c + 22.5^\circ = 135^\circ$

   $\angle c = 67.5^\circ$

   $\angle a + \angle b = 180^\circ$

   $135^\circ + \angle b = 180^\circ$

   $\angle b = 45^\circ$