Worksheet #61 - How to Find Angles of a Polygon?

Complete the following chart:

<table>
<thead>
<tr>
<th>Polygon</th>
<th># of Sides</th>
<th># of Diagonals</th>
<th>Sum of Interior Angles</th>
<th>Measure of Each Interior Angle</th>
<th>Measure of Each Exterior Angle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triangle</td>
<td>3</td>
<td>0</td>
<td>180</td>
<td>60</td>
<td>120</td>
</tr>
<tr>
<td>Quadrilateral</td>
<td>4</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pentagon</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hexagon</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heptagon</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Octagon</td>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nonagon</td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decagon</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1) What is the sum of the interior angles in a regular polygon with 80 sides?  
2) What is the number of sides of a regular polygon whose exterior angles each measure 36°?  
3) What is the number of sides of a polygon if the sum of the measure of the interior angles is 1,800°?  
4) What is the number of sides of a regular polygon whose interior angles each measure 135°?
6) The measure of an exterior angle of a regular polygon is 45°.
   a) Find the number of sides of the polygon.  
   b) Find the measure of each interior angle.  
   c) Find the sum of the measures of the interior angles.

7) Find the SUM of the degree measure of the INTERIOR angles of a polygon that has:
   a) 25 sides  
   b) 102 sides  
   c) 14 sides

8) Find the measure of each INTERIOR angle of a regular polygon that has:
   a) 40 sides  
   b) 22 sides  
   c) 19 sides

9) Find the measure of each EXTERIOR angle of a regular polygon that has:
   a) 18 sides  
   b) 20 sides  
   c) 15 sides

10) Find the number of sides on a polygon whose INTERIOR angles SUM:
    a) 900°  
    b) 1,980°  
    c) 2,880°

11) Find the number of sides on a regular polygon whose INTERIOR angles each measure:
    a) 144°  
    b) 135°  
    c) 165°

12) Find the number of sides on a regular polygon whose EXTERIOR angles each measure:
    a) 12°  
    b) 40°  
    c) 14.4°

13) In quadrilateral ABCD, \( m\angle A = x, \ m\angle B = 2x - 12, \ m\angle C = x + 22, \) and \( m\angle D = 3x. \)
   a) Find the measure of each interior angle of quadrilateral.
   b) Find the measure of each exterior angle of quadrilateral.