**Supplementary Activities**

**Unit 3 Investigation 1**

1. **Interior and Exterior Angles of Triangles**  
     
   a. Open the applet <http://tube.geogebra.org/material/simple/id/3180611>

Interact with the applet. Then answer these questions

1) What geometric transformations took place in the applet?     
  
  
  
2) When working with the triangle's interior angles, did any of these transformations change the measures of the blue or green angles?     
  
  
  
3) From your observations, what is the sum of the measures of the interior angles of  *any triangle?*4) When working with the triangle's exterior angles, did any of these transformations change the measures of the green or gray angles?   
  
  
  
5) From your observations, what is the sum of the measures of the exterior angles of  *any triangle?*

b. For a slightly different approach try this applet <http://tube.geogebra.org/material/simple/id/2976083>

Interact with the applet and answer the same questions.

1. **Interior and Exterior Angles of Quadrilaterals**  
    Open the applet<http://tube.geogebra.org/material/simple/id/3091735>

Interact with the applet. Then answer these questions.

1) What geometric transformations took place in the applet?     
  
  
  
2) When working with the quadrilateral's interior angles, did any of these transformations change the measures of these interior angles?    
  
  
   
3) From your observations, what is the sum of the measures of the interior angles of *any convex quadrilateral?*4) When working with the quadrilateral's exterior angles, did any of these transformations change the measures of these exterior angles?   
  
  
5) From your observations, what is the sum of the measures of the exterior angles of  *any convex quadrilateral?*

1. **Interior and Exterior Angles of Pentagons**

Open the applet<http://tube.geogebra.org/material/simple/id/3096163>

Interact with the applet. Then answer these questions.

1) What geometric transformations took place in the applet?    
  
  
   
2) When working with the pentagon's interior angles, did any of these transformations change the measures of these interior angles?     
  
  
  
  
3) From your observations, what is the sum of the measures of the interior angles of  *any convex pentagon?* 4) When working with the pentagon's exterior angles, did any of these transformations change the measures of these exterior angles?   
  
  
  
5) From your observations, what is the sum of the measures of the exterior angles of *any convex pentagon?*

1. **Interior and Exterior Angles of Convex Polygons**
2. **Open the applet** <http://tube.geogebra.org/material/simple/id/3097847>  
     
   Use this applet to explore the interior and exterior angles of a convex hexagon.
3. Open the applet <http://tube.geogebra.org/material/simple/id/3130919>  
     
   Use this applet to explore the interior and exterior angles of a convex heptagon.
4. <http://tube.geogebra.org/material/simple/id/3191189>  
     
   Use this applet to explore the interior and exterior angles of a convex octagon.
5. Generalize your results. Describe how the applets support the general theorems for the sum of the measures of the interior and exterior angles of a convex polygon.