



Let  $ABC$  be a triangle with no angle greater than  $120$ . Construct equilateral triangles  $ABN$ ,  $BCL$ , and  $ACM$  on the side of triangle  $ABC$ . Connect the centers of the equilateral triangles  $ABN$ ,  $BCL$ , and  $ACM$  to form a triangle. This triangle is known as the outer Napoleon triangle of  $ABC$ , named after Napoleon Bonaparte. Then construct equilateral triangle  $ABX$ ,  $BCY$ , and  $ACZ$  overlapping in the interior of triangle  $ABC$ . Connect the centers of the 3 triangles to form a triangle called the inner Napoleon triangle.

Show that the difference between the areas of the outer and inner Napoleon triangles is equal to the area of the original triangle.

Create a display showing your constructions. Attach a report explaining the relationship between the areas of the two Napoleon triangles and the original one.