Angle sum assignment:

1. Draw any triangle, and extend one side at each vertex to make exterior angles (turtle turn angles).

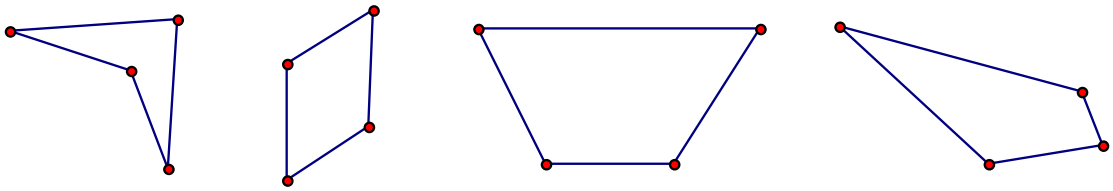
a. If you add up all of the exterior angles what do you get?

b. If you put together an exterior angle with its adjacent interior angle, what do you get?

c. If you put together all 3 exterior angles and all 3 interior angles and add them up what do you get?

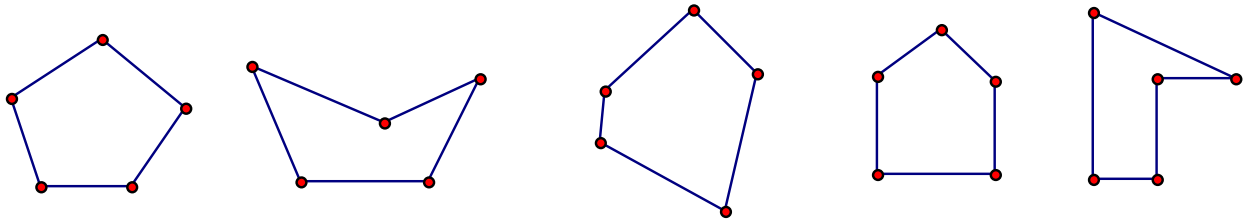
d. If you subtract a from c, you get just the 3 interior angles. How much is that?

2. Show that each quadrilateral below can be divided into 2 triangles by connecting vertices:



How does this show that the sum of the interior angles of a quadrilateral is $2 \times 180°$?

3. Show that each pentagon below can be divided into 3 triangles by connecting vertices:



How does this show that the sum of the interior angles of a pentagon is $3 \times 180°$?

4. Draw 3 interesting hexagons, and divide them into triangles by connecting vertices:

How many triangles will a hexagon divide into this way?

What is the sum of the interior angles of a hexagon?

5. What is the sum of the interior angles of a polygon with 20 sides?

What about a polygon with n sides?

6. Explain what you have to do to divide a polygon into triangles so that you can use them to figure out the sum of the angles in the polygon (you need to do this by telling the properties the triangles have to have, not by telling how many triangles you should get).

Think about these examples: one shows a pentagon divided into only 2 triangles, and the other shows a quadrilateral divided into 4 triangles. Does your explanation account for these (if not, fix it so that it does)? Explain what is wrong with the way these shapes are divided.