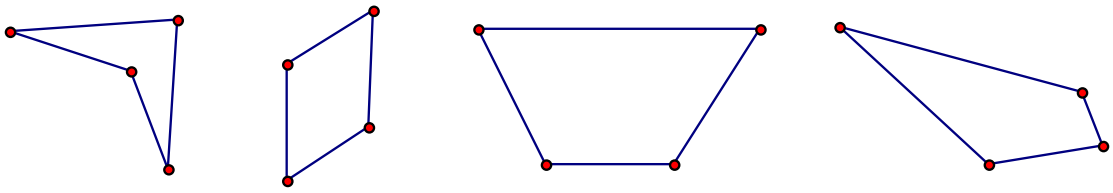
Angle sum assignment:

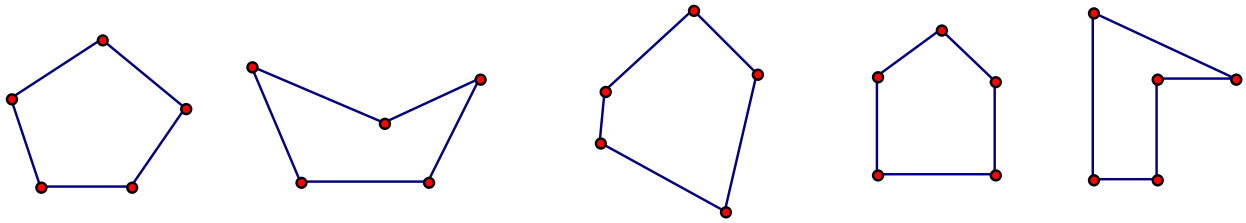
1. Cut out a triangle from paper and use it to show that the sum of angles in your triangle is 180°.

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?

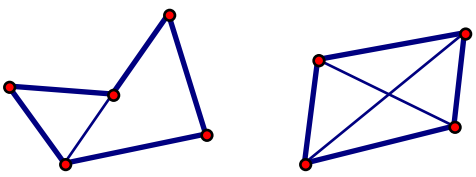
What is the sum of the interior angles of a hexagon?

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

What about a polygon with n sides?

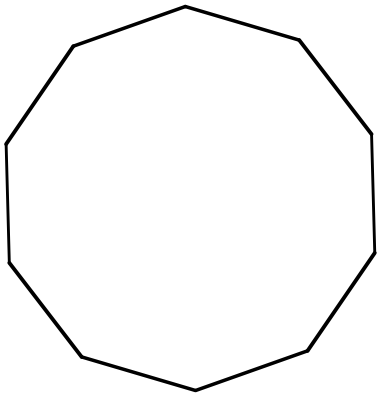
6. Explain what you have to do to divide a polygon into the “right” number of triangles so that you can use them to figure out the sum of the angles (you need to do this by telling the properties the triangles have to have, not by telling how many triangles you should get).

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.



1. What does it mean for a polygon to be *regular*?

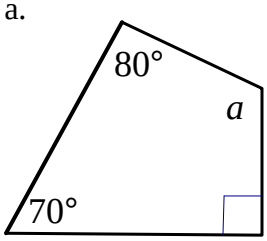
2. Find the measure of an interior angle of this regular decagon. Show how you figured it out.



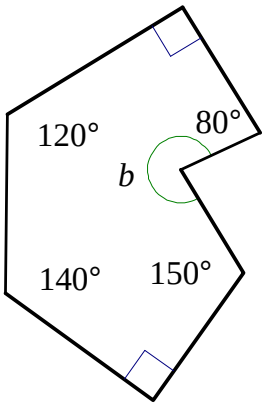
3. Show and explain how to find the measure of an interior angle of a regular nonagon (9 sides).

4. Find the missing angles:

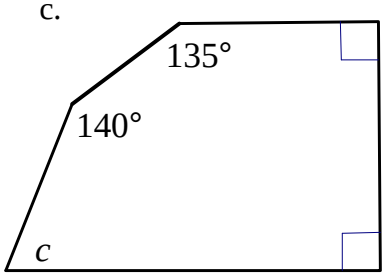
a.



b.



c.



5. Jack figured out the sum of angles in this pentagon this way:
Make triangles going out from the center to each of the vertices.
That's 5 triangles, so the sum of the angles in the pentagon is 5x180 °
What's wrong with Jack's reasoning?