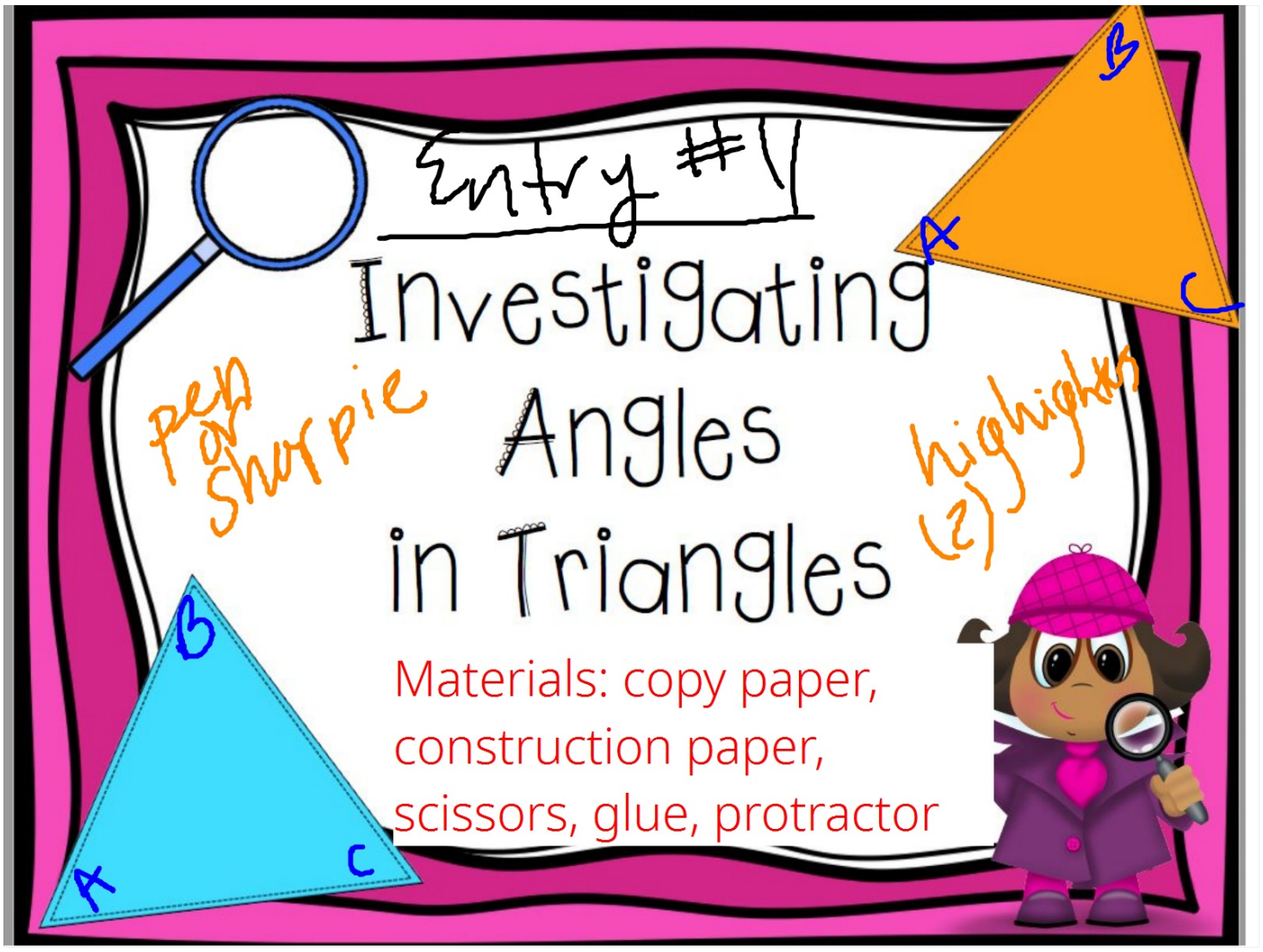

Entry #1
Investigating Angles in Triangles
pen or Sharpie
highlighters (2)
Materials: copy paper, construction paper, scissors, glue, protractor
A
B
C
A
B
C

Interior Angles of Triangles

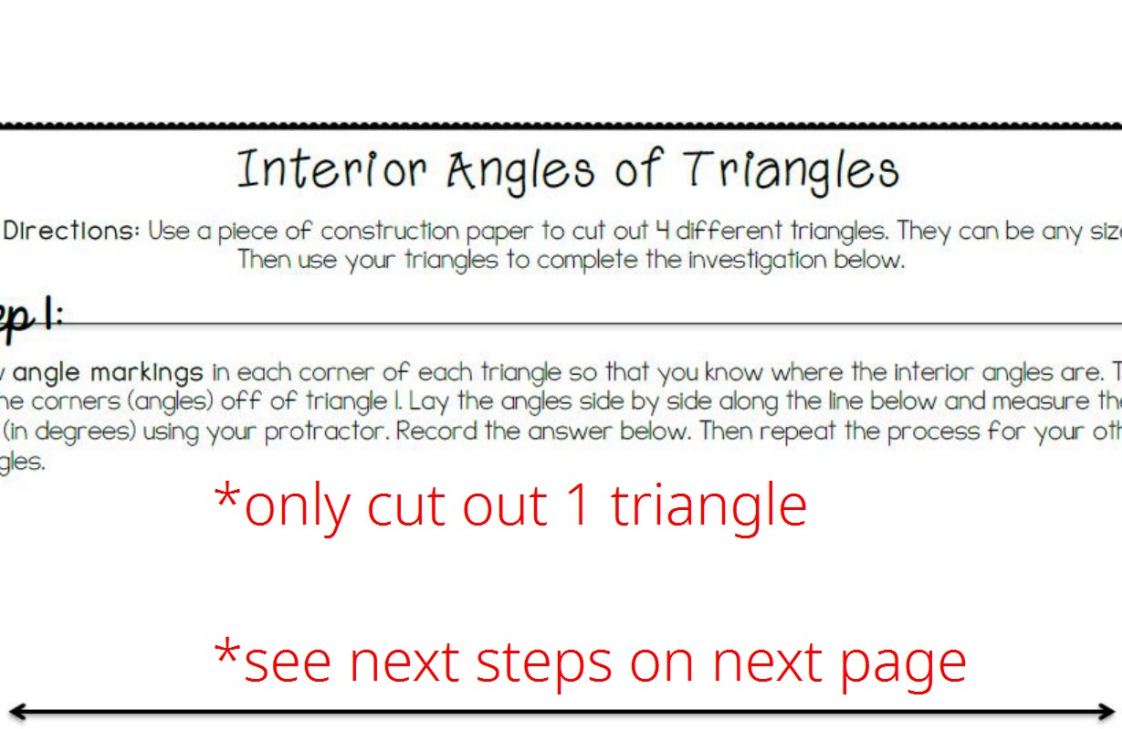
Directions: Use a piece of construction paper to cut out 4 different triangles. They can be any size. Then use your triangles to complete the investigation below.

Step 1:

Draw **angle markings** in each corner of each triangle so that you know where the interior angles are. Then cut the corners (angles) off of triangle 1. Lay the angles side by side along the line below and measure the total (in degrees) using your protractor. Record the answer below. Then repeat the process for your other 3 triangles.

*only cut out 1 triangle

*see next steps on next page



Triangle 1 interior angles are equal to:

_____ degrees

Triangle 2 interior angles are equal to:

_____ degrees

Triangle 3 interior angles are equal to:

_____ degrees

Triangle 4 interior angles are equal to:

_____ degrees

Step 2:

For any triangle, the sum of the interior angles is equal to: _____ 180 _____

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Angle Relationships in Triangles

Focus on Reasoning

Essential question: *What are some theorems about angle measures in triangles?*

G-CO.3.10

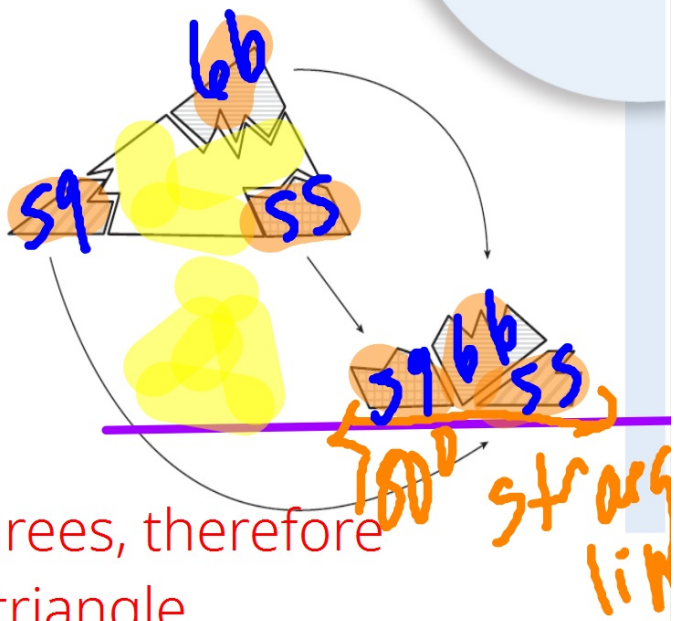
1 **Investigate the angle measures of a triangle.**

A Use a straightedge to draw a large triangle on a sheet of paper.

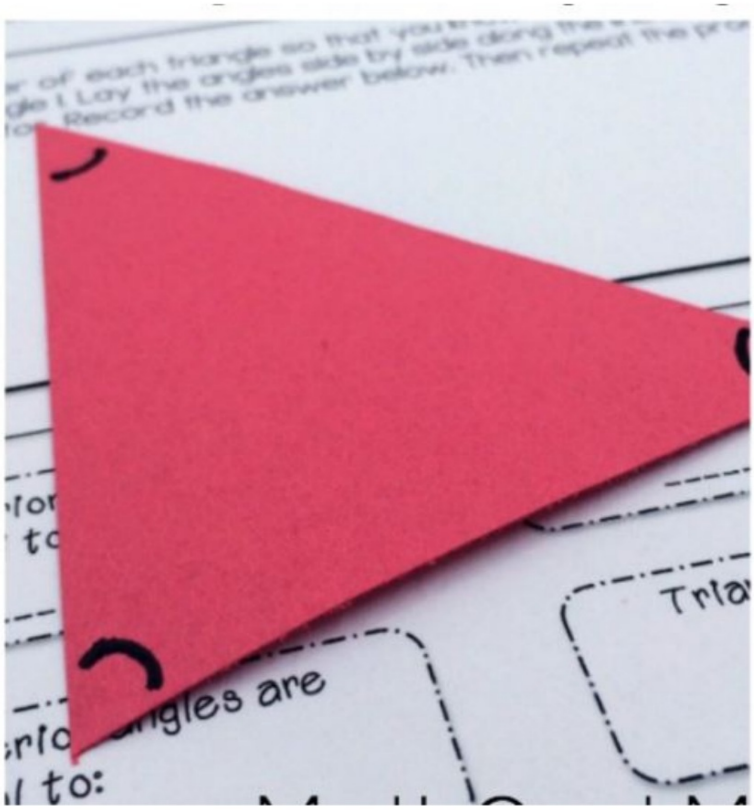
B Cut out the triangle.

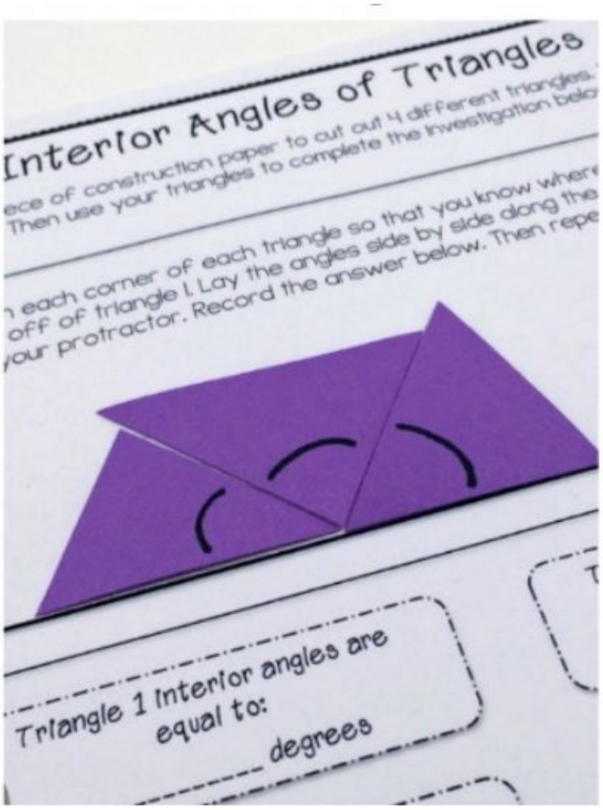
C Tear off the angles of the triangle.

D Place the angles together so their sides are adjacent and their vertices meet at a point. Take note of how the angles come together.



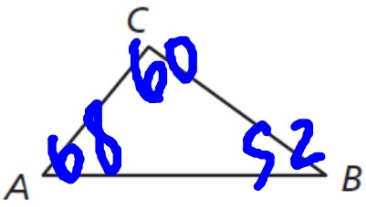
*A straight line is 180 degrees, therefore there is 180 degrees in a triangle.




Interior Angles of Triangles
Triangle 1 interior angles are
equal to:
degrees

The Triangle Sum Theorem

The sum of the angle measures in a triangle is 180°.



$m\angle A + m\angle B + m\angle C = 180^\circ$

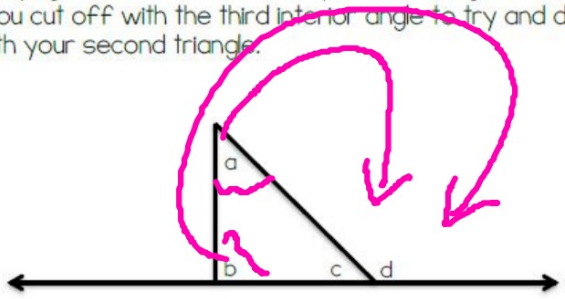
$68 + 60 + 52 = 180^\circ$

Exterior Angles of Triangles

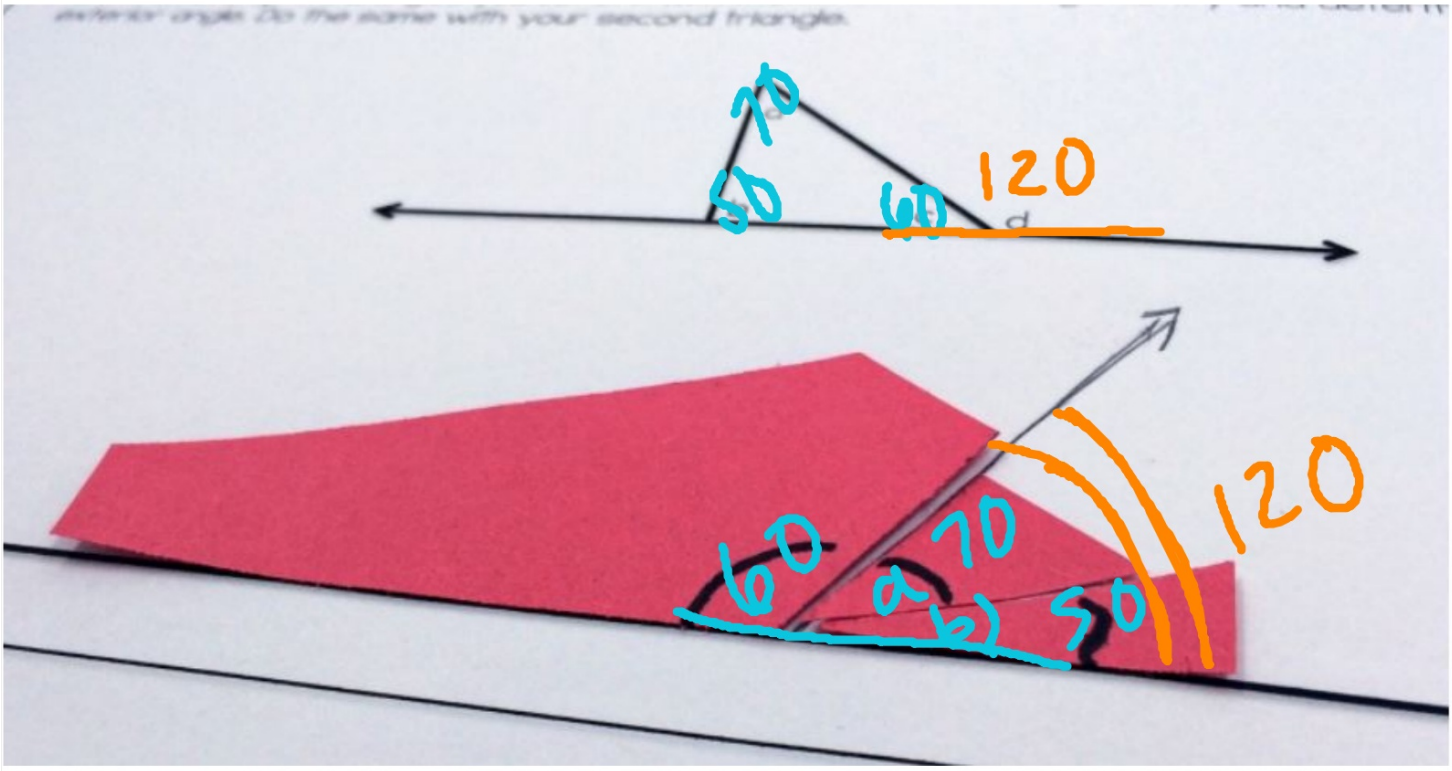
Directions: Use a piece of construction paper to cut out 1 triangle . They can be any size. Then use your triangles to complete the investigation below.

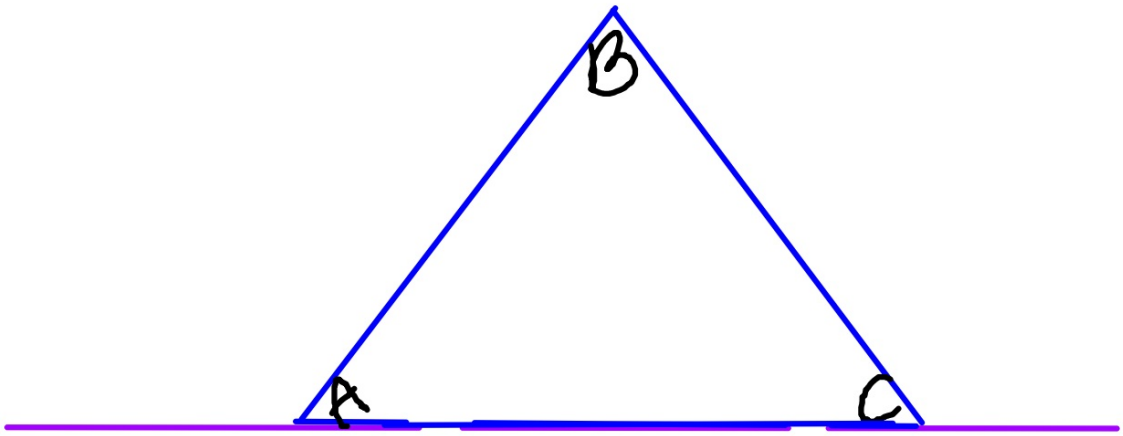
Step 1:

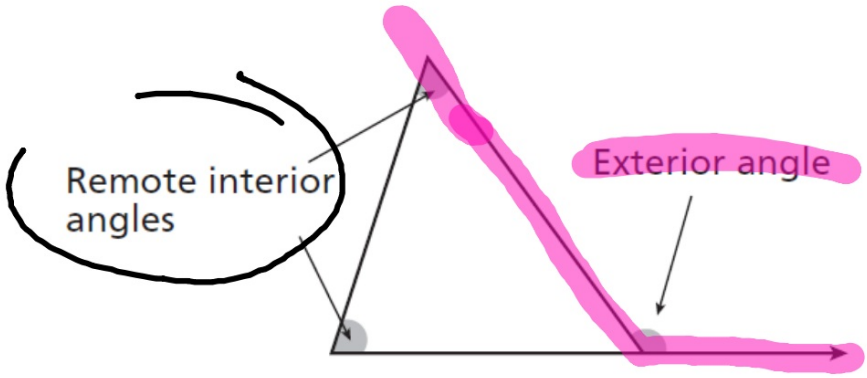
The purpose of this investigation is to determine the angle **outside of your triangle** (either side will work). For example, in the diagram below, we are trying to determine the measure of angle d. Place your first triangle on the line below, similar to the diagram. **Label your angles** and then cut off the interior angles **opposite the exterior angle** you are trying to measure. (For example, in the diagram below, we would cut off angles a and b). Line up the 2 angles you cut off with the third interior angle to try and determine the measure of the exterior angle. Do the same with your second triangle.



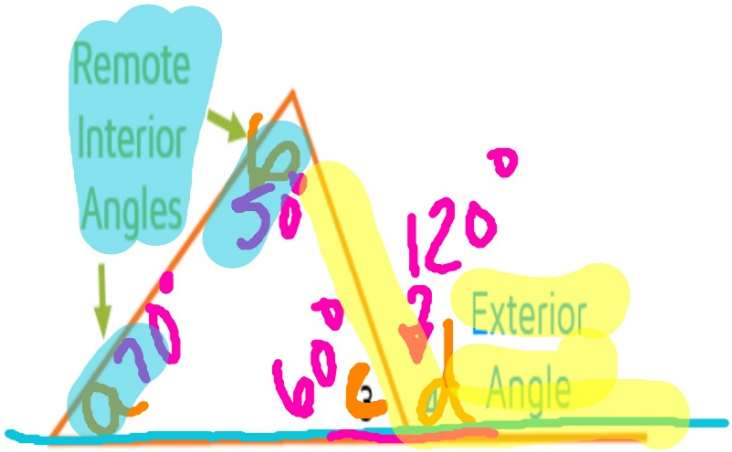
*see steps on next pages


70
50
60
120
60
70
50
120


B
A
C


Remote interior angles
Exterior angle

The Exterior Angle Theorem says that if you add the measures of the two remote interior angles, you get the measure of the exterior angle.



$m\angle 1 + m\angle 2 = m\angle 4$

$70 + 50 = 120$