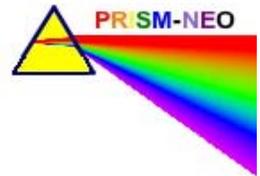


# The Sum of All Angles

<---Sketch Title



**Sketch Filename:**

**Movie Filename:**

**Math Concept(s)**

Properties of 2D  
Shapes

**Suggested Grades**

- 7  
 8  
 9 Applied

**Sketchpad Level**

Intermediate  
- measure/ construct/ tabulate/  
calculate

Beginner  
Intermediate  
Experienced

## Learning Goals:

- investigate the sum of the interior angles of a triangle
- apply the results to problems involving the interior angles of triangles

## “Sketchy” Description:

- This multiple page sketch includes
- five ways to visualize the sum of the interior angles
  - measuring and tabulating angle sum data to prove a point
  - making his/her own manipulative
  - view sample problem solutions
  - solving problems of diagrams not to scale (ie: by calculation rather than measurement)

## Lesson Plan Suggestions

- description of how the sketch might be used in each of the three lesson parts - *Minds On*, *Action!*, *Consolidate*.
- includes student groupings, instructional strategies, and connections to manipulatives or other technologies.

**Minds On** - Students cut or receive two paper triangles. The vertices of one are ripped off and fitted together to observe the straight angle that this created; the vertices of the other are folded together to observe the straight angle that this created;

**Action!** - Review interface (ie: use of buttons, calculator, menu bar)

- Have the students work in pairs to complete the sketch
- Students should be encouraged to compare their paper models to their sketch demonstrations

**Consolidate** - Students will complete a worksheet based on a blackline master

## Extensions:

- Once students have reviewed isosceles triangles, right triangles and other special triangles they then complete a blackline master with more complex problems.
- This sketch contains links to websites for some of these contexts.

## Questions or activities for students/parents to explore together:

1. Explore conjectures about the sums of interior angles of other shapes eg: quadrilaterals, pentagons,
2. Can you formulate a rule for the interior angle sum of an “n-gon”?
3. Is it possible for a triangle to contain two right angles, or a right angle and an obtuse angle? Without using a diagram, use your knowledge of the sum of interior angles to support your answer