The sum of the interior angles of regular polygons
by – Brittany Zweibel

Activity overview
The students will construct triangles within regular-sided polygons to determine the sum of the interior angles. They will then, using statistics, create a linear regression to determine the relationship between the number of sides of a regular polygon and the sum of its interior angles.

Concepts
Properties of a triangle
Sum of the interior angles of any n-sided polygon

Teacher preparation
Send the activity to each handheld. The only prior knowledge the students should know is the sum of the interior angles of a triangle.

Classroom management tips
Make sure the students know how to use the system. They need to be able to construct segments, and make calculations.
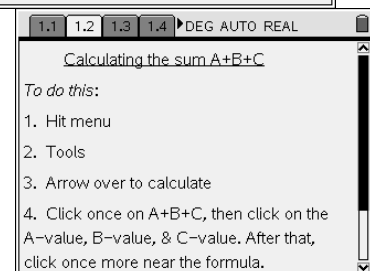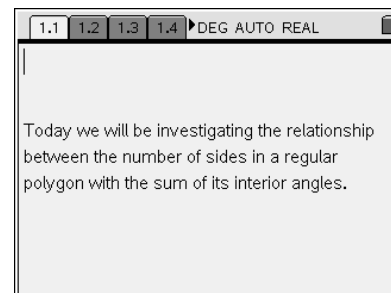
TI-Nspire Applications
- *insert text box*
- *calculate formula*
- *use statistics to calculate regression*
- *split screen to give instructions, questions, and diagrams on the same page*
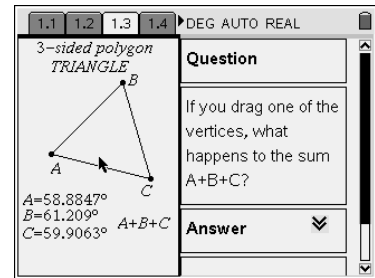- *the scatter plot is already set up for the students*

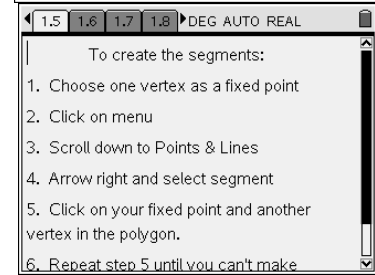### Step-by-step directions

Open document

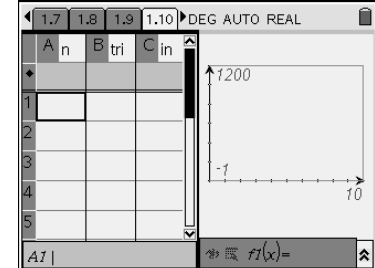*Have students calculate the sum of the interior angles of a triangle*

Have students drag around a vertex of the triangle to see what happens to the sum

Have students construct segments for 4, 5, and 6 sided regular polygons.

Have students record answers on separate answer sheet and then transfer onto table on 1.10

Have students calculate the linear regression for this set of data
Have students calculate, using the equation, the sum of the interior angles of an 8-sided regular polygon.
Have students conclude the relationship between the number of sides of the polygon and the sum of its interior angles.

Activity extensions

- *Calculating the measure of one interior angle of an n-sided regular polygon.*
- *Calculating the sum of the exterior angles of an n-sided regular polygon.*
- *Calculating the measure of one exterior angle of an n-sided regular polygon.*

Student TI-Nspire Document

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