**IsoscelesTriangle.java**

Class that allows the creation and display of user defined Isosceles triangles.

public class IsoscelesTriangle extends CommonFunctions

**Overview**:

This class allows the user to select how he wants to define an Isosceles triangle and then allows the user to see the computed area, perimeter, or a graph of said triangle.

**Class Constants:**

None.

**Class Enumerations:**

**Choices**

**KNOW\_3LEGS**

Define the triangle by the length of the 3 legs.

**KNOW\_CONGRUENTLEGS\_APEXANGLE**

Define the triangle by the length of one of the congruent legs and the apex angle.

**KNOW\_CONGRUENTLEGS\_BASEANGLES**

Define the triangle by the length of one of the congruent legs and one of the base angles.

**KNOW\_BASELEG\_APEXANGLE**

Define the triangle by the length of the base leg and the apex angle

**KNOW\_BASELEG\_BASEANGLES**

Define the triangle by the length of the base leg and one of the base angles.

**PERIMETER**

Display the calculated perimeter of the triangle.

**AREA**

Display the calculated area of the triangle.

**DISPLAY**

Display a graph of the triangle.

**GOBACK**

Backup one level in the general triangle menu hierarchy.

**Public Variables:**

None.

**Private Instance Variables:**

double **congruentLegs –** Length of the congruent legs.

double **baseLeg** – Length of the base leg.

double **apexAngle** – Measure of the apex angle in degrees.

double **baseAngles** – Measure of the base angles in degrees.

Choices **choice –** The user’s selected menu option.

Scanner **keyboard –** Allows for the retrieval of keyboard input.

**Constructors:**

**IsoscelesTriangle**(Scanner **keyboard**)

**keyboard** – Scanner class object.

**Public Methods:**

void **IsoscelesCreationMenu()**

Prompts for the way the user wants to describe an isosceles triangle using known values.

void **QueryIsoscelesCreationMenuInput**()

Retrieves the user's response to the IsoscelesCreationMenu().

void **ProcessIsoscelesCreationCommand**()

Prompts for the known values that the user chose to provide via QueryIsoscelesCreationMenuInput() and saves the user's input in the appropriate triangle component variables.

void **DisplayIsoscelesInfoMenu**()

Prompts the user for what he wants to know about the isosceles triangle he specified.

void **QueryDisplayIsoscelesInfoMenuiInput**()

Retrieves the user's response to the DisplayIsoscelesInfoMenu().

void **DisplayRequestedIsoscelesInfo**()

Display the info requested (perimeter, area, or graph) from DisplayIsoscelesInfoMenu().

boolean **goback**()

Returns **true** if the user selected the “Go Back” option in response to a menu.

@Override public String **toString**()

Prints the length of the legs and measures of the angles of the triangle.

**Private Methods:**

void **CalculateIsoscelesTriangle**()

Calculates the remaining values for an Isosceles triangle from the known values entered by the user in ProcessIsoscelesCreationCommand().

double **CalculateIsoscelesPerimeter**()

Returns the perimeter of an isosceles triangle.

double **CalculateIsoscelesArea**()

Returns the area of an isosceles triangle.

**Mutators and Accessors:**

public double **getCongruentLegs**()

private double **getCongruentLegs**()

private void **setCongruentLegs**(double legLength)

private double **getBaseLeg**()

private void **setBaseLeg**(double legLength)

private double **getApexAngle**()

private void **setApexAngle**(double angleDegrees)

private double **getBaseAngles**()

private void **setBaseAngles**(double angleDegrees)

**Test Interface/Sample:**

None.