UML Diagram:



Algorithm:

* Ask user what type of shape they want to use
* Ask user what they want to calculate
  + Area
    - Get base and height for all triangles
    - Get radius for circle
    - Get length and width for rectangle
  + Perimeter
    - Get base for equilateral triangle
    - Get radius for circle
    - Get length and width for rectangle
* Calculations

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| --- | --- | --- |
| **2-D Shape** | **Area Calculation** | **Perimeter Calculation** |
| Circle  Rectangle  Triangle |  |  |

* Display the result and explain the calculations that gave this result

Algorithm V2:

* Ask user what type of shape they want to use
* Get dimensions of the shape from user
* Ask user if they want to calculate area or perimeter
  + If area calculate (using calculation table) area and output answer
  + If perimeter calculate (using calculation table) perimeter and output answer
* Calculation table

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| **2-D Shape** | **Area Calculation** | **Perimeter Calculation** |
| Circle  Rectangle  Triangle |  |  |

Pseudocode:

1. Offer user options of different shapes
   1. Print out statement with all available shapes
   2. Tell user to select a number corresponding to desired option
      1. If input is outside of desired range ask user to try again
      2. If input is valid continue to the appropriate shape
2. Start function of the shape selected by the user
   1. Get user input for all variables of the shape
   2. Start loop asking user if they want to calculate area or perimeter
      1. If perimeter calculate and output perimeter
      2. If area calculate and output area
      3. If quit exit the loop