Algorithms:

Rectangle:

a) **Obtain user input for specified height and width of the rectangle**
b) **Set the height of the rectangle equal to 0**
c) **Insert while loop in order to print stars**
d) **In the while loop add one to height every time statement is run**
e) **Print height along with how wide the shape is**
f) **While loop will stop running once height reaches user input for height**

Triangle:

OBTAIN USER INPUT FOR HOW MANY ROWS THE TRIANGLE WILL REACH

ONLY ACCEPT ODD NUMBERS

Set number of spaces to 0 to begin the calculation – insert a command that will call to a space as a string

1. **Downward:**
    a. **Insert a while loop in order to be able to draw the figure – will run until the number of user inputted rows has been met**
    b. **Name a variable that will be used to multiply by the star string**
        i. **Multiply that variable by two and subtract one to it in order to get the right number of stars in each row**
    c. **Insert print statement for the spaces and to print the stars**
    d. **Add one and replace the value for variable being multiplied by the star string**

e. **Subtract one and replace value for the variable being multiplied by the space string**

2. **Upward:**
    a. **Set number of rows equal to 1 with a meaningful variable**
    b. **Insert a while loop that will run until the number of rows user inputted is met**
    c. **Replace the value of the variable being multiplied to the space string with the user input of row number minus 1**
    d. **Insert a print statement with the variable and string for space being multiplied and the row variable and star string being multiplied**
    e. **Add two and replace the value for the variable of rows**
    f. **Subtract one and replace the value for the user input of number of rows**
3. **Left:**
    a. **Set the first row variable to 1**
    b. **Insert the first while loop that will run as long as the number of user inputted rows is greater than 1**
    c. **Set the variable being multiplied by the space string equal to the user inputted number of rows**
    d. **Insert a print statement that will print the multiplication of the space number variable and string and print the row variable multiplied by the star string**
    e. **Add one and replace the row variable**
    f. **Subtract one and replace the user inputted variable for row number**
    g. **Outside of this loop set a second row variable equal to first row variable**

h. **Insert the second while loop that will run as long as the user inputted row number variable is less than or equal to the second row variable**
i. **Insert a print statement that will print the space number variable and string AND print the first row variable by the star string**
j. **Subtract one and replace the first row variable**
k. **Add one and replace the user inputted row number variable**

4. **Right:**
    a. **Set the row variable equal to 1**
    b. **Insert while statement that will run as long as the row variable is less than or equal too the user inputted row number variable**
    c. **Insert a print statement that will multiple the row variable by the star string**
    d. **Add one and replace the row variable**
    e. **The second row variable will be set to the first row variable subtracted by one**
    f. **Insert the second while statement that will run as long as the second row variable is greater than or equal to 1**
    g. **Subtract 1 and replace the second row variable**
    h. **Insert a print statement that will print the second row variable multiplied by star string**

Octagon:

OBTAIN USER INPUT FOR HOW LONG EACH SIDE SHOULD BE

SPACE NUMBER VARIABLE SHOULD BE SET TO USER INPUT LENGTH MINUS 2

INSERT A SPACE STRING

1. **Top of the Octagon**
    a. **Set row variable equal to 1**
    b. **Insert while statement that will run as long as the row variable is less than the user inputted side length**
    c. **Add one and replace the row variable**
    d. **Insert print statement that prints the space number variable by the space string and then the user input by the star string**
    e. **Subtract one and replace space number variable**
    f. **Add 2 and replace the user input variable**
2. **Middle of the Octagon**
    a. **Set a second row variable equal to 0**
    b. **Insert while loop that will continue to run until the second row variable is ess than user input length**
    c. **Add one and replace second row variable**
    d. **Insert print statement that will print user input length variable by star string**
3. **Bottom of the Octagon**
    a. **Set a third row variable equal to user inputted side minus 1**
    b. **Set what is being multiplied by the space string equal to 0**
    c. **Insert while loop that will run until the third row variable is no longer greater than user inputted side length**
    d. **Subtract 1 and replace the third row variable**
    e. **Subtract 2 and replace the variable used for the user inputted side length**

f. **Insert a print statement that will print the space number variable by the space string and the variable used for user inputted side length by the star string**

g. **Add 1 and replace the space number variable**