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Q1 Results:

```
Finished dev [unoptimized + debuginfo] target(s) in 0.02s
Running `target/debug/hw7q1`
triangle's area = 9.797958971132712, perimeter = 16, double perimeter = 32,
validation = true
rectangle's area = 30, perimeter = 22, double perimeter = 44, validation =
true
circle's area = 78.53981633974483, perimeter = 31.41592653589793, double pe
rimeter = 62.83185307179586, validation = true
o siasharma@crc-dot1x-nat-10-239-136-115 hw7q1 %
```

Q1 Report:

The results indicate the calculation of areas, perimeters, and double perimeters of a triangle, circle, and rectangle with side inputs, and all show validation = true, which means they adhere to the rules of generating these polygons.

Q2 Results:

```
Finished dev [unoptimized + debuginfo] target(s) in 0.03s
Running `target/debug/hw7q2`
For a polygon with 6 sides and radius of 2:
Area = 6.928203
Circumscribed circle has an area of 12.566371
Inscribed circle has an area of 4.18879

For a polygon with 6 sides and radius of 5:
Area = 43.30127
Circumscribed circle has an area of 78.53982
Inscribed circle has an area of 26.179935

For a polygon with 6 sides and radius of 7:
Area = 84.87048
Circumscribed circle has an area of 153.93805
Inscribed circle has an area of 51.31267

For a polygon with 6 sides and radius of 10:
Area = 173.20508
Circumscribed circle has an area of 314.15927
Inscribed circle has an area of 104.71974

For a polygon with 12 sides and radius of 2:
Area = 41.56922
Circumscribed circle has an area of 12.566371
Inscribed circle has an area of 37.699116

For a polygon with 12 sides and radius of 5:
Area = 259.80765
Circumscribed circle has an area of 78.53982
Inscribed circle has an area of 235.61948

For a polygon with 12 sides and radius of 7:
Area = 509.22296
Circumscribed circle has an area of 153.93805
Inscribed circle has an area of 461.81418

For a polygon with 12 sides and radius of 10:
Area = 1039.2306
Circumscribed circle has an area of 314.15927
Inscribed circle has an area of 942.4779

For a polygon with 24 sides and radius of 2:
Area = 179.13844
Circumscribed circle has an area of 12.566371
Inscribed circle has an area of 175.02698

For a polygon with 24 sides and radius of 5:
Area = 1119.6152
Circumscribed circle has an area of 78.53982
Inscribed circle has an area of 1093.9185

For a polygon with 24 sides and radius of 7:
Area = 2194.4458
Circumscribed circle has an area of 153.93805
Inscribed circle has an area of 2144.0803

For a polygon with 24 sides and radius of 10:
Area = 4478.461
Circumscribed circle has an area of 314.15927
Inscribed circle has an area of 4375.674

For a polygon with 128 sides and radius of 2:
Area = 5210.9995
Circumscribed circle has an area of 12.566371
Inscribed circle has an area of 5206.8135

For a polygon with 128 sides and radius of 5:
Area = 32568.748
Circumscribed circle has an area of 78.53982
Inscribed circle has an area of 32542.584

For a polygon with 128 sides and radius of 7:
Area = 63834.742
Circumscribed circle has an area of 153.93805
Inscribed circle has an area of 63783.465

For a polygon with 128 sides and radius of 10:
Area = 130274.99
Circumscribed circle has an area of 314.15927
Inscribed circle has an area of 130170.336
```

```
problems (M) with 256 sides and radius of 2:  
Area = 20856.566  
Circumscribed circle has an area of 12.566371  
Inscribed circle has an area of 20852.377
```

```
For a polygon with 256 sides and radius of 5:  
Area = 130353.53  
Circumscribed circle has an area of 78.53982  
Inscribed circle has an area of 130327.35
```

```
For a polygon with 256 sides and radius of 7:  
Area = 255492.94  
Circumscribed circle has an area of 153.93805  
Inscribed circle has an area of 255441.63
```

```
For a polygon with 256 sides and radius of 10:  
Area = 521414.13  
Circumscribed circle has an area of 314.15927  
Inscribed circle has an area of 521309.4
```

```
For a polygon with 512 sides and radius of 2:  
Area = 83438.836  
Circumscribed circle has an area of 12.566371  
Inscribed circle has an area of 83434.65
```

```
For a polygon with 512 sides and radius of 5:  
Area = 521492.7  
Circumscribed circle has an area of 78.53982  
Inscribed circle has an area of 521466.5
```

```
For a polygon with 512 sides and radius of 7:  
Area = 1022125.7  
Circumscribed circle has an area of 153.93805  
Inscribed circle has an area of 1022074.3
```

```
For a polygon with 512 sides and radius of 10:  
Area = 2085970.8  
Circumscribed circle has an area of 314.15927  
Inscribed circle has an area of 2085866.0
```

```
For a polygon with 1024 sides and radius of 2:  
Area = 333767.9  
Circumscribed circle has an area of 12.566371  
Inscribed circle has an area of 333763.72
```

```
For a polygon with 1024 sides and radius of 5:  
Area = 2086049.5  
Circumscribed circle has an area of 78.53982  
Inscribed circle has an area of 2086023.5
```

```
For a polygon with 1024 sides and radius of 7:  
Area = 4088657.0  
Circumscribed circle has an area of 153.93805  
Inscribed circle has an area of 4088606.3
```

```
For a polygon with 1024 sides and radius of 10:  
Area = 8344198.0  
Circumscribed circle has an area of 314.15927  
Inscribed circle has an area of 8344094.0
```

```
For a polygon with 2048 sides and radius of 2:  
Area = 1335084.3  
Circumscribed circle has an area of 12.566371  
Inscribed circle has an area of 1335080.1
```

```
For a polygon with 2048 sides and radius of 5:  
Area = 8344276.0  
Circumscribed circle has an area of 78.53982  
Inscribed circle has an area of 8344250.0
```

```
For a polygon with 2048 sides and radius of 7:  
Area = 16354782.0  
Circumscribed circle has an area of 153.93805  
Inscribed circle has an area of 16354733.0
```

```
For a polygon with 2048 sides and radius of 10:  
Area = 33377104.0  
Circumscribed circle has an area of 314.15927  
Inscribed circle has an area of 33377000.0
```

```
For a polygon with 65536 sides and radius of 2:  
Area = 1367130500.0  
Circumscribed circle has an area of 12.566371  
Inscribed circle has an area of 1367130500.0
```

```
For a polygon with 65536 sides and radius of 5:  
Area = 8544566000.0  
Circumscribed circle has an area of 78.53982  
Inscribed circle has an area of 8544566300.0
```

```
For a polygon with 65536 sides and radius of 7:  
Area = 16747349000.0  
Circumscribed circle has an area of 153.93805  
Inscribed circle has an area of 16747349000.0
```

```
For a polygon with 65536 sides and radius of 10:  
Area = 34178263000.0  
Circumscribed circle has an area of 314.15927  
Inscribed circle has an area of 34178265000.0
```

Q2: Report

My observations are that as the number of sides of the polygon increases, the area of the polygon begins to get closer to the area of the inscribed circle, basically matching it after 128 sides. This conceptually makes sense as the inscribed circle becomes similar in shape and size as the number of sides of the polygon increases, as more sides makes the polygon more circular.