

Your students will need to come up with a rule that will tell us how any attempt at drawing a circle ranks against any other. Throughout their attempt they may use the resources provided (areas, perimeters, and coordinates) but come up with a rule that doesn't hold up for every case.

Ask them to test their rule against lots of different cases. Their rule will have to work with cases that are very large or really small. If they are still convinced their rule works, you may want to suggest cases.

The best solution is to use the fact that a circle is the shape that encloses the most area for a given perimeter. Take Chris' shape, for instance. His area is 10,810 un<sup>2</sup>. His perimeter is 370 un. A circle with that perimeter would have its radius equal to 58.9 un. The area of that circle would be 10,894.2 un<sup>2</sup>. We can take a ratio of *what his shape area was to what his area should have been with a circle* and get a score. The closer to 1 (where *what was* and *what should have been* are the same) the better.

Rank	Name	guess		circle			score
		perimeter	area	circumferer	radius	area	
1	Chris	369.9	10,809.8	369.9	58.9	10,889.4	99.78%
2	Nathan	271.8	5,856.2	271.8	43.3	5,878.4	99.62%
3	Timon	443.3	15,553.9	443.3	70.5	15,635.3	99.46%
4	Andrew	186.7	2,740.7	186.7	29.7	2,772.6	98.85%