$$S = \frac{1}{4}\pi R^2 - 4\pi r^2$$
Pythagorean equality: $l^2 + (4r)^2 = R^2$

$$S = \frac{\pi}{4}(R^2 - 16r^2) = \frac{\pi}{4}l^2$$

$$S = \frac{r}{4}(R^2 - 16r^2) = \frac{\pi}{4}l^2$$