

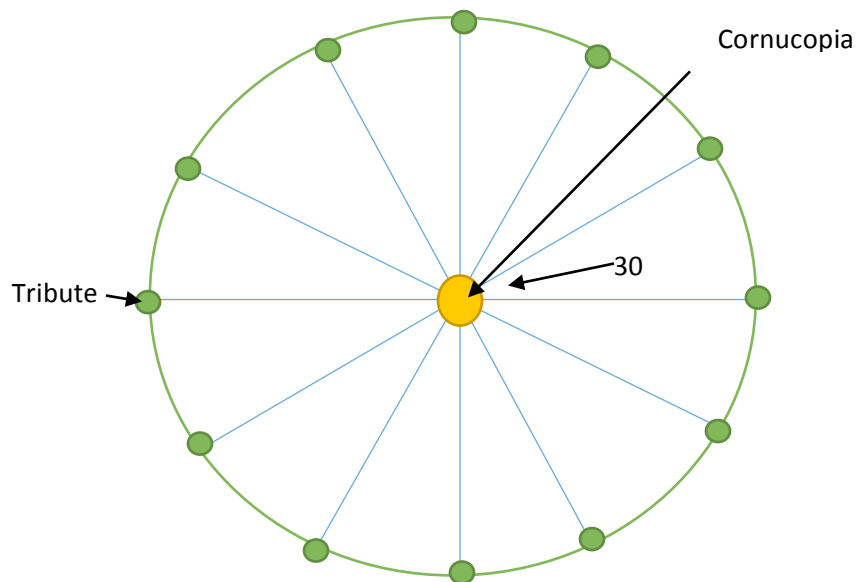
Arc Length

Background:

Katniss just arrived at the games, she is currently standing on her metal plate taking everything in:

“Sixty seconds. That’s how long we’re required to stand on our metal circles before the sound of the gong releases us. Step off before the minute is up, and land mines blow your legs off. Sixty seconds to take in the ring of tributes all equidistant from the Cornucopia, a giant gold horn shaped like a cone with a curved tail, the mouth of which is at least twenty feet high, spilling over with the things that will give us life here in the arena. Food, containers of water, weapons, medicine, garments, fire starters. Strewn around the Cornucopia are other supplies, their value decreasing the farther they are from the horn. For instance, only a few steps from my feet lies a three-foot square of plastic.”
(P.148)

Each tribute is equidistant from each other and the Cornucopia. The closer the tributes are the less of the chance they have to reaching the Cornucopia for supplies. Katniss has sixty seconds to decide whether she should run to the Cornucopia for supplies. She is thinking of the distance between her and the tributes. The tributes are standing on metal circles that surround the Cornucopia, the tributes are making a circle around the Cornucopia. To find the arc length (distance) between each tribute, you need the angle the arc length makes. A circle is 360 degrees, to find each angle divide 12 from 360 because there are 12 tributes. $\frac{360}{12} = 30$, each angle is 30 degrees.



To find the arc length you would use the formula, $\frac{\text{Arc Length}}{\text{Circumference}} = \frac{\text{The angle}}{360}$.

- 1.) If the radius is 50 feet, what is the arc length between each tribute? Is Katniss far enough away to run and get supplies safely?

- 2.) If the radius is 100 feet, what is the arc length between each tributes? Is Katniss far enough away to run and get supplies safely?

- 3.) Which arc length would you choose for running to get supplies?

- 4.) Estimate the safest arc length for Katniss to run and get supplies.
 - a.) 10-20 feet
 - b.) 20-40 feet
 - c.) 50-60 feet
 - d.) 70-100 feet

Arc Length Answer Key

- 1.) The arc length is 26 feet. No Katniss is not far enough away.
- 2.) The arc length is 52 feet. Yes Katniss is far enough away.
- 3.) 50-100 ft
- 4.) D