

Gordon Burgin's Puzzles

July 2021 challenges

- 1. There are 10 points equally spaced around the circle with interconnecting lines drawn between them.
 - a. How many lines are needed to draw the 10-point pattern shown below?
 - b. How many lines would you need for 50 points on the circle?
 - c. How many lines would you need for 100 points on the circle?



- 2. In 2015 the populations of City X and City Y were equal. From 2010 to 2015, the population of City X increased by 20% and the population of City Y decreased by 10%. If the population of City X was 120,000 in 2010, what was the population of City Y in 2010?
- 3. Two bicycles start at the intersection of two perpendicular roads. One rides west at a rate of 9 miles per hour, while the other rides south at a rate of 12 miles per hour. If both travelled in the same plane, how many miles are they in the shortest distance between them at the end of 3 hours?
- 4. The amount of money a performer earns is directly proportional to the number of people attending the performance. The performer earns £60 a performance for every 12 people attending. The performer pays 43% of the money earned to pay the organizer's costs in putting on each performance. The rest of the money earned is the performer's profit.
 - a. What is the profit that the performer makes at a performance where 48 people attend?
 - b. If the organizer receives £7.50 per person, per performance, what is the profit that the organizer makes per performance?