1. In the English Premier Soccer League, a team earns three points for a win and one point for a tie. Teams play 38 games per season. Suppose a team finishes the season with 53 points. Let m be the minimum number of games they could possibly have won and let M be the maximum number of games they could possibly have won. What is m + M?

Answer: 25 (8 + 17)

1. Eight points are placed equidistant from each other on a circle. How many distinct quadrilaterals can be drawn with vertices at four of the points? Note: if two quadrilaterals are congruent, they are not considered distinct.

Answer: 8 (1 w/ 4 adjacent vertices, 2 w/3 a.v., 4 w/2 a.v., 1 w/o a.v.)

1. If a clock runs 3 minutes fast per day, how fast is the angle of its second hand changing? Your answer should be exact and be stated in degrees per second.

Answer: 6.0125

1. An equilateral triangle is drawn such that it circumscribes three mutually tangent unit circles. Find the area of the triangle to two decimal places.

Answer: 12.93

1. Let  be a sequence of positive integers such that  for . If  and a12 = 563, determine a11.

Answer: 348

1. If log4 x = y, then log32 x =

Answer: 2y/5

1. What is the square root of the sum of the squares of the solutions of ?

Answer: 

1. In a game of tug-of-war, 3 boys pull with the same force as 4 girls. One adult pulls with the same force of 2 boys and 1 girl. Team A is made up of one adult and 3 girls. Team B is made up of 4 boys. These teams are uneven. Which type of person needs to be added to which team to make the teams even? You must state BOTH the type of person and the team.

Answer: A boy to Team B

1. A king is placed at the top center square of a 5 x 5 chessboard (row 1, column 3). He must move to the bottom center square (row 5, column 3) in four moves. He can move one square at a time either vertically, horizontally, or diagonally. How many different paths are possible for the king to take?

Answer: 19 (A form of Pascal’s triangle)

1. A rectangular solid has edges that add up to 76 inches, the total surface area is 206 square inches, and the volume is 165 cubic inches. What is the length of the smallest edge?

Answer: 3

Tiebreaker #1: For how many integer values of *n* is  an integer?

Answer: 6

Tiebreaker #2: In how many ways can we pick three different numbers from the set {8, 9, 10, 11, 12, 13, 14} such that the sum of the three numbers is divisible by 3?

Answer: 13