

Math Bowl Round 9

Problem 1: In a 4 by 5 grid, how many paths are there to go from the bottom left corner to the top right corner if you can only move to the right or up?

Ans: 126

Problem 2: How many diagonals does a polygon with 20 sides have?

Ans: 170

Problem 3: How many factors does 144 have?

Ans: 15

Problem 4: Maria takes a fast train to work going an average 80 mph. On her way home she has to take a slower train that takes her home, 25 miles away, in half an hour. If the trains taking her to and from home travel the same distance, what is the average speed of the whole trip? Express your answer as a fraction.

Ans: 800/13

Problem 5: What is the $\lim_{n \rightarrow \infty} (1 + \frac{1}{n})^n$?

Ans: e

Problem 6: What is the distance between the points (-7, 8) and (2, 4)? Give your answer in simplest radical form.

Ans: $\sqrt{97}$

Problem 7: What is the area of a Hexagon with side length 6

Ans: $54\sqrt{3}$

Problem 8: How many numbers under 2019 have at least 5 distinct prime factors?

Ans: 0

Problem 9: If the distance a plane travels in 39 minutes going 456 mph is x, and the distance it travels going 456 mph in 13 hours is y, what is x/y?

Ans: 1/20

Problem 10: What is $(2^3 - 3^2)^{2^3}$?

Ans: 1

Tiebreaker 1: A group of people is comprised of four 6th graders, four 7th graders, and four 8th graders. In how many ways can a committee of six be formed with two people from each grade?

Ans: 216

Tiebreaker 2: What is the surface area of a cylinder with radius 4π and height 4π ?

Ans: $64\pi^3$