Warm-Up MR

1. _____ The sum of two numbers is 5 and their product is 3. What is the sum of the squares of these two numbers?

2. _____ What is the smallest positive integer that leaves a remainder of 8 when divided by 9, a remainder of 9 when divided by 10, and a remainder of 10 when divided by 11?

3. _____triangles How many distinct triangles can be formed by connecting three of the points below?

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4. $_____ Mitas, Franklin, and Peter are making lemonade. They are each supposed to bring some lemons. Mitas brings 35 lemons, and Franklin brings 25 lemons. Unfortunately, Peter forgets to bring any lemons. Mitas, Peter, and Franklin share the lemons that Mitas and Franklin brought so that each gets the same number of lemons. Peter gives Mitas and Franklin $12 to split for his share of the lemons. How much should Mitas get?

5. _____ Yujian and Evan are playing a dice game. Yujian rolls one standard 6-faced die while Evan rolls two. What is the probability that Yujian's roll is greater than or equal to both of Evan's rolls? Express your answer as a common fraction.

6. _____ Find the sum of the solutions of the following equation: $3^{2x} - 4(3^x) = -3$.

7. _____ What is the product of the two smallest factors that divide $2^{1024} - 1$?

8. _____ What is the sum of the infinite series below? Express your answer as a common fraction.

$$\frac{1}{4} + \frac{2}{4^2} + \frac{1}{4^3} + \frac{2}{4^4} + \frac{1}{4^5} + \cdots$$

9. _____mph Calvin was rushing to school in fear that he would be late for math class. He rode on his bike at 16 mph. When he got out of school, he saw that one of his tires was flat, so he had to walk home at a pace of 4 mph.   What was his average rate for the trip to and from school? Express your answer as a decimal to the nearest tenth.

10. _____days Bill can paint a fence in 4 days. Bob can paint a fence in 5 days. How long will it take for them to paint three fences if they work together? Express your answer as a mixed number.