

#0 Theta Ciphering**FAMAT State Convention 2021**

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Mr. Lu has 2 solutions: one is 44% Lu-Goo and the other is 35% Lu-Goo. If he mixes the 2 solutions together to form a 40% Lu-Goo solution, how much of the 44% one must be added to make a 240-unit solution?

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#6 Theta Ciphering

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Mr. Lu loves perfect squares. His favorite sequence is: $1, -4, -9, 16, 25, -36, -49, 64, 81, \dots$

After the 1 he has 2 negations of perfect squares followed by 2 positive perfect squares, then repeating in this pattern. What is the sum of the first 2020 terms of this sequence?

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#8 Theta Ciphering**FAMAT State Convention 2021**

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#10 Theta Ciphering
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Mr. Lu's pet ant is on the parabola $y = x^2 - x - 6$ at point L whose ordinate is 6. The ant crawls along the parabola until it reaches the nearest point U whose ordinate is -6. The positive difference between the abscissas for L and U is?

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