

# MAA Metro NY Problem of the Month

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Given a deck of 32 cards with 10 red cards numbered 1 to 10 (i.e. there is a red card with a number 1 on it, a red card with a number 2 on it, and so on), 10 blue cards numbered 1 to 10, and 10 yellow cards numbered 1 to 10, and 2 white cards, both numbered 0. A card with the number  $m$  is worth  $2^m$  points.

- (a) We say a group of cards is *good* if the sum of their points is 2026, and we say a group of cards is *bad* if the sum is 2025. Calculate the number of “good groups” and the number of “bad groups”.
- (b) Modify the deck of cards to use 42 cards by adding 10 purple cards numbered 1 to 10 with the same rule. Calculate the number of “good groups” and the number of “bad groups”.

Computer or AI assisted/generated solutions will not be accepted.

Please send your solution to [maanyproblems@gmail.com](mailto:maanyproblems@gmail.com), including your name (your given name first) and school affiliation if applicable. Solutions are due on April 30.