

MATHCOUNTS[®] Problem of the Week Archive

Bag of Bricks – September 20, 2021

Problems

Kaleb has a bag containing red, black and white LEGO[®] bricks. If he has 12 more red bricks than white bricks and 15 fewer white bricks than black bricks, what is the positive difference between the number of red bricks and black bricks in Kaleb's bag?

Kaleb is thinking about sharing his bag of LEGO[®] bricks with some friends. Knowing the information given in the previous problem and that Kaleb has a total of 117 red, black and white bricks in his bag, what is the maximum number of friends with whom Kaleb can share his bricks so that all the bricks of each color are evenly distributed among Kaleb and his friends with no bricks leftover?

Instead of sharing with friends, Kaleb decides to share his bag of LEGO[®] bricks with his sister, Kami. Kaleb randomly selects one brick from the bag and gives it to Kami, then randomly selects another brick from the bag, without replacement, and keeps it for himself. Kaleb continues this random selection and distribution process until he and Kami have the same number of bricks and there is one brick remaining in the bag. If Kaleb started with all 117 LEGO[®] bricks in his bag, what is the probability that the brick left in the bag is black? Express your answer as a common fraction.

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