



MUSTANG MATH TOURNAMENT 2020

GALLOP ROUND 3

7. Benjamin has two nine-quart buckets, each initially containing six quarts of water. He rolls a die and transfers the number of quarts that he rolled from the first bucket to the second. He then rolls a second die, and transfers this number of quarts from the second bucket back to the first. If the probability that neither bucket has overflowed once Benjamin is finished is $\frac{a}{b}$ and $GCD(a, b) = 1$, what is the value of $a * b - (a + b)$?
8. How many natural numbers give a quotient of 23 and leave a remainder of at least 11 when divided by 57 and give a quotient of 29 and leave some remainder greater than zero when divided by 47?
9. A massive circular coin of radius 6 cm is wedged into the corner of two walls as shown in the figure. The angle between the two walls is 60° . What is the radius of the largest possible second coin that can fit in between the two walls and the coin?

