Math Kangaroo Practice

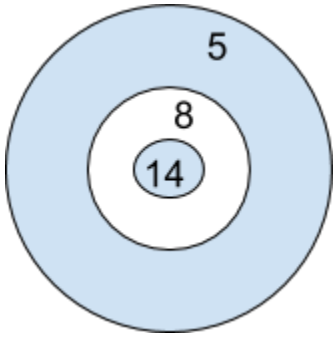
UCLA Olga Radko Math Circle 10/19/2020

Question 1: Gavin arranged cards in a line as it is shown in the figure below. At each move, Gavin is allowed to interchange any two cards. What is the smallest number of moves Gavin needs to get the word KANGAROO?

O	A	R	G	O	N	K	A

(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

Question 2: Cassandra threw seven darts at the dartboard, shown in the figure, and scored 32 points in total. How many darts did not hit the dartboard?



(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

Question 3: Rabbit Paul likes cabbage and carrots very much. Each day, he eats either 9 carrots, or 2 heads of cabbage, or 1 head of cabbage and 4 carrots. Last week, Paul ate 30 carrots. How many heads of cabbage did he eat last

(A) 6 (B) 7 (C) 8 (D) 9 (E) 10

Question 4: Kangaroo Ashin bought toys and gave the shop-assistant 150 dollars. He received 20 dollars back. Then he changed his mind and exchanged one of the toys for another. He got back an additional 5 dollars. What toys did Ashin leave the store with?

(A) The truck and the plane (B) the truck and the bus (C) the truck and the train
(D) the motorcycle and the train (E) the bust, the motorcycle, and the train

Item	bus	motorcycle	truck	train	plane
Price	40	48	73	57	52

Question 5: Cassandra has to sell 10 glass bells which vary in price: $1 , $2, $3, $4, $5, $6, $7, $8, $9, and $1 0. In how many ways can Cassandra divide all the glass bells into three packages so that each package has the same price?

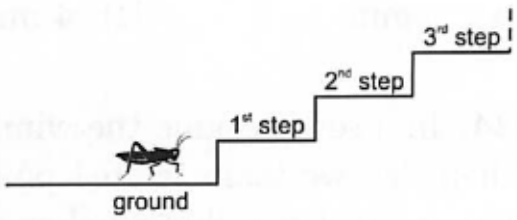
(A) 1 (B) 2 (C) 3 (D) 4 (E) Such a division isn't possible!

Question 6: Ashin wrote down several numbers using only the digits 0 and 1. The sum of these numbers is 2013. It turned out that it is impossible to get the same sum by adding up fewer numbers of this kind. How many numbers did Ashin write?

(A) 2 (B) 3 (C) 4 (D) 5 (E) 204

Question 7: A grasshopper wants to climb a staircase with many steps. She makes only two kinds of jumps: 3 steps up or 4 steps down. Beginning at the ground level, at least how many jumps will she have to make in order to take a rest on the 22th step?

(A) 7 (B) 9 (C) 10 (D) 12 (E) 15



Challenge:

Once upon a time, in a land far, far away there lived a very beautiful princess, the only daughter of a very evil king. Some day, a handsome and very smart prince from a neighboring kingdom came to pay them a visit. The princess and prince fell in love with each other and asked the king for permission to marry. The evil king didn't want his daughter to leave. Instead of blessing the marriage, he ordered to put the prince in jail and to prepare for his exile. The princess begged the king not to kill the prince and finally he agreed. He told the prisoner, "At her Highness's request, I will give you a chance. Tomorrow you will be brought to my court. You will have to pull a lot. I will put two pieces of paper in the box. One will read MARRIAGE, the other will read EXILE. Whatever piece you pull out, it will be your destiny." The king was a very evil man. He ordered his minister to write EXILE on both pieces of paper. The princess overheard the king's order and found a way to warn the prince. What should the prince do to survive? Hint: kings do not like public embarrassment.