

Grade 6 Math Circles

November 11, 2020

Logic Puzzles - Problem Set

1. Pet Race

The results of the Orangetown Annual Pet race have gone missing! Can you help by determining each pet's name, owner and place they came in?

Clues:

- (a) Fluffy wasn't awarded second place, but the rabbit placed 4th.
- (b) The turtle placed lower than Zippy the sloth, but higher than Riley's pet.
- (c) Parker's pet, which wasn't a sloth, was awarded first place.
- (d) Sidney's pet wasn't named Spot.
- (e) In no particular order, the four pets were the pet named Whiskers, Charlie's pet, the pet who won 3rd place and the lizard.

	Fluffy	Spot	Whiskers	Zippy	Lizard	Rabbit	Sloth	Turtle	1st	2nd	3rd	4th
Charlie												
Parker												
Sidney												
Riley												
1st												
2nd												
3rd												
4th												
Lizard												
Rabbit												
Sloth												
Turtle												

2. Across the River

Three athletes, Alex (whose coach is Liam), Ben (whose coach is Mike), and Carly (whose coach is Nora), are trying to get across a river. None of the coaches trust any of the other coaches to stay with their athlete while they are not there. For example, Mike cannot be with Alex while the boat is in the water and Liam is not there. But, Mike could drop off Ben on the side that Alex is on, so long as Mike immediately turns back for the other shore, not carrying Alex back with him. Either a coach or an athlete can drive the boat, but someone must drive the boat for it to cross. At most two people can be in the boat at any one time. How can they all get across?

3. Places Please!

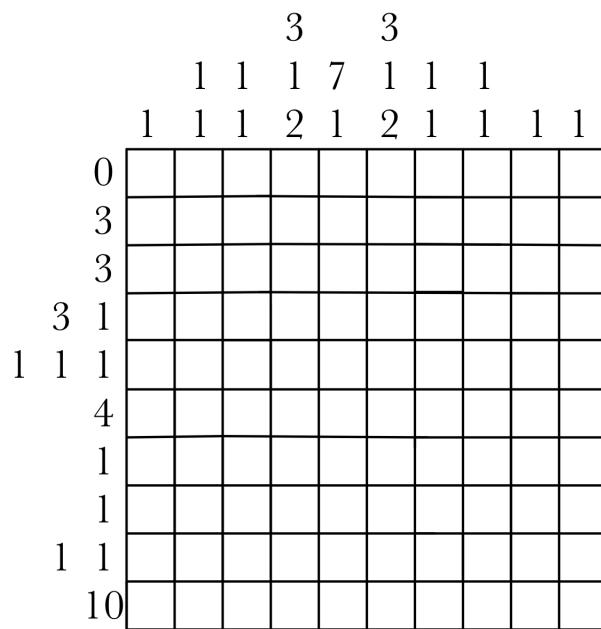
Nine friends, Alex, Blacke, Casey, Drew, Eddie, Finn, Gale, Harper and Jamie rent an apartment together. There are nine rooms to assign - laid out in three storeys as shown below. Each friend will be assigned exactly one room. The friends have some requirements, listed below. Can you help them pick rooms so that they are all happy?

Requirements:

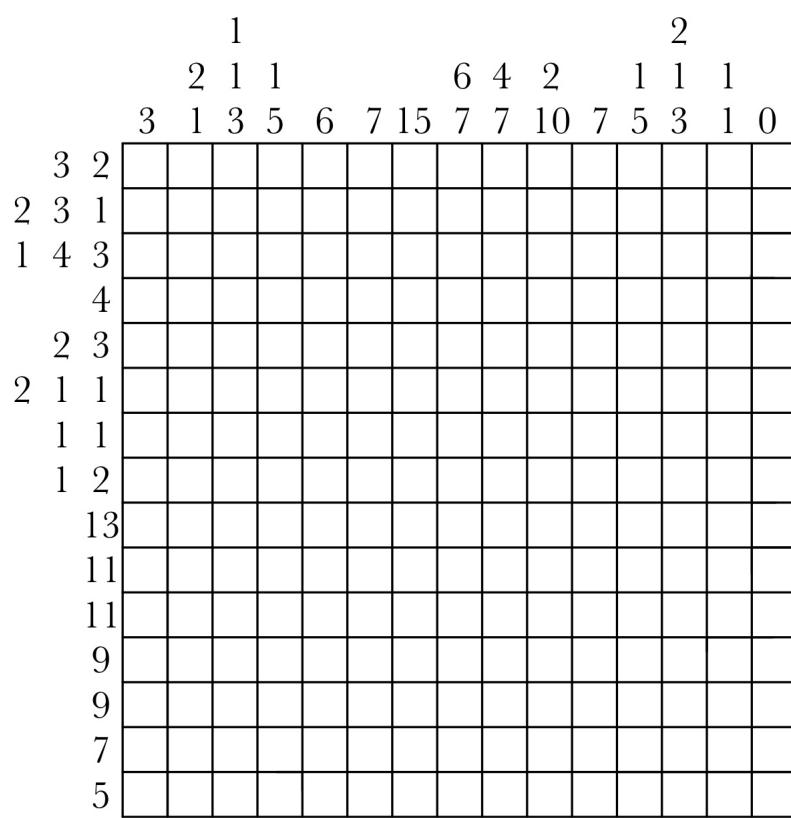
- (a) Alex wants to live directly to the left of Finn and right under Harper.
- (b) Drew wants to live right under Finn and directly to the right of Jamie.
- (c) Eddie wants to live below Casey, who wants to live below Gale.
- (d) Blake wants to live on the right side of the building.

4. Nonograms

a)



b)



Hint: As is sometimes the case, for this one, the spaces that you cannot colour are equally as important as those you do colour.

5. Einstein's Riddle

There are 5 people and 5 houses in a row. Each person is of a different nationality (British, Swedish, Danish, Norwegian, and German), and each of their houses is a different colour (Green, White, Red, Yellow, and Blue). Additionally, each person eats one type of candy (Snickers, Starburst, Skittles, Jelly Beans, or Mike & Ike) and each raises a different type of pet (cats, birds, horses, dogs, and fish). Finally, each owner drinks a different beverage (milk, coffee, tea, water or juice). Who raises the fish?

Clues

- (a) The Brit lives in the red house.
- (b) The Swede keeps dogs as pets.
- (c) The Dane drinks tea.
- (d) The green house is directly on the left of the white house.
- (e) The green house owner drinks coffee.
- (f) The person who eats snickers raises birds.
- (g) The owner of the yellow house eats skittles.
- (h) The person in the centre house drinks milk.
- (i) The Norwegian lives in the first house.
- (j) The person who eats starburst lives next door to the one who keeps cats.
- (k) The person who keeps a horse lives next to the person who eats Skittles.
- (l) The person who eats jelly beans drinks juice.
- (m) The German eats Mike & Ike.
- (n) The Norwegian lives next to the blue house.
- (o) The person who eats starburst has a neighbour who drinks water.

	Cat	Dog	Horse	Fish	Birds	Snickers	Starburst	Skittles	Jelly Beans	Mike & Ike	Juice	Coffee	Tea	Water	Milk	British	Norwegian	Swedish	Danish	German	Blue	Green	Red	White	Yellow
1 (Far Left)																									
2																									
3																									
4																									
5 (Far Right)																									
Blue																									
Green																									
Red																									
White																									
Yellow																									
British																									
Norwegian																									
Swedish																									
Danish																									
German																									
Juice																									
Coffee																									
Tea																									
Water																									
Milk																									
Snickers																									
Starburst																									
Skittles																									
Jelly Beans																									
Mike & Ike																									

6. Looking for more problems?

Try out one of the previous Math Circles: https://cemc.uwaterloo.ca/events/mathcircle-presentations_gr6.html based on Logic Puzzles. Terms that have such sessions include Fall & Winter 2012, Fall 2015 and Fall & Winter 2017. Or, check Piazza for a new puzzle each day!