YEAR 6 FROGS INVESTIGATION 2021

Frogs
investigation

Frogs Investigation

Frog project

I am trying to find out how many slides and jumps it takes to move 100 green frogs and 100 yellow frog from one side to the other

RULES

- You can't move backwards
- You can only move over one frog
- You can only slide forwards once
- You can only jump over one frog.

Rules

- When moving the frogs, you MUST only jump and slide. SLIDING is moving the frog forward into an empty space.

- JUMPING also known as HOPPING is when the frog jumps over another frog, into a free space. If you are JUMPING also known as HOPPING you should know that the frog you want to JUMP with only can jump over one frog.

- So, say you wanted to jump over a frog, YOU CAN ONLY JUMP OVER ONE FROG!!!

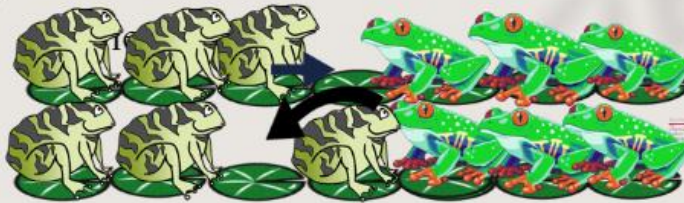# INTRODUCTION AND RULES THAT WE MUST FOLLOW!

KNOW THE RULES !

- While we are trying to find how many moves it takes to get a line of 100 bronze frogs and a line of 100 silver frogs to all swap the side that they started on we must obey some rules!!

- You can jump a frog over 1 frog but no more than 1!

- You can slide a frog over 1 Lilypad but no more than 1 !

- You can only move 1 frog at a time!

- You can't move a frog backwards!

The rules:

you **can't** go backwards!

-You can move forward one space

-You can leap over the other frogs

Patterns to follow

- As you can see in this video, I move a red frog first, then a blue. The trick is that they must be alternate colors, or the frogs will get stuck.

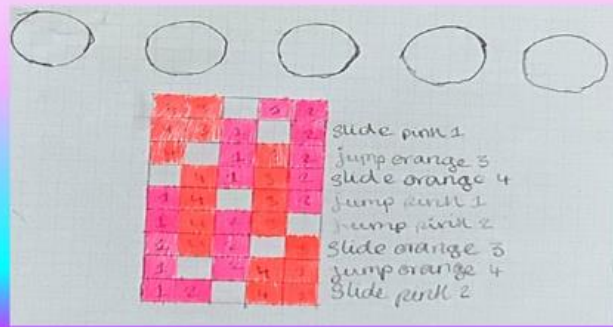- In the video, I am moving the frogs alternately. This is only with 4 frogs though.

Method:

- If you have two frogs on each side (the blue and black frogs) then you would first move a blue frog forwards and make one of the black frogs jump over it.

- Slide the other black frog that is at the back forward, so it is face to face with the blue frog.

- Now the blue frogs should be alternate with the black frogs.

- Jump the blue frogs over the black frogs.

- Slide the first black frog to the lily pad Infront and then the other black one over the second blue.

- Now slide the second blue forward and you have won with 8 moves!

Clue

Try to keep the frogs in a pattern of blue green blue green if you are using these colors but you can use any colors that you have at home.
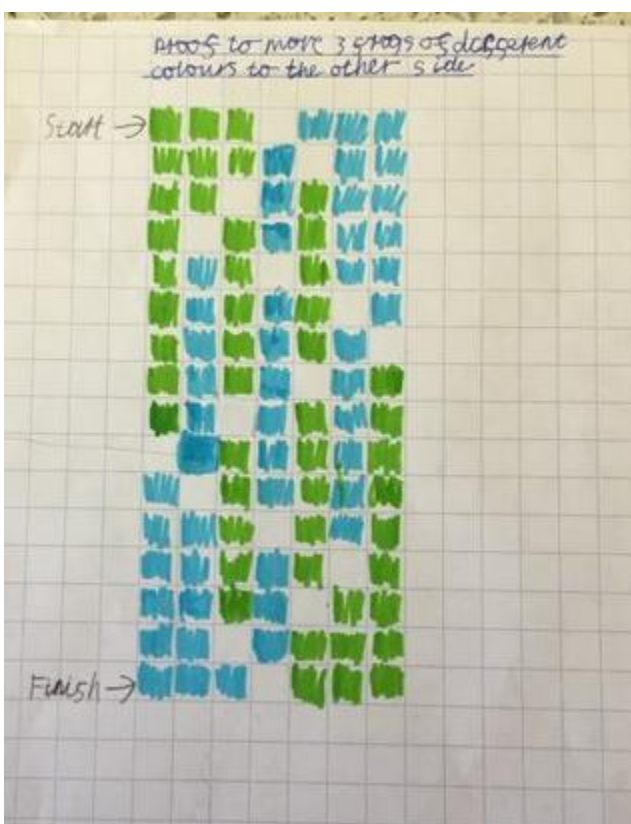
RECORDING YOUR MOVES

My frog table recording work

slide pink 1
jump orange 3
slide orange 4
jump pink 1
jump pink 2
slide orange 3
jump orange 4
slide pink 2

RESULTS TABLE FOR 3 BRONZE FROGS AND 3 SILVER FROGS

RESULTS →

START	B	B	B		S	S	S	
1	B	B	B		S	S	S	SLIDE B
2	B	B	S	B	S	S	S	JUMP S
3	B	B	S	B	S		S	SLIDE S
4	B	B	S		S	B	S	JUMP B
5	B		S	B	S	B	S	JUMP B
6		B	S	B	S	B	S	SLIDE B
7	S	B		B	S	B	S	JUMP S
8	S	B	S	B		B	S	JUMP S
9	S	B	S		B	S	B	JUMP S
10	S	B	S	B	S		B	SLIDE B
11	S	B		B	S	B	B	JUMP B
12	S		S	B	S	B	B	JUMP B
13	S	S		B	S	B	B	SLIDE S
14	S	S	S	B		B	B	JUMP S
15	S	S	S		B	B	B	SLIDE B

Start →

Finish →

Aims to move 3 frogs of different colours to the other side

AIMS OF THE INVESTIGATION

Find out how many jumps and slide it takes for 100 green frogs and 100 blue frog to swap places.

FROG TABLE

goes up adding odd numbers
5   7   9

Green frog	Red frog	Total	Sides	Jumps	Total moves
1	1	2	2	1	3
2	2	4	4	4	8
3	3	6	6	9	15
4	4	8	8	16	24
5	5	10	10	25	35
6	6	12	12	36	48
7	7	14	14	49	63
8	8	16	16	64	80
100	100	200	200	10000	10200
n	n	2n	2n	n^2	$2n+n^2$

This column is going up in the two times table.

This column is going up in squared numbers.

This is the nth term.

- If I wanted to expand on this question, I would try to work out how many moves it would take to move the frogs using the same rules but with two lily pads free rather than one.