4.6 Project A: Learning Mathemagic Tricks Date : .....

Situation You and a partner are to select a magic trick or a puzzle that involves math. You will perform it in front of your classmates and explain the maths behind it.

Possible strategies Watch several videos, and pick a trick that you like or that you think is easier to perform.

Notes

- Ask teacher for material or make a sample of your game.
- Practice makes perfect! Try the trick to be able to perform it with ease.
- Prepare your introduction. You need to capture the audience's attention.
- Use the video explaining the trick to understand its mechanics and some of the math behind it.
- Prepare clear diagrams if necessary to illustrate.

Magic tricks Following are a small selection of some tricks and the math behind them.

- **The Government Strikes Back!** https://youtu.be/TN9pZWXMgmk.
  (Pigeonhole principle, number of permutations).
- **A truly random prediction that always makes cents** https://youtu.be/0FpermM9NaA
  (Divisibility rule of 9) (alternative https://youtu.be/-6cUIWjJGtE)
- the **21-card trick** https://youtu.be/d7dg7gVDWyg
  (Arithmetic, logic)
- the **27-card trick** https://youtu.be/l7lP9y7Bb5g
  (Arithmetic, base-3 numbers1)
- **The unbeatable Game of Nim**https://youtu.be/EiqJcQ7YxHw
  Simple NIM https://youtu.be/9KABcmczPdg
  (Arithmetic, logic)
- **Josie learns the secrets of advanced NIM** https://youtu.be/vt0ZddT_kBQ
  (logic, devising a strategy)
- **a New Monty Hall Variation!** https://youtu.be/v0SOG3tYEbM
- 🌵 **Same size card trick** https://youtu.be/V3uNDe_i_1Y

Project A : Games people play.

Date .....

Name(s) .....

Picked theme .....

Teacher assessment

Content & teamwork				**/2**
• Used only english and was fully involved during preparation				/1
• All the elements required are present				/1
The quality of English				**/9**
• Grammar	1	2	3	/3
• Syntax	1	2	3	/3
• Vocabulary	1	2	3	/3
Pronunciation				**/6**
• Stress pattern	1	2	3	/3
• Phonology	1	2	3	/3
Overall quality of the presentation and interaction				**/3**
• Student is addressing the audience and not reading his/her notes.				/1
• The performance of the trick is fluid.				/1
• Student understands and answers the audience's questions.				/1
Total				**/20**

Student Self-assessment To assess your work and what you have learned during this project, answer the following questions.

1. What did I like about this project?
2. What did I not like about it?
3. Was the math hard to understand?
4. Is my work sufficient? Could I have provided more? How?