

# Math-O-Trick: Storyline

Draft - 2

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The students enter LH-5, we divide them into 7 groups with 6 to 8 students in each group. Each of us have 3 pack of cards, arranged in special order for “The Great Discovery”, “Spelling the Spades” and “Gilbreath Principle” .

## WELCOME TO MATH-O-TRICK

[*The Great Discovery*] Pick a deck of 52 cards and hand it over to one of the spectator (convincing him/her that the cards are randomly arranged). Then spectator is asked to “shift the top card to the bottom of the pack, deal the next card to the table, and so on”, until only one card remains. Spectator is asked to show this remaining card to other members of the audience, but not you. Then you ask the audience that would they be happy if you correctly predict the card. You ask the audience to prick a balloon (that you will point to) from the 6 balloons hanging in front of them. A small chit with selected card details (rank and suit) is discovered. [Applause]

## A STORY ABOUT A HAPPY KINGDOM CALLED KALINGA WITH A GENEROUS KING

[*Spelling the Spades*] Pick a new deck of 52 cards, and start telling the story of a kingdom called Kalinga which had a generous king. The king has 6 kids who are old enough to be admitted to school (gurukul). But the teachers of the school wish to test their general knowledge before admission and ask them to correctly spell the names of all 10 teachers which are ONE/ACE, TWO, THREE, FOUR, FIVE, SIX, SEVEN, EIGHT, NINE and TEN, legendary hero JACK of spades, their mother-the QUEEN and their father-the KING. [Applause] The royal kids pass the exam (since spelled cards appear at the said positions) and are admitted to the school (gurukul). As an award for their performance, the royal kids (spectators) are handed five red cards bearing the values of 2, 3, 4, 5, and 6.

[*The Cyclic Number*] Their education at school starts with mathematics. Six of the teachers, ONE/ACE, FOUR, TWO, EIGHT, FIVE and SEVEN want to teach them multiplication (place these 6 cards in a row to form the no 142857). The royal kids (spectators) are asked to draw one of the five cards that they had earned and place it face up beneath the row. Using pencil and paper, they are asked to multiply the large number by the value of the card they selected. While they do this, you assemble the six cards, cut them once, and leave them on the table in a face-down pile. After the result of the multiplication is announced, you pick up the pile of cards and once more deal them in a face-up row. They form a six-figure number which is exactly the result obtained by the spectators. [Applause] After 15 years, the royal kids finish their schooling and leave for their home after seeking the blessings of their teachers.

[*Pairs Repaired*] When the 6 royal kids return to their palace the king was very happy to see his well-mannered grown up children. The king wanted to gift them royal carriages so that they can go around and have a look at their vast kingdom. So one day, he took his children to the royal stable where the best horses in the kingdom were kept and trained. He asked them to choose any pair of horses they liked, to be used in their royal carriage. (The audience is asked to choose their pair of cards and we collect them in a definite order). The next day the king takes them to the garden in the palace and asks them to close their eyes till he asks them to open. (We arrange the cards in the meantime). The king (we act on behalf of the king) then asks them to recognize their horses, and pairs them to say this is your carriage. [Applause]

[*Gilbreath Principle*] Pick a new deck of 52 cards and start telling the story that royal kids are grown up and ready for the marriage. The king, being generous and keeping the tradition of the royal family, decides to marry his 6 children and his 20 niece and nephews, who are elder than the royal kids. Tell them that the 26 red cards represent the royal blood. Ask them to look near the middle of the deck and find two adjacent cards of the same color and not to tell you the color, but cut the cards between those two. The deck is now ordered as a sequence of pairs and each pair has one red and one black card which are dealt to say they got married.[Applause]

[*Peirce Curiosity*] Unfortunately, good times don't last forever. A powerful king with a mighty army attacks the state of Kalinga. Not prepared for the sudden blow, the king's army lose the war and the state was annexed. The enemy king captured the royal family and the head minister of the state but the king, however, was able to escape his capture. The king in order to hide himself takes to living in the forest. On one lucky day, he meets the magician (You can comment : who is of course me), who respected the king for his generosity. Magician decides to offer his help to the king. But the king being poor in mathematics does not believe in (math-)magic. So, to prove his/her worth the magician (you) deal five hands of five cards each face-down. King is asked to select his hand of cards and look at them without showing the magician (you). He is then asked to mentally choose one card out of the five and return the hand to the magician. The hands are gathered up in an order and once more dealt around the table to form five hands of cards. You (the magician) pick up any designated pile and fan it towards the king. You ask if the king can see his selected card. If so, the magician (acting like using telepathy) immediately pulls the chosen card from the fan. [Applause]

[*Gergonne's Pile Problem*] Impressed by the trick, the king asks the magician will he help him rescue his loyal head minister and raise an army to get his kingdom back. The magician declares that, with his/her extraordinary mathematical abilities and magical cards, he/she will surely help the king. Everybody knows that the enemy king is very clever and keeps special prisoners in three different cells, shifting the prisoners every day. The magician pulls out 27 cards from the deck and says that these represent the 27 special prisoners that the enemy king has at the moment. One of them is your head minister. The magician asks the king to select a card (without telling you, but showing others) which gives closest resemblance to his head minister. You declare that you are going to deal the 27 cards into 3 piles which represent the 3 prisons and the king has to identify his minister among the other prisoners. Then you deal the cards (the top card is placed as the bottom card of the first pile, the second card in the pack as the bottom card of the second pile, the third card as the bottom card of the third pile, the fourth card on the top of the first one, and so on). You ask the king to identify the prison (pile) in which he sees his minister on three days (dealing cards 3 times). You claim that on the 14th day of the month when the moon has almost vanished you will free the minister and using teleportation bring him to the king. You deal out the cards saying, the first day, the second day, (and so on till 13th day) and now on the 14th we have the minister.[Applause] End the story saying that with the help of his minister and the mathmagician, the king raises an army, fights the enemy, wins the war and gets his family and kingdom, living happily thereafter.

Since selecting the random number is not essential for the trick, we are skipping it for now.

[*A Mathematical Wizard*] The king, in order to honor the magician, made him the royal magician and requested him to teach some of his/her tricks. You ask the audience, would they like to learn a trick. Present this trick as it is and teach the principle behind this (if time permits).

THANK YOU