

Mind Explorer

Thank you for downloading the science and mathematics activity packet! Below you will find a list of contents with a brief description of each of the items. This activity packet contains all the information (including any handouts) you will need to run this activity in your own classroom or at a science festival.

Please note: some activities might require the need for a facilitator to be present to oversee the activity. Activities that require a facilitator will be clearly noted.

-Community Resources for Science



ACTIVITY PACKET CONTENTS

1. Organizer Instructions for the person running the activity
 - Print suggestion: 1 for the facilitator
 - Includes information for setup prior to the event (e.g., materials prep)
2. Participant Instructions (printout)
 - These instructions are for the participant to read through how to do the activity and then should be able to try out with someone new



ORGANIZER INSTRUCTIONS

Grade(s): 3-6

Standard connections:

- **CCSS.Math.Practice.MP1** Make sense of problems and persevere in solving them
- **CCSS.Math.Practice.MP5** Use appropriate tools strategically
- **CCSS.Math.Practice.MP2** Reason abstractly and quantitatively
- **CCSS.Math.Practice.MP6** Attend to precision

Next Generation Science Standards: Science and Engineering Practices

- **Using Mathematics and Computational Thinking** Use counting and numbers to identify and describe patterns in the natural and designed world(s)
- Crosscutting Concepts
 - **Patterns** Use patterns to identify cause and effect relationships

Objective: Use addition, subtraction, and multiplication skills, along with mathematical precision, to perform a card trick

Activity overview and background: Student-directed activity that is performed as a card trick in pairs. One person is the “receiver” of the trick, and one person performs the trick.

Materials:

- A deck of cards
- A friend
- A pencil and paper

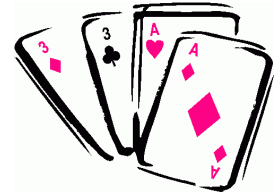
Setup:

1. Shuffle a deck of cards in front of your friend
2. The “magician” has the deck in hand to start the trick



Instructions

Mind Explorer: Mind Reader Handout



These instructions tell you how to do a cool card trick that's guaranteed to make you look like a mind reader. Try it with a friend, then spring it on some unsuspecting victims—like your parents!

1. Shuffle the deck. That way your victim—oops, *your friend*—knows you haven't done anything weird to the deck of cards.
2. Ask your friend to choose any card from 1 (ace) to 9, but not a 10, jack, queen, or king. Tell them not to show it to you, but to memorize the number on it.
3. Tell your friend to put his or her card on the table, face down.
4. Now you take a card from the shuffled deck. Choose a card with a number from 1 (ace) to 9. Don't choose a 10, a jack, a queen, or a king. Don't show the card to your friend.
5. Memorize the number on the card, then lay the card face down on the table on the right side of your friend's card. **Be sure that your card is to the right of your friend's card.**
6. Now comes the “magic” part. Give your friend the paper and pencil so that he or she can do some math. Now tell your friend to do the following things—without showing you the answers:
 7. Tell your friend to:
 - Double the value of the card.
 - Add 2 to that number.
 - Multiply the result by 5.
8. Example: Suppose they have the 3 of hearts.
$$3 * 2 = 6$$
$$6 + 2 = 8$$
$$8 * 5 = 40$$
9. So far, your friend has been doing all the math. In this step, you have to do a little math in your head. Take the number of the card you chose. (You remember what it is, don't you?) Then do the following:

Mind Explorer

10. What you do: Subtract the number of your card from 10.

Example: Suppose your number is 8.

$$10 - 8 = 2$$

11. Now it's your friend's turn again. Tell your friend your answer from Step 6. Have your friend subtract that from the number he or she got after doing all the math in Step 5.

Example: $40 - 2 = 38$

12. Ask your friend to tell you what number he or she got after doing all that math.

Example: Our friend said 38.

13. Here's the magic part. Flip over your friend's card on the table, and then your own. There will be the two digits of the number your friend said. Enjoy the shocked look on your friend's face!

14. But wait! Suppose your friend came up with a different number. Mutter something like, "I know the magic worked—so let's check your math." Check the math—and you will get the number that's on the cards.