

IT'S NOT  
**MAGIC**  
IT'S  
**SCIENCE**

**MAGIC DICE  
EXPERIMENT GUIDE**

**EXPERIMENT**

Fun experiments disguised as  
a magic tricks!

**EXPLANATION**

Discover the science behind  
the magic!

**EXPLORATION**

Bring the "magic" to life with  
real world applications!

**IN PARTNERSHIP WITH**

**SHPE**  
**NOCHE de**  
**CIENCIAS™**

Interactive “family science nights” for high school students and families bring STEM to life. Imagine yourself in different STEM careers and discover what excites you. All the while, your parents learn how to support you in achieving these new found ambitions.



Diana Mogena  
Industrial Engineer  
SHPE Professional



Jay Flores  
Mechanical Engineer  
SHPE Lifetime Member  
@JayFloresInspires

# CONTENTS

## Magic Dice

### EXPERIMENT PREPARATION - PAGE 3

This is everything you will need in order to make the "magic" happen!

### EXPERIMENT INSTRUCTIONS - PAGE 4

Now that you've gathered all your materials we will guide you through the process to bring the science magic to life!

### EXPLANATION - PAGE 5

Wow that was cool! Now let's learn how it works.

### EXPLORATION - PAGE 6

Now that you know the science behind the magic it's your turn to share cool ideas of how we can use it to make the world a better or cooler place!



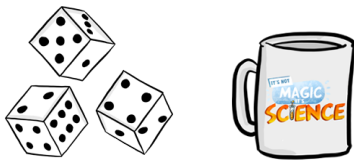
# EXPERIMENT

## Magic Dice

### MATERIALS

Cup or "It's Not Magic, It's Science" Mug (optional for rolling the dice)

Index card or small piece of paper



### WATCH (OPTIONAL)

Scan the QR Code below or visit [www.jayfloresinspires.com/blog/magicsciencekit](http://www.jayfloresinspires.com/blog/magicsciencekit) to watch "It's Not Magic, It's Science" hosts Jay Flores and Diana Mogena conduct the Magic Dice experiment!



# EXPERIMENT

## Magic Dice

### INSTRUCTIONS

\*Prior to starting the experiment write the number 21 on your index card or piece of paper

1. Gather all of your materials from the equipment list and set up a safe space to conduct the experiment
2. Roll three dice together
3. Ask your audience to add up the sum of all of the numbers you rolled
4. Without looking, show your audience the numbers on the bottom of the dice and have them add that sum to the sum of the numbers on top
5. Tell your audience that you magically know the sum and show them the number 21 on the back of your index card or piece of paper
6. Remind everyone that "It's Not Magic, It's Science!"

Tip: Roll the dice a few times before having your audience add up the sum to show that you aren't using "trick dice."



# EXPLANATION

## Magic Dice

### "MAGIC" REVEAL - HOW IT WORKS

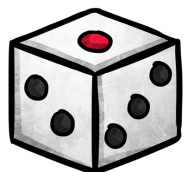
We hope you enjoyed our Magic Dice experiment! You were able to "magically" know the results of a random roll without even seeing half of the numbers.

So how do we do it? Remember, it's not magic, it's science! It seems random but there is a pattern in dice that helps us get it right every time no matter how many dice we roll. The sum of both sides of a die always adds up to 7.

So all you need to know is how many dice you are going to roll and then multiply that number by 7 to get the final answer every time you roll! In our case  $3 \times 7 = 21$ . Try adding more dice the next time you conduct this experiment to see if you've mastered the equation!

### BRING THE "MAGIC" TO LIFE!

Now that you know the science behind the magic how do you think we can apply this science to solve real life problems? Use the following exploration pages to start bringing your ideas to life!



# EXPLORATION

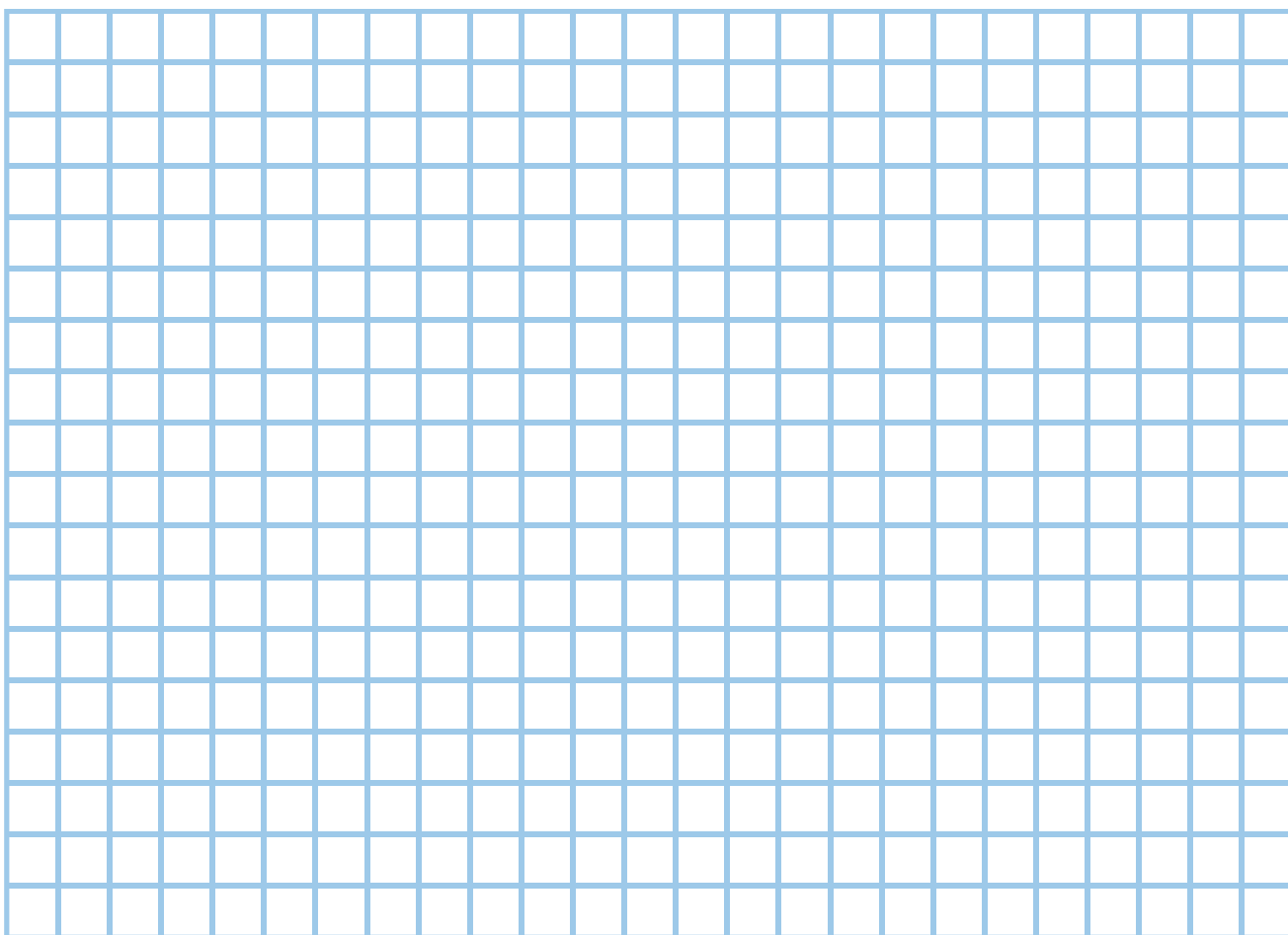
## Magic Dice

IDEA NOTES & DESIGN SPACE

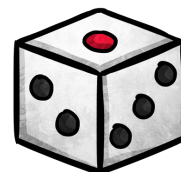
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Don't limit your creativity. Dream BIG!



# ABOUT SHPE

## Organization Overview

SHPE is the nation's largest association dedicated to fostering Hispanic leadership in the STEM field.

### **Mission**

SHPE changes lives by empowering the Hispanic community to realize its fullest potential and to impact the world through STEM awareness, access, support, and development.

### **Vision**

SHPE's vision is a world where Hispanics are highly valued and influential as the leading innovators, scientists, mathematicians, and engineers.

### **SHPE Jr.**

Starting early is the key to successfully exploring a future in Science, Technology, Engineering or Mathematics. If you're a high school student, and you think STEM might be the path for you, join a SHPE Jr. Chapter today. If your school doesn't have one, let's start one together!

