

# Superhero Probability

**Intended for Grade:** 7<sup>th</sup>

**Subject:** Mathematics: Combinations and Probability

**Description:** This project is designed to give students a fun activity for exploring combinations and probabilities.

## **Mississippi State Framework addressed:**

4g: Determine probability of one event.

4h: Use simple permutations and combinations.

## **National Frameworks addressed:**

Math Standard, Data Analysis and Probability

**Procedure:** Each student will be given a sheet to work on. This can either be a group or individual project.

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## SUPERHERO PROBABILITY

The world is in danger! Its safety and well-being has been left in your hands. But before we give you details you must first assemble the greatest superhero team the world has ever seen. In order to save the world this team must be greater than the X-men, Avengers, and the Justice League combined.

We're giving you 5 super beings and you must choose their super powers. This is the list of powers you must choose from:

- super strength and invulnerability (SSI)
- telepathic abilities (TA)
- ability to teleport (AT)
- super speed (SP)

However, you must choose them in such a way that **no two super beings have the same two powers.**

	Name	Super Power #1	Super Power #2
Super being #1			
Super being #2			
Super being #3			
Super being #4			
Super being #5			

In addition to choosing your superhero team, you must also choose your super villain team. This will be the most vile and evil group of super beings. We're giving you 4 super villains and you must choose their super powers. From the list below, choose their powers so that each super villain receives 3 powers and that **no two super villains have the same three powers.**

- ability to levitate objects (LO)
- super intelligence (SI)
- can fly (FL)
- emits energy beams from hands (EB)

	Name	Super Power #1	Super Power #2	Super Power #3
Super being #1				
Super being #2				
Super being #3				
Super being #4				

### **QUESTIONS TO GO OVER WITH THE CLASS:**

1. How many ways can we combine two of the super hero powers without repeating? (Hint: super strength and telepathy, super strength and teleport, super strength and super speed,....what are the rest?)
  
2. How many ways can we combine three of the super villain powers without repeating? (Hint: levitate, intelligence, flying; intelligence, flying, emits energy;...what are the rest?)
  
3. What is the probability that a super hero will receive super strength and super speed powers?
  
4. What is the probability that a super villain will receive levitating, intelligence, and flying powers?

## ACTIVITY

Beware citizens of \_\_\_\_\_, \_\_\_\_\_ are  
(Name of a city) (Name of super villain team)

back after being locked up for \_\_\_\_\_ years in a \_\_\_\_\_.  
(# of ways to combine 3 of the 4 powers) (Name of institution)

They have an evil plan to take hostage every \_\_\_\_\_ in order  
(Name of a thing living on Earth)

to rule over the citizens. The only hopes these citizens have are \_\_\_\_\_.  
(Name of super hero team)

\_\_\_\_\_, the evil genius, devised the plan. He calculated that  
(Name of super villain)

\_\_\_\_\_ of the people living in \_\_\_\_\_ depended  
(probability of villain having levitating, flying, and intelligent powers) (Name of city)

on \_\_\_\_\_. Therefore, if \_\_\_\_\_ owned  
(Name of thing living on Earth) (Name of super villain team)

these, then the people would depend on them and so \_\_\_\_\_ could  
(Name of super villain team)

rule the people. Their plan was that \_\_\_\_\_ would  
(Name of super villain)

break into the buildings using the energy emitted from his/her hands, then

\_\_\_\_\_ would levitate the \_\_\_\_\_ and  
(Name of super villain) (Name of thing living on Earth)

finally \_\_\_\_\_ would fly by grabbing them and taking them to  
(Name of super villain)

their base in \_\_\_\_\_.  
(A far off land)

However, before \_\_\_\_\_ could put their plan into action,  
(Name of super villain team)

\_\_\_\_\_ was there to stop them. They were there  
(Name of super hero team)

\_\_\_\_\_ seconds before the plan started because  
(# of ways to pair up the super hero powers)

\_\_\_\_\_ read the mind of the evil genius who devised the plan. So the  
(Name of super hero)

fighting begins.

\_\_\_\_\_ fought \_\_\_\_\_ and defeated him/her  
(Name of super hero) (Name of super villain)

by using his/her invulnerability to withstand the energy beams and then throwing a

\_\_\_\_\_ at him/her. \_\_\_\_\_ could not dodge  
(Name of a big object) (Name of super villain)

it because this object was \_\_\_\_\_ times the size of him/her.  
(# of ways to select two out of the four super villains)

\_\_\_\_\_ fought \_\_\_\_\_ and defeated him/her  
(Name of super hero) (Name of super villain)

by teleporting up into the sky onto his/her back and covering his/her eyes. Then

\_\_\_\_\_ teleported back to the ground just before \_\_\_\_\_  
(Name of super hero) (Name of super villain)

flew into a \_\_\_\_\_. This was quite tricky for  
(Name of object)

\_\_\_\_\_ because \_\_\_\_\_ could fly \_\_\_\_\_ of the  
(Name of super hero) (Name of super villain) (probability of superhero  
having telepathic and  
super speed powers)

speed of \_\_\_\_\_.  
(Name of fast object)

By this time the rest of \_\_\_\_\_ saw that they were defeated  
(Name of super villain team)

and began to run away. However \_\_\_\_\_ caught them since  
(Name of super hero)

he/she can run fast and they were locked up for a very long time.