

# WORKSHOP EXTENSION ACTIVITY

Built by The Home Depot Kids Workshop



## HUMVEE

Ages 5-8 and 9-12

### MAKE. CREATE. EXPLORE.

#KidsWorkshopExplore





## Add a parachute to your Humvee!

How many **branches of the military** can you name?

**Veterans Day is an official United States public holiday** that is observed on November 11th. It honors military veterans who served in the United States Armed Forces and celebrates the soldiers who are still alive and served in the forces during peace or war.

### Do you know all five branches of the military?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

*Army, Air Force, Coast Guard, Marine Corps, and Navy*

Science, Technology, Engineering, and Math are critical skills in the military that help us develop the high-tech gear soldiers wear and use.

You built a High Mobility Multipurpose Wheeled Vehicle (HMMWV) that is more commonly known as the Humvee. It is a truck used by the military to carry people and light cargo. They are designed to withstand conditions all over the world. A Humvee can even be transported by larger military aircrafts and dropped by parachute!

### How have you seen parachutes used?

Examples may include space missions, dropping supplies, skydives, BASE jumping, drag cars, and to stop small planes.



Share your discovery! Use **#KidsWorkshopExplore** to post pictures of your experiment and results.

# How fast do you think your Humvee will fall?

## Let's get started!

When designing a parachute, you need to consider the **mass** of the object first. The more mass equals more gravitational force acting on the object. This makes the parachute fall at different speeds. You also need to consider the **size** of the parachute. A larger parachute will trap more air and makes the parachute fall more slowly.

Your finished Humvee has a mass of ~160 grams. This is about the same mass as an apple. Your parachute will need to be 12-24 inches to soften the fall when dropped.

### You'll need...

- Heavy weight plastic trash bag
- Measuring tape
- Permanent marker
- String
- Tape
- Scissors
- Calculator



## Directions

1. Use your plastic trash bag, measure a 24-inch square with a ruler and permanent marker, and cut out the square using your scissors.
2. Cut a 5-inch square out of each corner. You can fold the square in half to make a rectangle, then fold it in half again to make a square. Then, measure the 5-inch square on the loose corner. Cut through all four layers. When you unfold the plastic, it should look like a plus sign.
3. Push the edges together of the first corner you cut the 5-inch square from. Place a 2-inch piece of tape halfway over the bottom edge. Leave the bottom half of the tape hanging over the edge of the plastic. Repeat for the other three corners.
4. Turn the plastic over and fold the pieces of tape onto the other side. Now the corners are taped on both sides. It should look like a bag with a slit in each corner. Do not tape the slits.
5. Cut two 36-inch pieces of string. Use a permanent marker to make a dot on each string, 3 inches away from each end.
6. Take your first string, and place the end over one of the corners you taped up. Align the 3-inch mark with the edge of the plastic, then place a strip of tape over it. Tape the end of the string down. Fold the loose end of the string over the tape, towards the edge of the plastic. Place another piece of tape over it to secure it.
7. Tape the other end of the string to the next corner. Repeat step 6. You will have two loops hanging from your parachute.
8. Tie a knot into the middle of each loop. The loop should have equal amounts of string on both sides of the knot. Leave enough room between the knot and the middle of the string to put your Humvee in. Repeat this step for the other loop.
9. Use the loops to hold your Humvee in place.
10. Locate a place in your home to drop the Humvee and parachute. A good place may be a secure balcony, deck, or playground platform. If you need to stand on a chair make sure an adult helps you. The higher you are when you drop the Humvee, the better the parachute will work.
11. Measure the distance you plan to drop your Humvee. Drop your Humvee slowly. If the parachute falls too fast, the Humvee is too heavy. You may need to make a larger parachute for it to work. Time how long it takes from when you dropped your Humvee to when it lands.
12. Record your results in the data table. Conduct two more trials. The more trials you perform, the less chance there will be for error. We recommended conducting three trials. After your three trials, add up each column and divide by three to find the average.
13. Calculate the Speed by dividing distance over time.

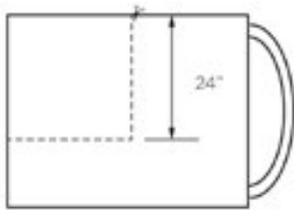
## Data Table

<b>Trial</b>	<b>Mass</b> <i>(grams)</i>	<b>Distance</b> <i>(meters)</i>	<b>Time</b> <i>(seconds)</i>	<b>Seconds</b> <i>(meters per second)</i>
<b>Trial 1</b>				
<b>Trial 2</b>				
<b>Trial 3</b>				
<b>Average</b>				

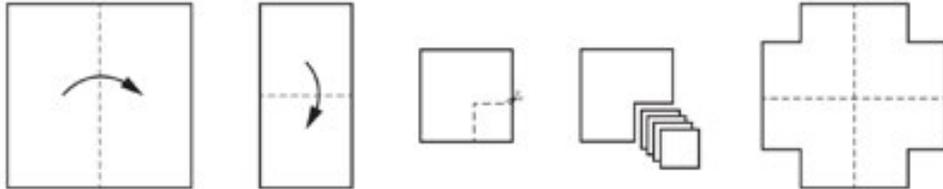
Share your finished parachute! Use [#kidsworkshopexplore](#) to post pictures of your experiment and results!



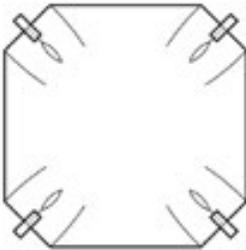
Share your discovery! Use [#KidsWorkshopExplore](#) to post pictures of your experiment and results.



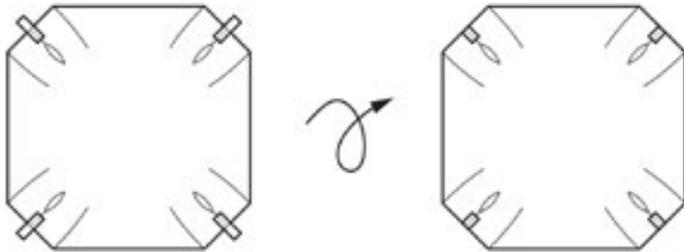
1. Use your plastic trash bag, measure a 24-inch square with a ruler and permanent marker, and cut out the square using your scissors.



2. Cut a 5-inch square out of each corner. You can fold the square in half to make a rectangle, then fold it in half again to make a square. Then, measure the 5-inch square on the loose corner. Cut through all four layers. When you unfold the plastic, it should look like a plus sign.



3. Push the edges together of the first corner you cut the 5-inch square from. Place a 2-inch piece of tape half-way over the bottom edge. Leave the bottom half of the tape hanging over the edge of the plastic. Repeat for the other three corners.

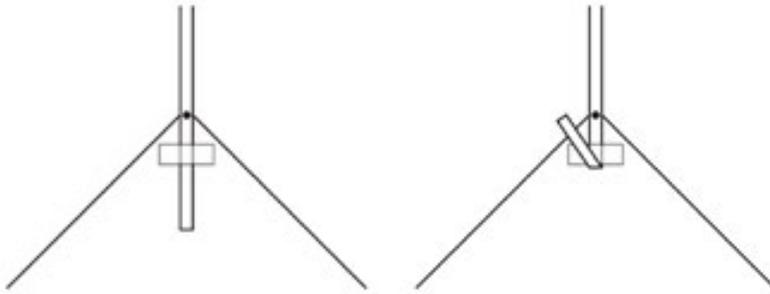


4. Turn the plastic over and fold the pieces of tape onto the other side. Now the corners are taped on both sides. It should look like a bag with a slit in each corner. Do not tape the slits.



5. Cut two 36-inch pieces of string. Use a permanent marker to make a dot on each string, 3 inches away from each end.





6. Take your first string, and place the end over one of the corners you taped up. Align the 3-inch mark with the edge of the plastic, then place a strip of tape over it. Tape the end of the string down. Fold the loose end of the string over the tape, towards the edge of the plastic. Place another piece of tape over it to secure it.



7. Tape the other end of the string to the next corner. Repeat step 6. You will have two loops hanging from your parachute.



8. Tie a knot into the middle of each loop. The loop should have equal amounts of string on both sides of the knot. Leave enough room between the knot and the middle of the string to put your Humvee in. Repeat this step for the other loop.



9. Use the loops to hold your Humvee in place. Repeat this step for the other loop.

