



TP TWISTER

SCIENCE SAFETY

PLEASE follow these safety precautions when doing any science experiment.

- **ALWAYS** have an adult present.
- **ALWAYS** wear the correct safety gear while doing any experiment.
- **NEVER** eat or drink anything while doing any experiment.
- **REMEMBER** experiments may require marbles, small balls, balloons, and other small parts. Those objects could become a **CHOKING HAZARD**. Adults are to perform those experiments using these objects. Any child can choke or suffocate on uninflated or broken balloons. Keep uninflated or broken balloons away from children.

INGREDIENTS

- Toilet Paper
- Tape
- High Velocity Fan

INSTRUCTIONS

STEP 1: Remove the front grille of the high velocity fan.

STEP 2: Place the fan on the floor, tilt the fan, so it blows air toward the ceiling.

STEP 3: Using the tape, attach about 15 feet of toilet paper to the back of one of the blades.

STEP 4: Holding the toilet paper, in your hands, toward the ceiling, so the toilet paper can easily slip through your hands, have an adult turn the fan to low, and observe. **KEEP YOUR HANDS AWAY FROM THE FAN.**

STEP 5: Holding the toilet paper, in your hands, toward the ceiling, so the toilet paper can easily slip through your hands, have an adult turn the fan to high, and observe. **KEEP YOUR HANDS AWAY FROM THE FAN.** Compare the effects of different strengths or different directions of pushes and pulls on the motion of the toilet paper. Provide evidence of the effects of balanced and unbalanced forces on the toilet paper.

EXPLANATION

Two forces are working together, one is pushing the toilet paper in a curved path while the other is pushing the toilet paper upward, to create a vortex of toilet paper called the TP Twister.



SCIENCE BACKGROUND

A force is a push or pull, which can cause an object to be in motion. Pushes and pulls can have different strengths and directions. Motion is a change in position. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object's speed or direction of motion. Speed is how far an object moves over a specific period of time. Pushing or pulling on an object can change the speed or direction of its motion and can start or stop it. Friction is the resistance between two objects. The force of friction opposes the motion of an object, causing moving objects to lose energy and slow down.

I CAN STATEMENT

- ✓ I can plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.
- ✓ I can plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on an object.

NEXT GENERATION SCIENCE STANDARDS CONNECTION

K – Forces and Interactions: Pushes and Pulls I Cause and Effect
3 – Forces and Interactions I Cause and Effect