



## AMERICAN FLAG SHADOW

### 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 when performing 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

- Blank Canvas
- Glow-In-The-Dark Paint
- Bright Flash Light
- American Flag
- Construction Paper
- Plastic Wrap

### INSTRUCTIONS

**STEP 1:** Paint the blank canvas with the glow-in-the-dark paint. Allow the canvas to dry.

**STEP 2:** Shine the bright flash light through the American flag, construction paper, and plastic wrap. What happened? Which object is considered translucent, transparent, and opaque? Why?

**STEP 3:** Place the American flag flat on the canvas, shine the bright flash light over the American flag, turn off the bright flash light, remove the American flag, and observe. What happened? Why?

### EXPLANATION

The glow-in-the-dark paint absorbs light and then re-emits the light over a period of time, causing the canvas to glow. The American flag is translucent and stops some of the light from reaching the paint, therefore preventing that area from glowing, making it look as if you captured the shadow of the American flag.



### SCIENCE BACKGROUND

Light is energy you can see, which travels in a straight line until it hits an object. Shadows are evidence of light traveling in straight lines. Once light hits an object it can reflect, refract, or absorb. Reflect mean to bounce off, refract means to bend, and absorb means to take in. Light transfers energy from one location to another. Objects can be seen if light is available to illuminate them or if they give off their own light. Transparent materials allow most light to pass through. Translucent materials allow some light to pass through. Opaque materials block all light from passing through. Mirrors can be used to redirect a beam of light.

### I CAN STATEMENTS

- I can make observations to construct an evidence based account that objects in darkness can be seen only when illuminated.
- I can plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.
- I can make observations to provide evidence that energy can be transferred from place to place by light.

### NEXT GENERATION SCIENCE STANDARDS CONNECTION

- 1 – Waves: Light and Sound
- 4 – Energy

