

# LESSON 12:

# MARSHMALLOW LAUNCHER

## SUPPLIES

### TEACHER BRINGS

- 1 bag of mini marshmallows
- 1 bag of giant marshmallows

### PENCIL BOX

- Pencils
- Scissors
- Markers
- Glue sticks


### MAIN BIN

- Cardboard Tube (15)
- Masking Tape (2)
- Balloons (15)

## OBJECTIVES

- To understand why spies may use a distraction.
- To understand how force and energy make the marshmallow launcher work.

## INTRODUCTION

 3-5 min

Welcome back, agents! Get ready for another top secret mission! As you know, in order to keep their identity hidden, spies often use distractions to get them out of trouble quickly. Sneaky distraction techniques are a key way that spies can do this. Whether it's a quick trick like pointing to something surprising or using cool spy gadgets, distractions help agents stay undercover. Today, we will be creating our very own distraction device: marshmallow launchers! This mission will not only keep us under cover, it will help us learn about force and energy along the way. Let's check in with Agent Quackshot for more mission-critical intel!

## HOOK 3-5 min

- Sometimes a secret agent can get stuck in a tricky situation. They might be stuck in a room they shouldn't be in, or someone may be following them!
- Hey, look at that! \*face out the window\* (While students look, move to a different place in the room.) See, there wasn't really anything there, but I distracted you long enough to move. Often, spies need a distraction!
- Ask students what else could be used as an effective distraction.

## MEET TODAY'S SECRET AGENT

**QUACKSHOT**



### Specialty: Advanced Distraction

Agent Quackshot is the real deal. Their ability to distract is unparalleled, making them a total game-changer on any mission. After years of intense training and experience, Quackshot has become a total pro, a shining example for other agents to follow. Their peers look up to them and for good reason. Whether you're on a top-secret assignment or in a high-stakes showdown, Agent Quackshot is the one you want in your corner.

## DISCUSSION

🕒 5-7 min

Discuss as a class how launching the marshmallows could cause attention to focus on the flying marshmallows, diverting the audiences attention and allowing the spy time to get away. Here's why it works:

### A distraction draws attention away.

When you launch marshmallows, people will almost always look at them! Why? Well, it's surprising! No one expects marshmallows to fly through the air. The eyes of the audience follow the marshmallows, not the secret agent.

### A marshmallow distraction can obscure vision.

If you launch a bunch of marshmallows at once, it can make it harder for someone to see clearly. The marshmallows may even bounce or scatter, adding to the confusion.

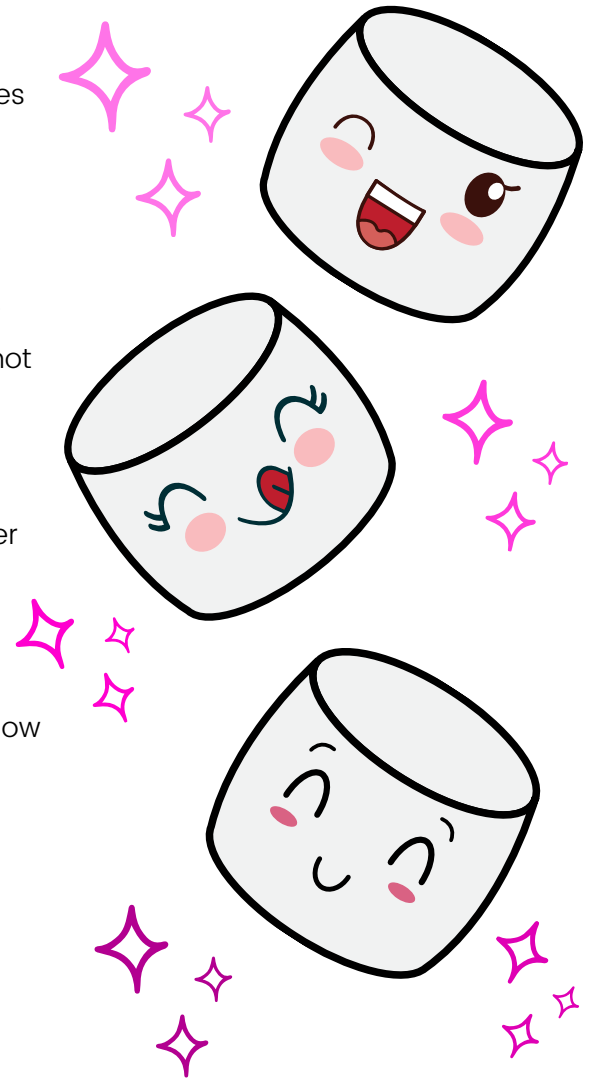
Show students the supplies and ask them:

- How do you think you will use the materials to make a marshmallow distraction launcher?
- How will the marshmallow launcher work?

## ACTIVITY PART 1

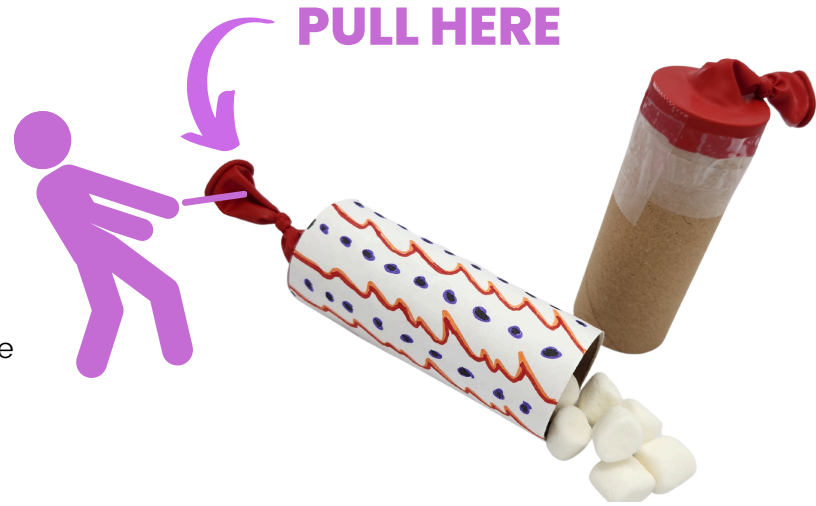
🕒 25-30 min

1. Give each student a cardboard tube and a balloon.
2. Have students start by tying a knot in the uninflated balloon.
3. Cut the balloon in half. Discard the top, rounded top and keep the end with the knot or tie.
4. Stretch the open-ended piece of the balloon over one end of the cardboard tube. Instruct students to secure their balloon in place with tape.



## ACTIVITY CONT.

5. The marshmallows are then loaded into the open end.
6. Once all students have made their marshmallow launchers, have them line up in groups of four in a designated launch zone.
7. Students will take turns pulling the knotted end of the balloon back and releasing it to launch the marshmallows into the air.
8. Encourage students to be precise with how they launch. Ensure students retrieve all marshmallows after launching.



**NOTE:** Only hand out the marshmallows when you are ready for the students to launch and can be supervised

## EXTENSION

Encourage students to try different variations of the launch:

- Bundle of marshmallows
- Pulling back further, or less pull back


Lastly, you can have the students wrap paper around the cardboard tube and mark the areas to cut around it.

- They can then tape the paper to the tube and decorate their launcher!

## SAFETY NOTE

- Please make sure the students never aim at each other.
- Designate a "launch zone" for safety.
- Ensure marshmallows are not left within the classroom after class.

## OBSERVE AND EXPLAIN

 5-7 min

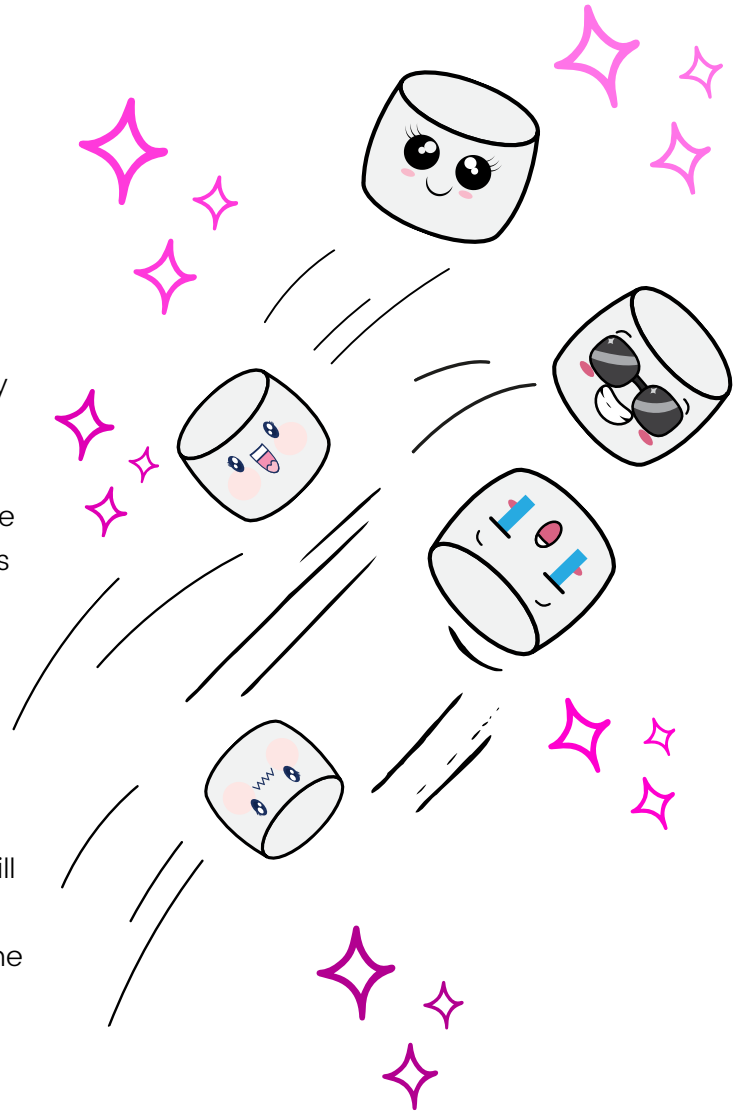
Ask students to observe:

- How does the marshmallow launcher work?
- How did the pull of the balloon affect the distance traveled?
- How did the angle of the shooter affect the distance traveled?

Explain to students that when they pull the balloon back, they are exerting force. When they hold the balloon in place after pulling it back, it is **potential (stored) energy**. As they let the balloon go, the energy becomes kinetic energy, and the force is transferred to the balloon which pushes the marshmallows out and into the air!

The further back they pulled the balloon, the more force exerted and the further the marshmallows traveled.

The angle of the marshmallow launcher can also affect the distance travelled. If it is pointed down, the marshmallows will travel into the ground rather than going a distance. If the marshmallow launcher is pointed too close to 90 degrees, the marshmallows will travel straight up in the air and down!



**Exit Ticket**



Ask each student the following question as they walk out the door.

- Ask students to explain why spies use distraction techniques.
  - Distraction techniques serve as powerful tools for spies, allowing them to divert attention, maintain stealth and disrupt security measures.