



# 3, 2, 1 . . . **We have lift-off!**

*NASA launches several rockets each year. There are actually several launch facilities around the United States. You probably know of the launch pad at Kennedy Space Center in Florida, but did you know there is a launch facility at Vandenberg Air Force Base in California, one at Wallops Flight Facility in Virginia, and another at White Sands Missile Range in New Mexico? A rocket is just the launch vehicle that carries a payload into space. A payload is the load, or package or set of instruments, that needs to be delivered to a destination. When you watched the video for this session, you saw an Atlas V rocket carry a payload, the LRO and LCROSS satellites, to a destination: an orbit around the Moon.*



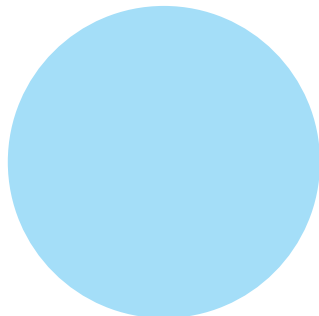
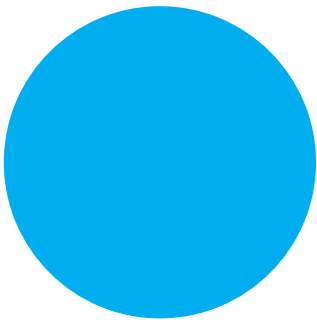
## THE CHALLENGE:

*Your mission is to design and build a **launch vehicle** to send a payload to the Moon. The **launch vehicle** is a balloon rocket assembly. Your **payload** is the satellite you built at the last session. Your team must also determine how to attach your satellite to the balloon assembly and then launch it down a fishing wire.*

## DESIGN challenge

*To design a balloon rocket to launch the satellite that was built in the last activity. The goal is to get the satellite to go as far as possible.*

Launch Your Satellite  
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# ASK IMAGINE & PLAN

**Draw and label your balloon rocket design that includes the satellite design.**



## DESIGN challenge

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Approved by: \_\_\_\_\_

# ***Experiment & Record***



Your challenge is to launch your balloon rocket the farthest distance! Build your rocket with **ONE** balloon attached to a drinking straw. Test three different lengths of straw.



**Balloon Rocket Data Table 1**

	Trial 1	Trial 2	Trial 3
Straw Length	Short _____ cm	Medium _____ cm	Long _____ cm
Distance traveled (cm)			

## DESIGN challenge

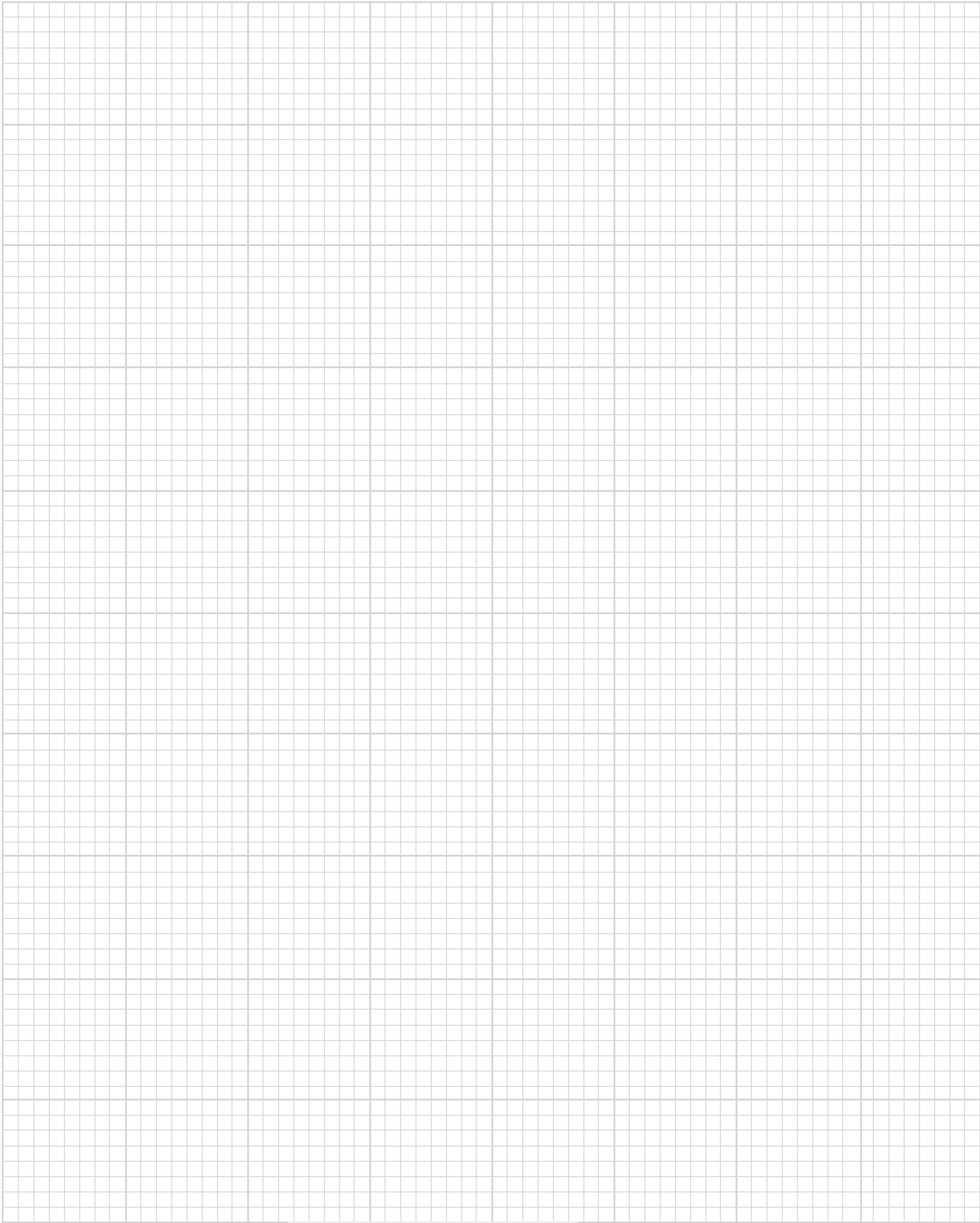
*To design a balloon rocket to launch the satellite that was built in the last activity. The goal is to get the satellite to go as far as possible.*

Now that you tried three different lengths of straw, build your final rocket – the one your team expects to go the farthest.

**Balloon Rocket Data Table 2**

Rocket Elements	New Trial after re-design
Balloon length (cm)	
Straw Length (cm)	
Distance traveled (cm)	

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