



Teacher's Guide for: **Balloon Rockets**

Note: All activities in this document should be performed with adult supervision. Likewise, common sense and care are essential to the conduct of any and all activities, whether described in this document or otherwise. Parents or guardians should supervise children. Rock-it Science assumes no responsibility for any injuries or damages arising from any activities.

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Title Page of Video

(Numbers in the text are **time codes**, so you can refer back to the video.)

[00:03;09]

Balloon Rockets
filmed July, 2010

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Releases have been obtained for all students who appear in this video, but their images should not be used publicly unless their nametags are rendered unreadable and their names are bleeped from the audio track.

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Intro Quick Recap

Lesson Intro: Balloon Sounds

- When you inflate a balloon and let the air out, it makes a sound.
- If you cut off the rounded end of the balloon stem, does it make a different sound?



Experiment Quick Recap

Experiment: Launch Balloon Rockets

- Students each get a rocket balloon and a balloon pump and practice launching the balloon.



Equipment List: "*Balloon Rockets*"

Items needed for Instructor:

- 11" Round Balloon
- Scissors
- Balloon Pump
- Rolling Cart for supplies

Items needed for Students:

Consumables (per student):

- Rocket Balloon
(plus extras, because they break easily)

Other:

- Balloon Pump

Prep Work:

- None.

Story Quick Recap



Part 1:

- Jack and Jill have a herd of purple elephants.
- They're bringing chocolate to Poor Town.
- Each elephant carries a one-thousand-pound block of chocolate.
- Jill is steering the elephant, with Jack along for the ride.
- Each bar of chocolate is worth ten thousand dollars, so Evil Mister Fred wants to steal them.
- He flies over on his cloud with his minions.
- He gives the minions fishing line and hooks to snag the chocolate bars.
- One minion yanks on the line too soon, and it flies up and snags Evil Mister Fred's hat. He pulls it off, revealing Evil Mister Fred's bushy hair.
- The other minions manage to snag a lot of the chocolate bars.

Story Quick Recap



Ending:

- Jack and Jill call the Acme Store of Everything and order a compressor bird.
- The bird goes to one of the elephants that's no longer carrying a chocolate bar, sticks its beak in his trunk, and inflates him
- When the bird lets him go, the elephant starts zooming through the air backwards.
- Before long, several elephants are zooming all over the place.
- One of the elephants that's almost out of air starts flying really fast. He bumps into Evil Mister Fred's cloud and knocks off the chocolate bars, which the other elephants get.
- Evil Mister Fred tells the minions to pop the elephant that's bumping against his cloud.
- Before they can do that, the elephant hits the cloud so hard, he knocks it all the way to the moon.

Transcript: Introduction

[NOTE: This lesson was presented in conjunction with *Water Bottle Rockets*; however this DVD only contains the *Balloon Rockets* section of the lesson, because *Water Bottle Rockets* was previously taped for a separate DVD. Also, there were three students for whom *Rock-it Science* was unable to obtain video releases, and their images have been cut from the video, except where only the back of their head appears.]

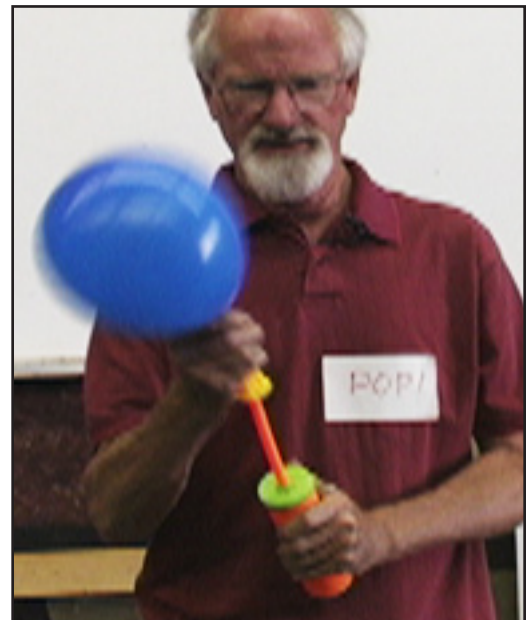
[01:00:11;02] If you blow up a balloon and let it go, it makes a sound, okay? Yeah. Ordinarily when you blow up a balloon, it's got a rolled-up edge on it so it doesn't fall out of your mouth when you try to blow on it. We're going to cut that part off and make it so there's no rolled-up edge. Do you remember the sound it made just at the first test? Okay, we're going to see if it makes the same sound after I cut off the rolled-up edge. Will it make a different sound or not? We'll find out. That's why we do experiments.



Cutting off end of balloon.

[Cuts off end of balloon, inflates it, and then lets the air out while still holding onto it.] Okay, here we go. [Student: It's a higher pitch!] A higher pitch.

Now, if I let go of this after I blow it up . . . [inflates balloon again] Okay, now it's a balloon rocket of sorts. [Releases balloon and it flies around as the air escapes.] Now, if we made the balloon really heavy, would it fly farther? [Students: No.] No? If we made it lighter, would it fly further? [Students: Yes.] Okay. Well, we're going to do experiments with things that fly. But first, we need a crazy story.



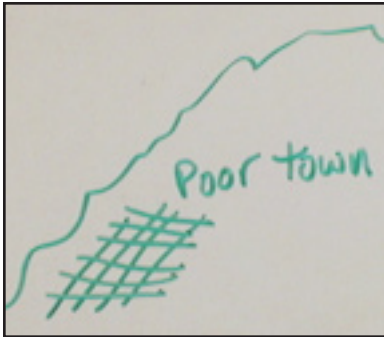
Inflating the balloon with a balloon pump.

Story: "The Elephants and the Chocolate Bars"

[01:02:18;15] Once upon a time, there was a whole herd of purple elephants. And elephants can talk to each other. Elephants have long trunks and really big ears, so they can hear each other from a long, long ways off. There's an elephant. And here's a bunch more elephants. These guys are smaller because they're far away. And the elephants are going to go and help Jack and Jill. They're going to carry candy bars over the mountains for the poor people. They're chocolate bars. They're a thousand pounds each. Chocolate bars. And they have to carry them through the jungles, over the mountains, through the woods, over to a village over here. This is Poor Town. The people in Poor Town never tasted



Elephants carrying chocolate bars.



chocolate before, and Jack and Jill are going to bring them chocolate bars. Lots of chocolate bars.

Let's see, let's put Jack up here. And let's put Jill over here. She's got to steer the elephant. And there's Jill's hair being trampled. And she's got some ropes down to the elephant so she can steer the elephant. Jack's just going along for the ride. And every elephant is carrying a thousand pounds of pure chocolate that they're going to give to the people in Poor Town.

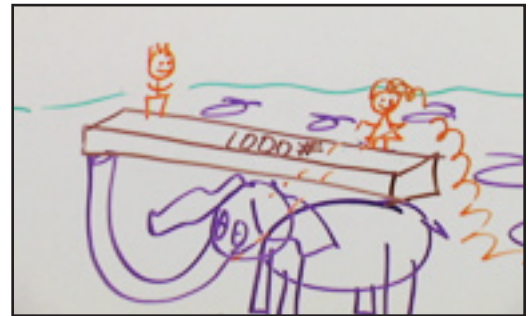
Well, chocolate of this quality is worth ten thousand dollars for each one. And Evil Mister Fred wants to steal their chocolate. And he's flying overhead in his cloud. And he's got his minions out there, and he's given them fishing line with hooks on it so they can snag the candy bars and take them away from Jack and Jill. So lots of hooks hanging down like this. And Evil Mister Fred said, "Yeah, we're just going to bring my cloud in, swoop in low, snag their candybars, pull them up to the cloud, and I can take them off and sell them on the black market for candy bars and get filthy rich. And do all kinds of evil stuff."

So he comes down low and gets to the first set of elephants, and they've got a whole bunch of candy bars on their backs. And he says, "Okay, minions, when your hook gets right next to a candy bar, pull up hard." So the minions say, "Okay, boss!" And they come in low like this, and one of the minions pulls up hard before he gets to the candy bar. And the hook shoots through the air, flies over the top of the cloud, and gets stuck in Evil Mister Fred's hat. So now he's got a hook stuck in his hat. And Evil Mister Fred said, "No, no, no! Don't pull until after you get stuck on a candy bar!" And the minion says, "Okay." So he pulls again, and yanks off Evil Mister Fred's hat.

I wonder what he looks like without a hat. Should he have lots of hair? He's got curly hair. [Student: That's what the hat is for.] Yeah, it holds all the curly hair in. Like that.

And Jack and Jill saw this going on and they said, "Uh oh, we're in trouble! He's going to steal all of our candy bars. We've got to do something fast to stop him."

If you were Jack and Jill, what would you do to stop the Evil Mister Fred?



Jill is steering the elephant.



Evil Mister Fred and minions with hooks.



Evil Mister Fred's curly hair.

Imagination and Brainstorming Time

[01:06:50;21] *[Students make suggestions]* (THERE ARE NO WRONG ANSWERS! Whatever they say, you should reply: "That's a good idea," "They might do that," etc. After brainstorming, proceed with the experiments, then finish the story.)

We'll leave this To Be Continued . . .

Experiment

Experiment: Shoot Balloon Rockets

[01:07:23;11] You don't need goggles for this one. Okay, walk this way. *[Leads students out to parking lot, where they each receive a rocket balloon and a balloon pump, and they experiment inflating and releasing the balloons. At the end of the experiment, students pick up the used balloons so the birds don't eat them.]*



End of Story

*** DO NOT *** present this part of the lesson until after the experiments!

[01:12:49;15] So Jack and Jill are trying to deliver high-quality chocolate to the people in Poor Town. And Evil Mister Fred has given his minions fish hooks on lines to try and snag their chocolate bars. And they've been snagging some of them. And Jack and Jill said, "Oh, no! We've got to stop that Evil Mister Fred!"



The Compressor Bird.

Well, there's some elephants out there with no chocolate bars because they snagged them. And Jack and Jill said, "What shall we do?" And they said, "Ah! I have an idea!" They called the Acme Store of Everything and they ordered a compressor bird. And the compressor bird flies through the air, and he can blow out high-pressure air through his beak. What do you think he's going to do?

He flew up to one of the elephants that didn't have a chocolate bar, put his beak right into the trunk of the elephant, and filled the elephant full of air. So now, you have this elephant flying backwards through the air like that, after the compressor bird lets him go. So these elephants are going pshooo, pshooo, pshooo, pshooo -- and he got three or four elephants all flying around like crazy. And one of the elephants came right under Evil Mister Fred's cloud, and started shaking and hitting and bouncing against the cloud. Then the chocolate bars fell out of the cloud and landed on other elephants who grabbed them.

Now Evil Mister Fred's cloud is out of control. It's zooming this way, and it's zooming that way. And he's telling his minions, "Minions! Pop the elephant! Pop the elephant!" And the minions said, "Uh, do you think that's a good idea, boss?" And he said, "Yeah, pop it!" But before they could pop the elephant, the elephant zoomed -- you know how the [balloons] go really fast right at the very end? Yeah, the elephant zoomed really fast and shot the cloud all the way up to the moon. And they all lived happily ever after, except Evil Mister Fred. [Students: And his minions.]



Inflated elephant flying all around.

End of Lesson