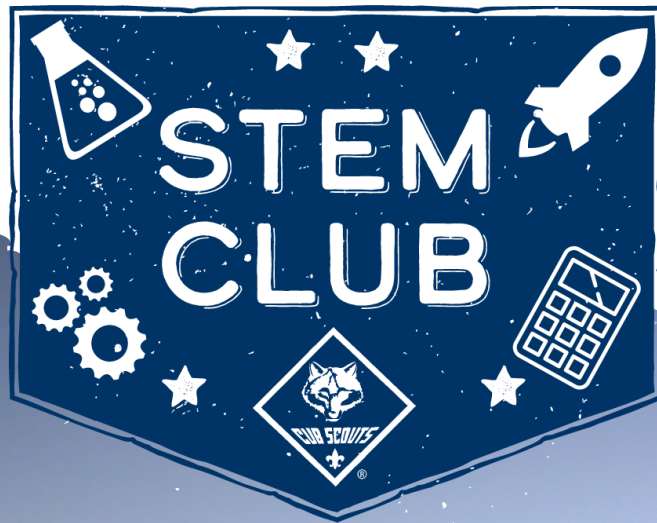


# LEADER

## CUB SCOUT MEETING GUIDE



### WEEK 3

### UP AND AWAY

# PRE-MEETING EMAIL

## **SEND 1 WEEK PRIOR + A REMINDER DAY OF:**

Pack (enter #) Families,

Our next meeting is (enter date) at (enter time). Please log-in using this Zoom Code (enter zoom code). I, (enter name), will be the meeting host. Our meeting theme is Up and Away and we will be doing a terminal velocity experiment. Please ensure scouts have the following materials ready to use during our meeting:

- a tall, clear tube or cylinder. (like a tennis ball tube)
- enough karo (corn) syrup to fill the tube
- two objects of same size, but different weights. (like a marble and a steel ball bearing)

Up and Away explores how fluid dynamics affect us every day. we will learn about terminal velocity and what it does. We will learn about an amazing animal that can take advantage of terminal velocity, and we will learn a bit about how pinewood derby cars take advantage of fluid dynamics to go fast.

See you at our meeting,

(Your Name)

# ZOOM MEETING TIPS

## WHEN SETTING UP YOUR MEETING:

- Prior to meeting:
  - Set up your meeting and email meeting code, only email to those in your Cub Scout Pack, set up a new meeting in Zoom for each meeting, so there is a new secure code
  - Pre-assign other adults to help as co-hosts, ask them to do specific tasks (monitor chat room, help present w/assigned slides)
  - Take a look at the slide deck and script before the meeting. Read through it once or twice and think about questions your den may ask. You know them best!
- In settings turn off:
  - Annotation (prevents Scouts from writing on screen)
- At beginning of meeting
  - Mute everyone and select "do not let participants unmute themselves"
  - Make additional adults co-hosts
  - Give scouts basic chat courtesy rules: Use it only for questions and on topic conversation. Don't type your response over and over - this makes it hard to see what your friends are saying!
  - You can keep the chat open, but likely you will want to close the chat to "host only", the Scouts tend to spam the chat

# MEETING SPECIFIC RESOURCES

Squirrel Obstacle Course (squirrels and terminal velocity):  
[https://www.youtube.com/watch?v=hFZFjoX2cGg&ab\\_channel=MarkRober](https://www.youtube.com/watch?v=hFZFjoX2cGg&ab_channel=MarkRober)

Pinewood Derby science: [https://www.youtube.com/watch?v=-RjltO51ykY&ab\\_channel=MarkRober](https://www.youtube.com/watch?v=-RjltO51ykY&ab_channel=MarkRober)

# SLIDE DECK SCRIPT

## **SLIDE 1**

Welcome to our Cub Scout Meeting! We will start at (enter time). This week, we will be highlighting the Up and Away Cub Scout NOVA Award. NOVA Awards are something fun that Cub Scouts can earn by studying various fields of STEM. STEM stands for Science, Technology, Engineering and Math. Each week we will focus on something new.

We will not be completing the NOVA awards with these meetings, they are meant to be a fun introduction!

## **SLIDE 2**

Alright, now let's get started with this week's focus, Up and Away. Up and Away explores how fluid dynamics affects us every day. We will learn about terminal velocity and what it is. We will do an experiment that will show us terminal velocity in action, After we know a bit more about terminal velocity and how it works, we will see how squirrels take advantage of fluid dynamics and terminal velocity. Then, we will learn a bit more about the science behind the pinewood derby cars and how they use fluid dynamics to go fast and win races. Let's get started.

## **SLIDE 3**

First of all, What is terminal velocity? First, the technical definition of terminal velocity is: The constant speed that a freely falling object reaches when the resistance of the medium through which it is falling prevents further acceleration. That's a pretty technical definition, but basically it means that the faster you move through something like air or water, the harder the air or water will push back against you. That push is called resistance. Resistance is why it is harder to move through water than air, and what pushes against your hand when you put it out the car window when you are driving somewhere.

# SLIDE DECK SCRIPT

## SLIDE 4

now, Terminal velocity is pretty cool, but it can also be kind of hard to understand. So here's a video to help explain what terminal velocity is, and how it works.

<Play Video>

## SLIDE 5

Now, let's get ready for our experiment. Let's take a minute to get all of our supplies. the supply list is on the screen now.

## SLIDE 6

Now we are going to do an experiment. Terminal velocity. If you did the STEM Club over Summer in 2020, you might remember this experiment. We're going to explore the differences of terminal velocity between air and syrup.

So, let's get started with the experiment.

\*Directions for experiment, read as needed\*

- Fill clear tube with karo syrup.
- take both the marble and ball bearing (or whatever you are using) and get them ready to drop into the syrup
- Drop both objects into the syrup at the SAME TIME and watch them sink to the bottom
- observe how the lighter object falls slower
  - This is because the force of gravity is greater on the larger object, so it can fall faster through the syrup before terminal velocity is reached

# SLIDE DECK SCRIPT

## Slide 7

Now that we know a bit more about terminal velocity, and have done an experiment and seen it in action, let's look at how squirrels take advantage of terminal velocity when they are jumping around in high trees, or from other things high up in the air. This is a clip from a video by a Youtuber named Mark Rober. He set up a squirrel obstacle course in his back yard, and he learned something really cool about squirrels and how they take advantage of terminal velocity. Check this out.

<Play Video>

That's so cool! If you want to watch the whole video about his squirrel obstacle course, and learn a bit more about how amazing squirrels are, you can find the video by getting an adult to help you and going to Youtube.com and searching "Mark Rober Squirrels."

## Slide 8

But we aren't squirrels. which means we can jump from any height and be ok. but we can take advantage of terminal velocity and fluid dynamics in other ways. Pinewood derby cars are a great example of taking advantage of fluid dynamics. the easier it is for a car to cut through the air, the faster it will can go. This is another video by Mark Rober talking about some of the science behind a pinewood derby car.

<Play Video>

Now, that video goes into all sorts of cool details about how to make a fast pinewood derby car. if you want to learn more about it, go to youtube.com with an adult and search "Mark Rober Pinewood Derby"

# SLIDE DECK SCRIPT

## **SLIDE 9**

That's all for today. Today we focused on Up and Away. Up and Away explores how fluid dynamics affects us every day. We learned about terminal velocity and what it is. We did an experiment that showed us terminal velocity in action, Then we learned how squirrels take advantage of fluid dynamics and terminal velocity every day to survive a fall from any height! Then, we learned a bit more about the science behind the pinewood derby cars and how they use fluid dynamics to go fast and win races. There is a lot more to learn, especially about pinewood derby cars. If you are interested, remember to check out that youtube video with an adult by going to [youtube.com](https://www.youtube.com) and searching "Mark Rober Pinewood Derby."

See you next time!



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