



# **Aggie Grotto x BCI Spring Break '23**

Dream Team

# RIGGING

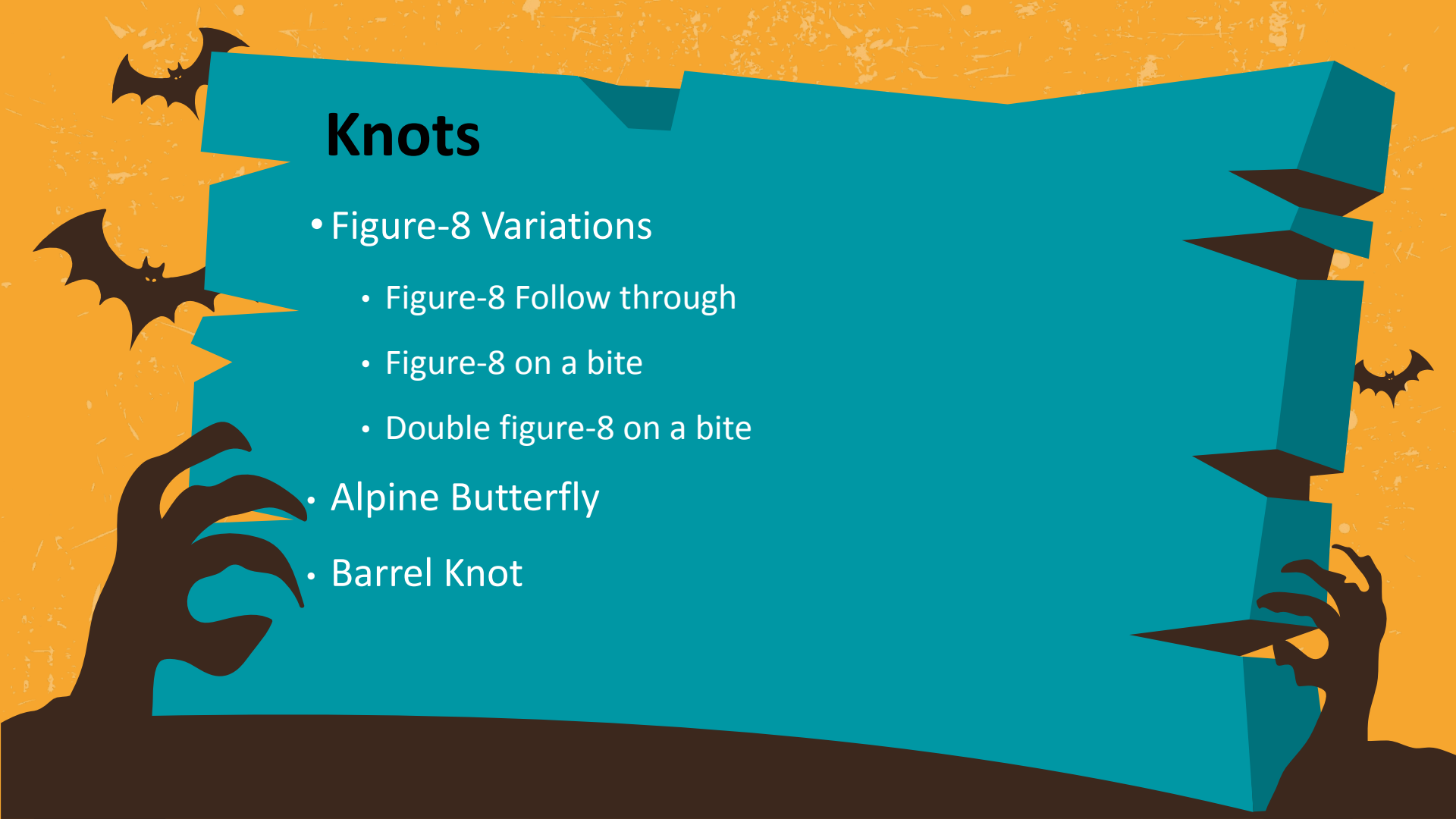
ALL THINGS KNOTS,  
BOLTS, AND SAFETY

Date



# Knots

- Figure-8 Variations
  - Figure-8 Follow through
  - Figure-8 on a bite
  - Double figure-8 on a bite
- Alpine Butterfly
- Barrel Knot





# Rigging Principles

## • Safety

- Pretty knots often make people more comfortable descending on your ropes. Go for a clean rig.
- Never rig with dirty ropes
- Having someone look over your rigging to ensure all knots were tied properly, carabiners are locked, and the best techniques were used for the situation
- Don't rig anything you are uncertain about or uncomfortable with. It's okay to not peach a pit.
- Rig up, not down. It's better to have a stronger set-up than needed.

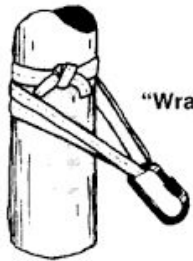


# Rigging Principles

- Responsibility
  - Other people will be using this rope to get in and out of the cave *safely*.
  - Highly important to focus on the task at hand and be serious.
  - Double-check your own work.
  - Have others double check your work as well.

# Rigging Principles

- Natural Anchors
  - Trees, Bushes, Shrubs, Rocks
    - Wrap 3 pull 2 method
    - Webbing, water knot, 2 locking carabiners (opposite, opposing), rope, figure-8 on a bite



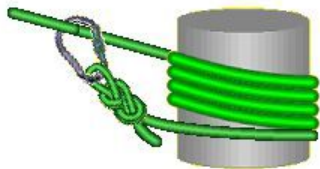
"Wrap Three Pull Two" anchor







# Strength of Anchors



No Knot:  
Rope strength (**6,500 lb**)



Girth Hitch:  
 $2 \times 4,000 \text{ lb} \approx \mathbf{8,000 \text{ lb}}$



Tied:  
 $2 \times 4000 \text{ lb} \times \frac{2}{3} \approx \mathbf{5,300 \text{ lb}}$



Wrap 3 Pull 2:  
 $4 \times 4000 \text{ lb} \approx \mathbf{16,000 \text{ lb}}$



# Rigging Principles

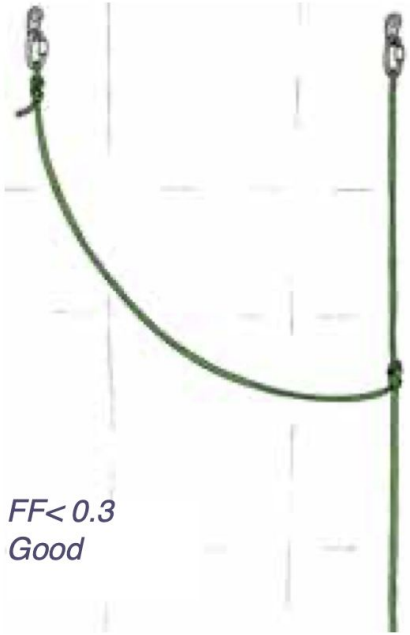
- Man-made Anchors
  - Bolts
    - Rope, figure-8 on a bite, locking carabiners (opposite, opposing)



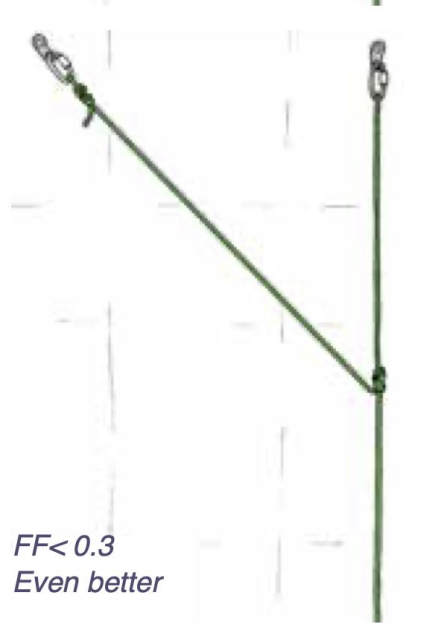
# Rigging Principles

- Primary Anchors
  - Weight-bearing
  - Can fail with minimal consequence in theory
- Secondary Anchors
  - Plan B knot
  - Failure will result in serious injury or death
  - Rigged with very minimal slack from primary anchor to avoid shock-loading
  - Ideal placement is level with the primary anchor at a distance of more than 30 cm

# Anchor Placement



$FF < 0.3$   
Good



$FF < 0.3$   
Even better



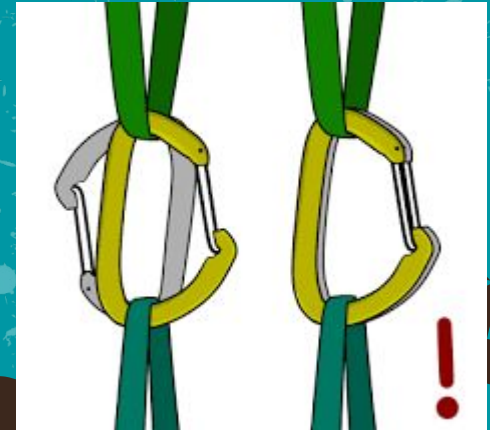
$FF 0.3$   
Safe



$FF > 1$   
Lethal

# Opposite Opposing Locking Carabiners

- Decreases likelihood of knot falling out of carabiners
  - This is a good thing
- Looks secure and leaves people feeling confident in your rigging

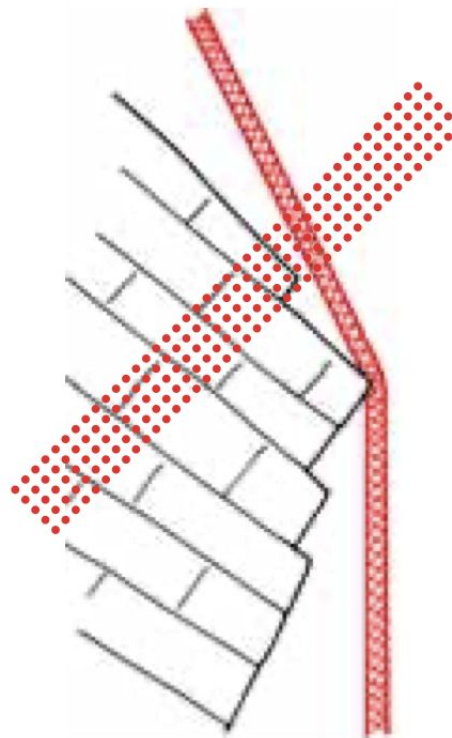


# Rigging Principles

- Rubbing Points
  - Can cut the rope
  - Damage the rope
  - Shorten the lifespan of the rope



*Slight*

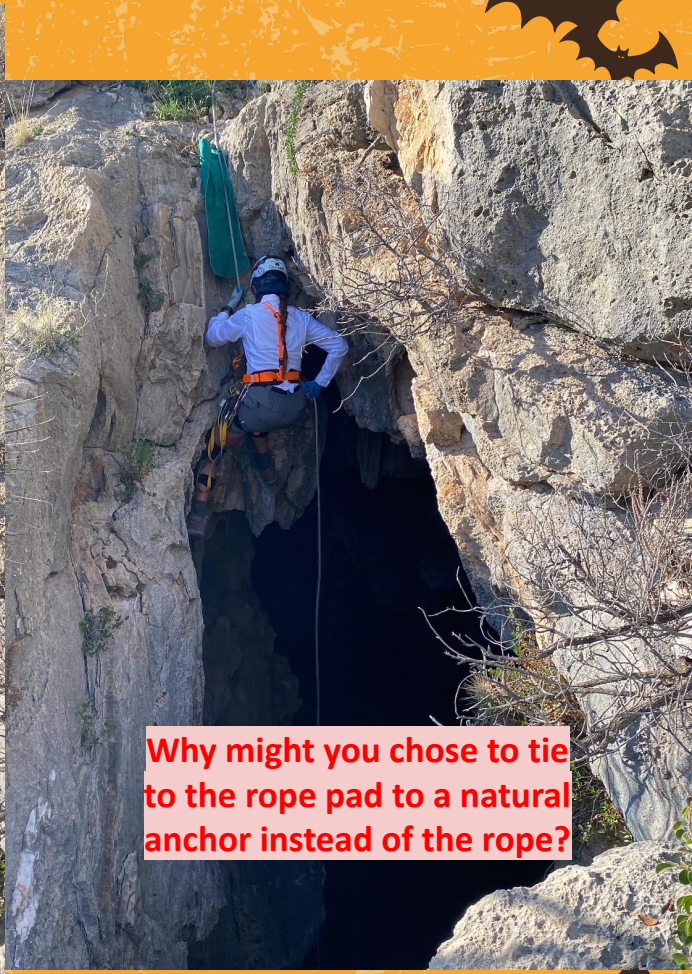


*Use a protector*

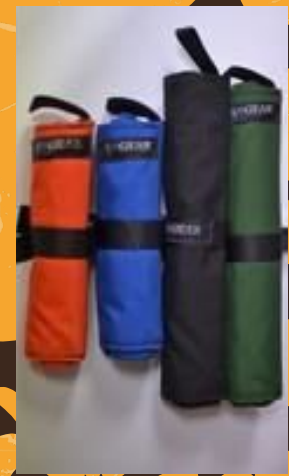




You sometimes have to place the rope on the pad if it is not tied to the rope.

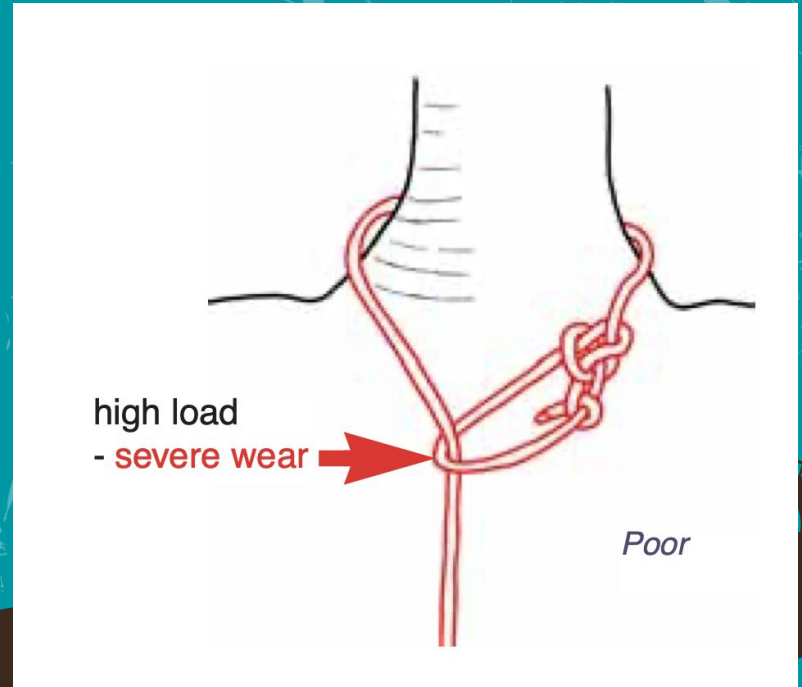
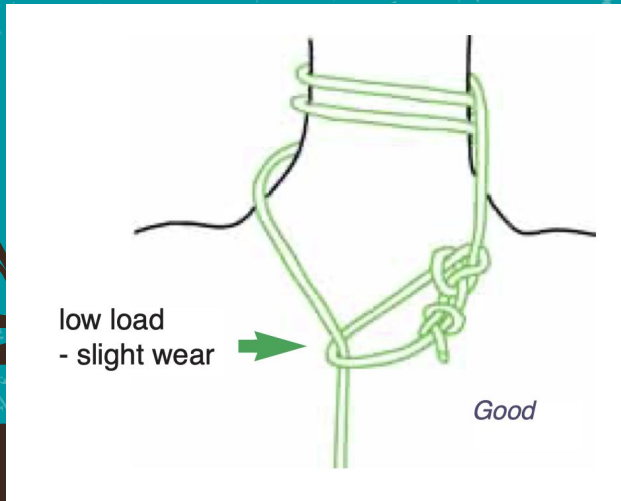


Why might you chose to tie to the rope pad to a natural anchor instead of the rope?



# Figure-8 Follow Through Uses

- Saves on carabiners!
  - Important in expedition style caving
- No-tension rigging style

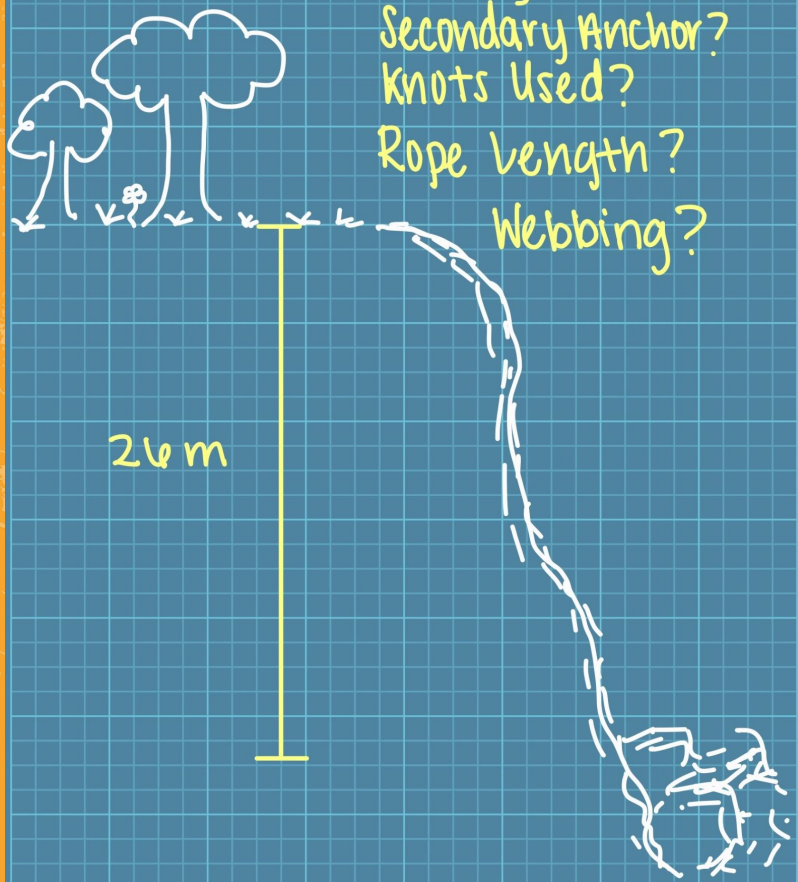




# SCENARIOS

WHAT WOULD YOU DO?

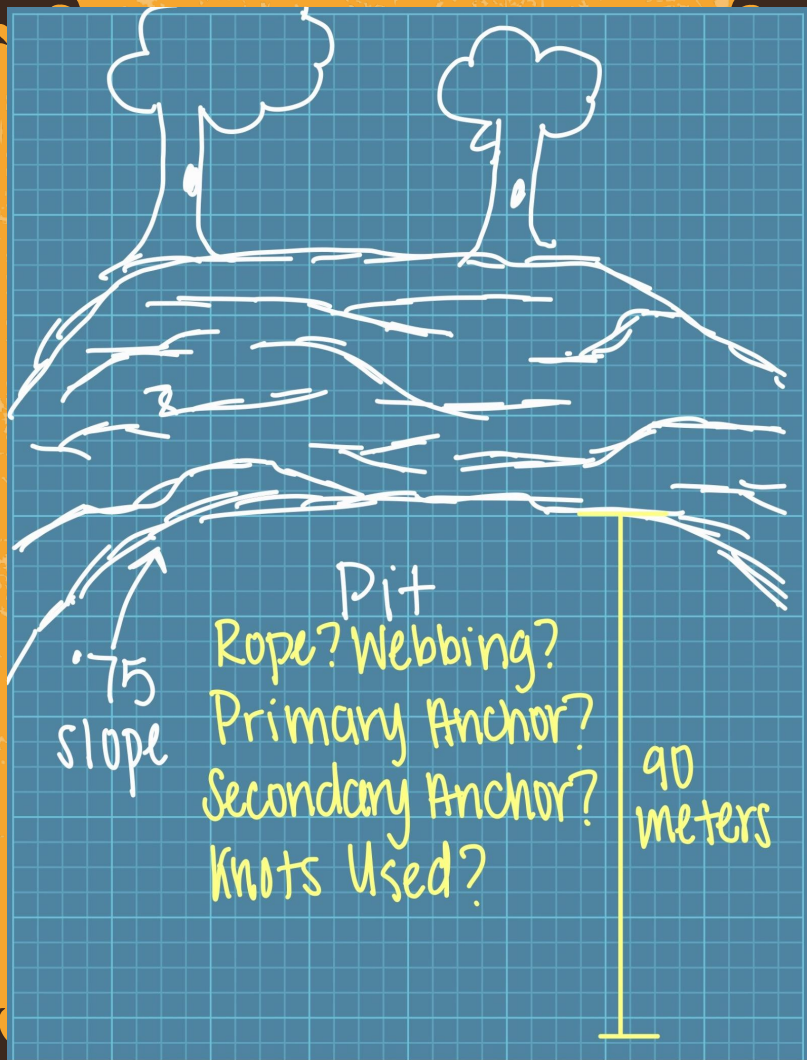




Primary Anchor?  
Secondary Anchor?  
Knots Used?  
Rope Length?  
Webbing?

26m









# Drivers

2 cars

1 high clearance



# Tents

The less amount the better

# Group Meals?

18 meals

7 Dinners

6 Lunches

6 Breakfasts

The background features a repeating pattern of black bat silhouettes with spread wings, set against a vibrant yellow and orange gradient. The gradient has a subtle, grainy texture, and the bats are scattered across the frame, creating a festive Halloween atmosphere.

# **Knot Check-Off**



# Saturday Leave Time

Do we want to leave earlier?



# Rules

Because Sometimes We Have 2





# Rules

- Substance Use
  - As long as you do not make it someone else's problem I do not care
- Wellness Checks
  - Will occur before every cave
  - Josie please help me remember
  - Be honest and truthful or it becomes a safety issue
- Bats
  - We will treat them with the utmost respect.
  - Do not handle them. Exceptions: 1. You have your rabies shot. 2. You have been authorized by an adult to do so.



# Rules

- Driving
  - Don't make other people uncomfortable.
  - Getting there sooner is cool but getting there safe is cooler.
- Timelines
  - Be punctual. It's disrespectful to waste other peoples' time.
- Working w/ Adults
  - Remember your manners.
  - Follow their instructions.
  - Don't be dumb.
  - Ask questions if you don't understand.

# Rules

- Safe Caving Practices
  - Safety is the top priority!
  - Don't touch speleothems or the cave with your bare hands.
  - 3 sources of light will be brought into the cave every single time.
  - We will decon every.single.night.
  - Never separate from the group. You should be able to see the headlight of the person in front of and behind you
  - Communicate if you are feeling unwell to your group members
  - Make sure you are hydrating and have cave snacks packed
  - People with longer hair will wear buffs. No exceptions.
  - When rigging or exploring virgin passage always do things the safest way possible even if it takes longer.
  - When exploring virgin passage make sure you can get back up the obstacle you went down. Mark you route via flagging or rope.