WINTER GAMES

STEM

Hockey

Carly and Adam

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Hockey

NGSS Standards

Grades K-2

K-2-ETS1-2 Engineering Design

Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-1 Engineering Design

Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.

K-PS2-1 Motion and Stability: Forces and Interactions

Plan and conduct an investigation to compare the effects of different strengths or different directions of pushes and pulls on the motion of an object.

Grades 3-5

3-5-ETS1-2 Engineering Design

Generate and compare multiple solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-PS2-2 Motion and Stability: Forces and Interactions

Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

Hockey

Teacher Instructions

Materials:

Hockey Net Materials

- 7 bendy straws
- 2 feet of tape
- 3 yards of yarn
- scissors

Hockey Stick Materials

- 2 popsicle sticks
- 1 foot of tape
- scissors

Additional Materials

- aluminum foil
- medium binder clips
- washers, nuts, or pennies

Instructions:

- Watch some of the included YouTube videos with your students to help develop background knowledge about hockey.
- Students can also read the included article and complete the comprehension questions.
- After learning about hockey students will construct a hockey net and stick using only the materials listed above.
- Have students read the task instructions or read them aloud.
- Give students the materials listed above. Students will have 40 minutes to construct their hockey net and stick.
- The net should be able to stand on its own and the puck should not be able to pass through the net after scoring a goal.
- The puck should be prepared ahead of time. Make the puck by wrapping 1 washer, nut, or penny in a small piece of aluminum foil so that it forms a small flat hockey puck shape.

Hockey

Teacher Instructions (CONTINUED)

- At the end of the 40 minute time limit students will test their hockey gear by using the stick to shoot the puck into the goal.
- The challenge will be completed successfully if the puck goes in the goal without passing all the way through the net.
- If time allows students can continue to test their designs by playing a modified game of hockey.

Hockey Game Instructions:

- -he players on each team will take turns shooting the puck into the goal that they created.
- Depending on the amount of time that you have to play each team can shoot 10-30 times. You can even play multiple rounds.
- The team that makes the most goals will be declared the winner of the game.
- In order for the game to be fair each team should be shooting from the same distance. Measure approximately 2-4 feet between the shooting line and the goal. The farther the distance the more challenging the game will be. Mark the starting line and the goal line with tape.
- To add more of a challenge print the goalie and place him in front of each team's goal. Use a binder clip to help him stand up.

Hockey

Teacher Instructions (CONTINUED)

Resources:

Basic Hockey Rules Explained (2:57 min)
https://www.youtube.com/watch?v=Y5zlRvfXUA&pbjreload=10

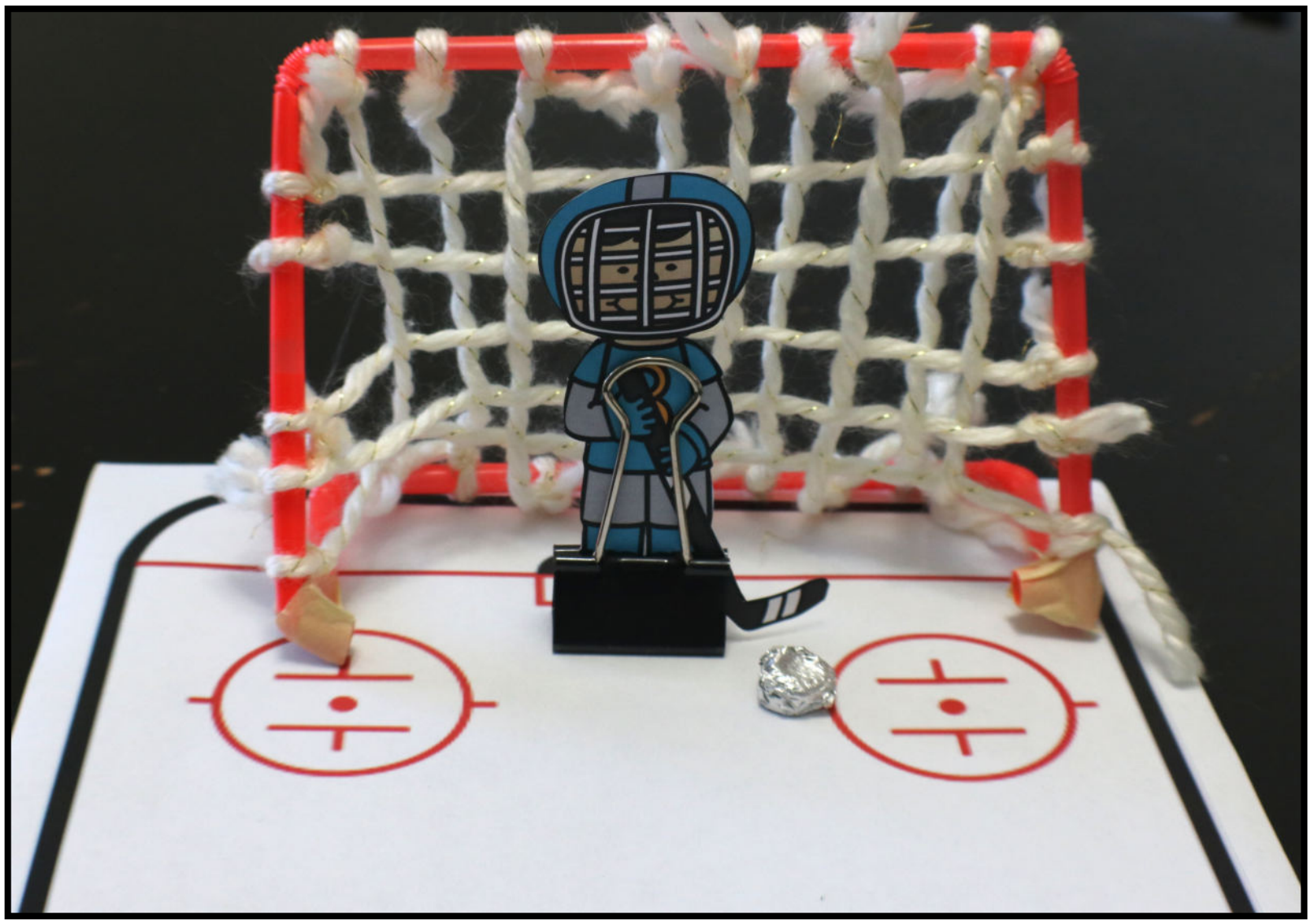
The Science of Hockey (2:26 min)
https://www.youtube.com/watch?v=YaX0HvefZ08

Science of the Winter Olympics: Hockey (4:18 min)
https://www.youtube.com/watch?v=NF8VlIx4Vaw

Hockey

Teacher Instructions

Example:

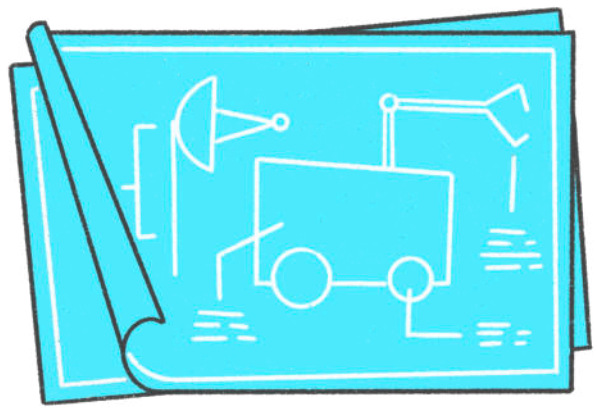


THE ENGINEERING DESIGN PROCESS

ASK

IMAGINE

PLAN



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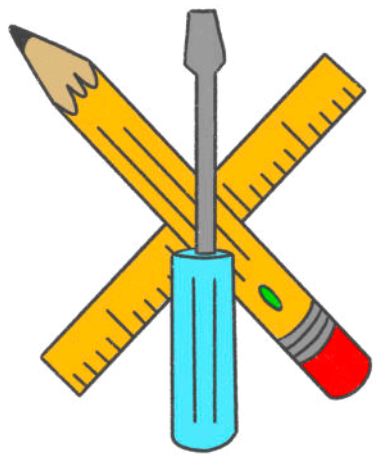
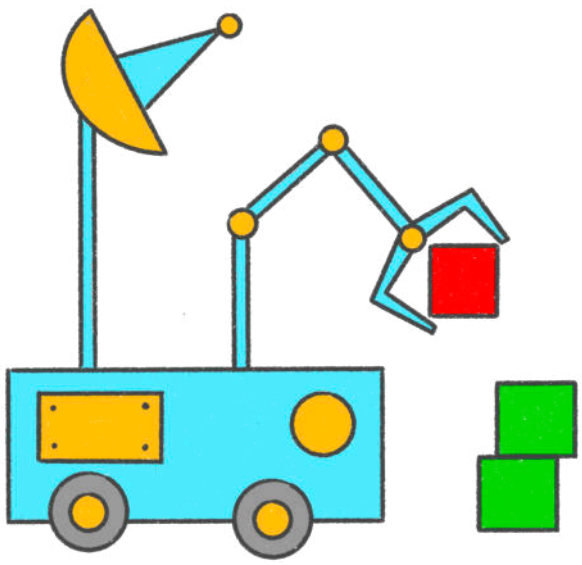


EXPERIMENT



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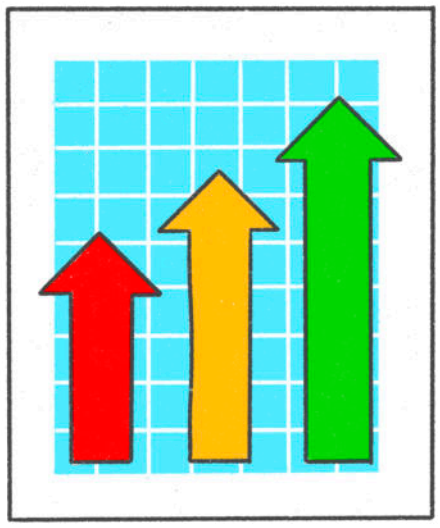
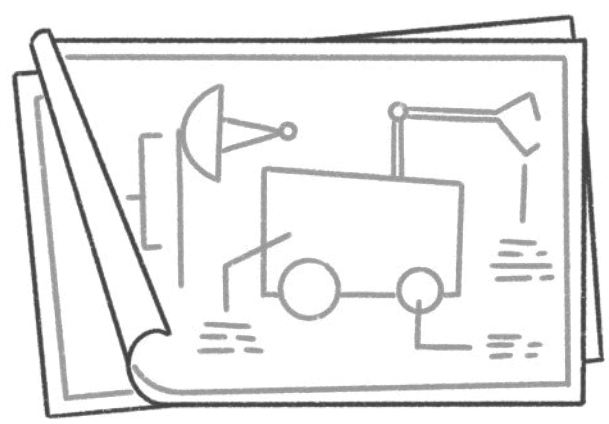


THE ENGINEERING DESIGN PROCESS

ASK

IMAGINE

PLAN



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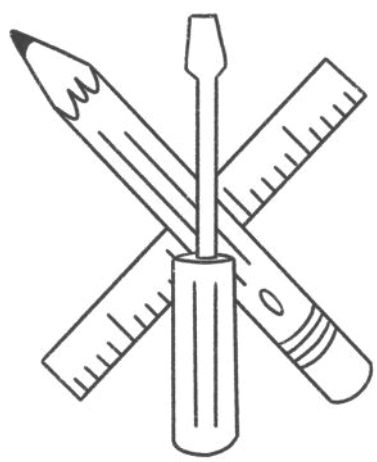

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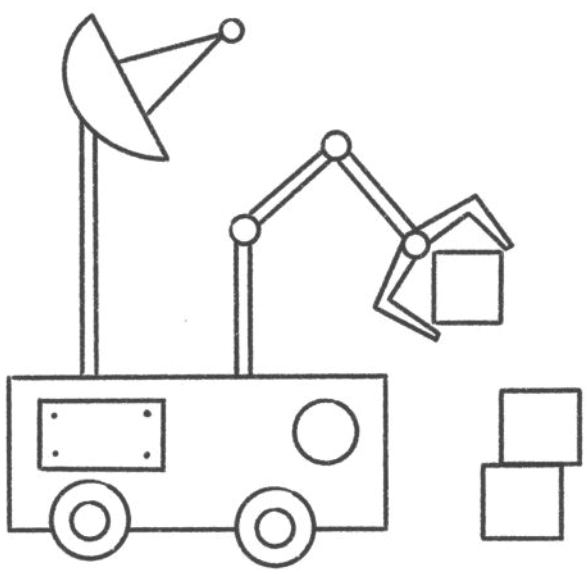

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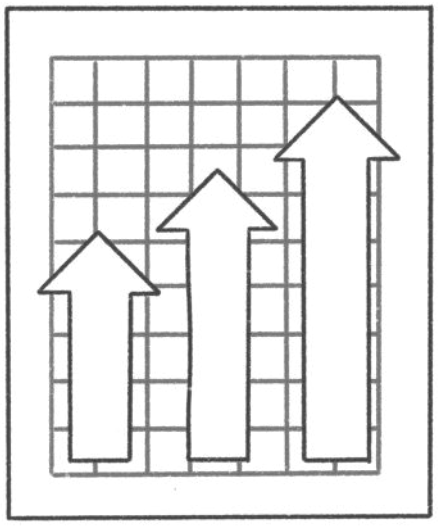
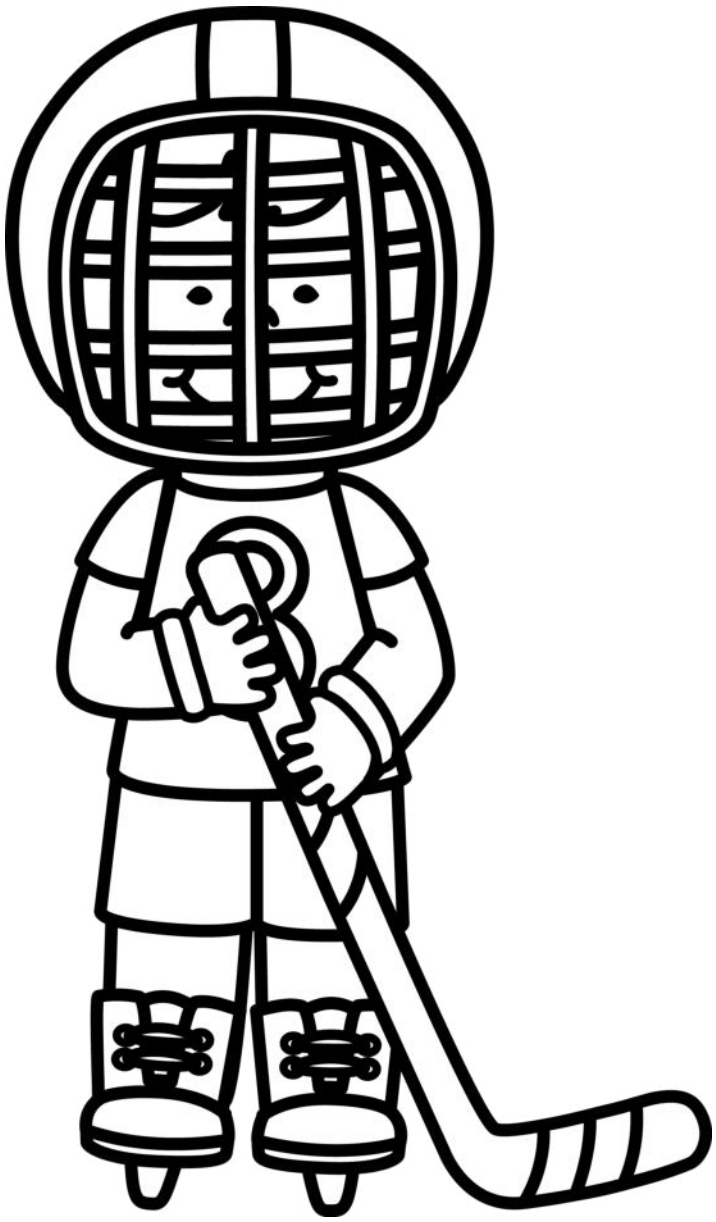
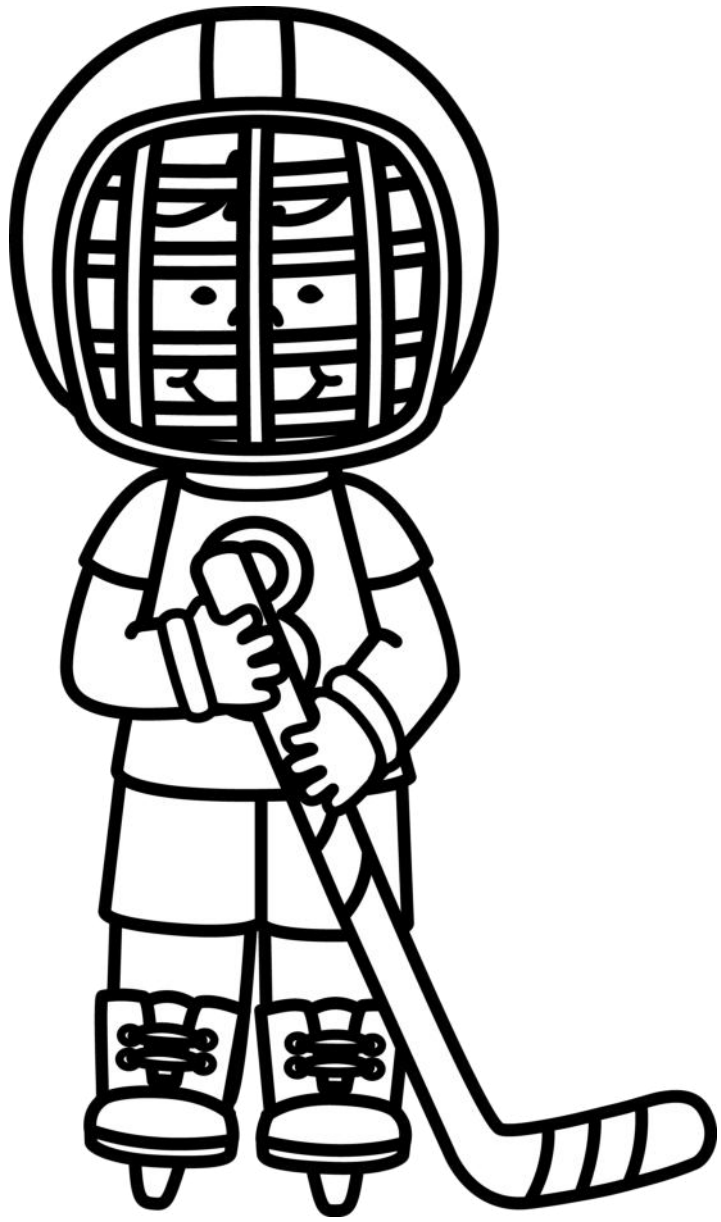
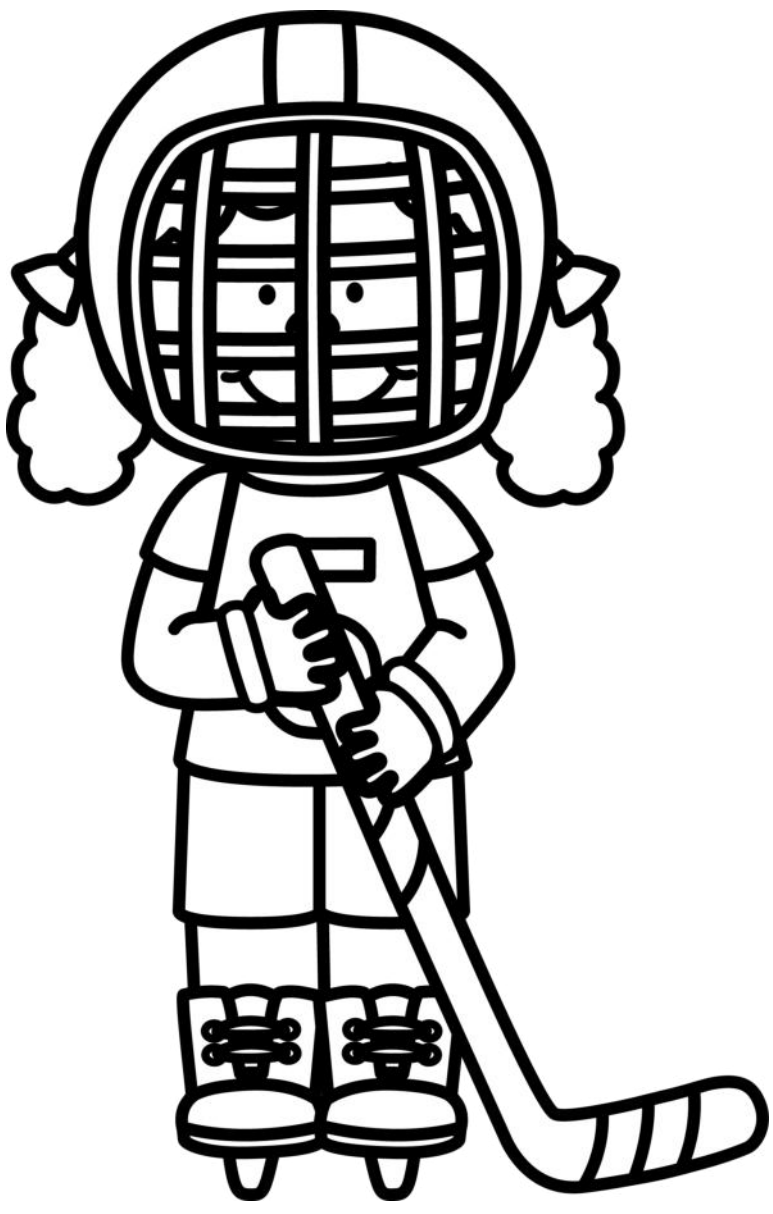
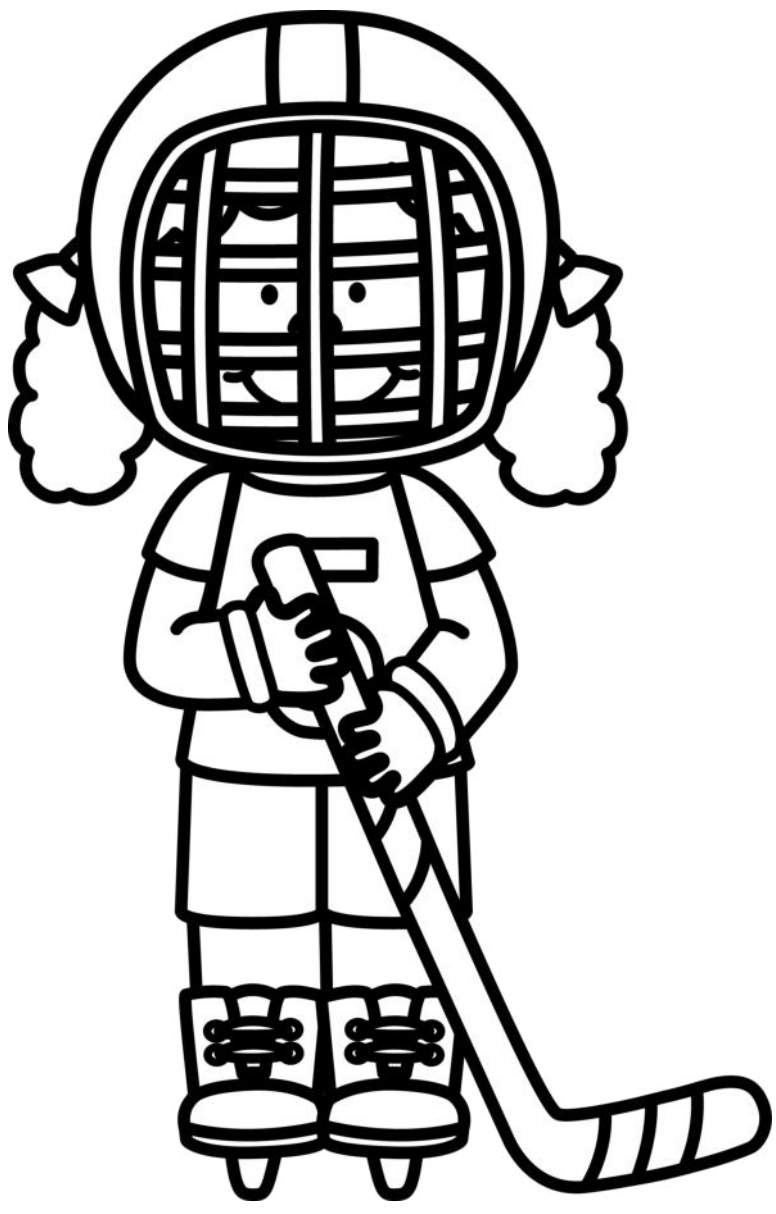
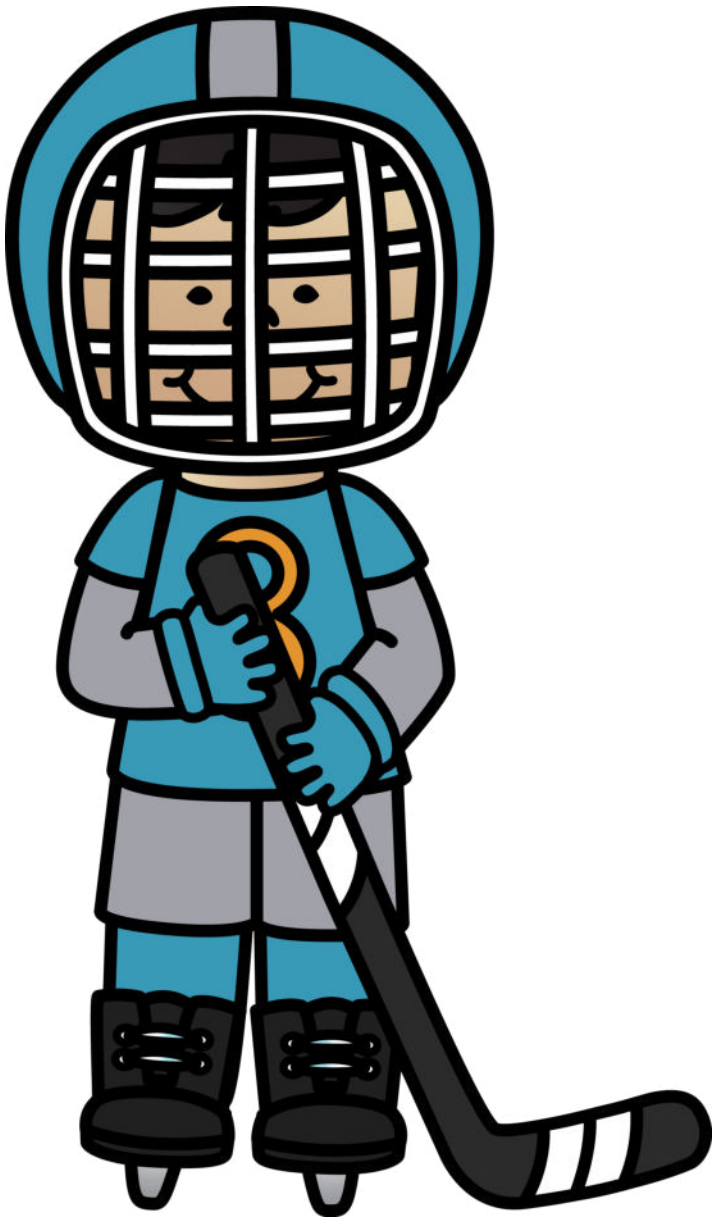


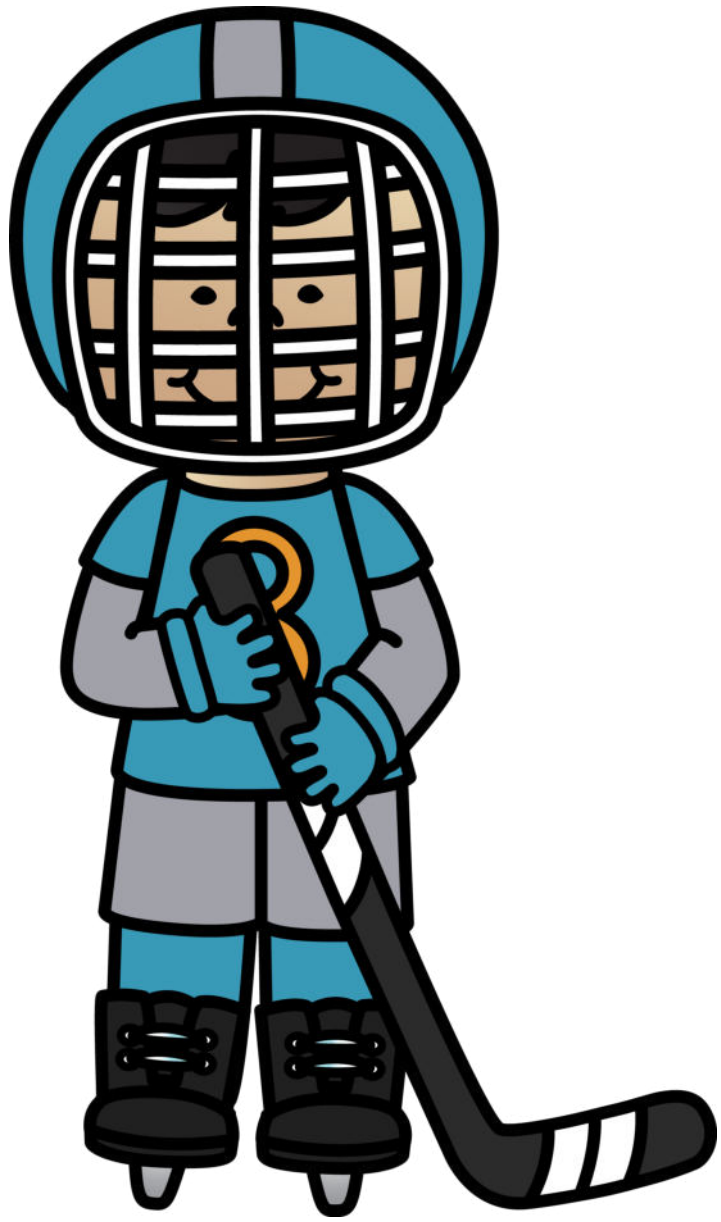












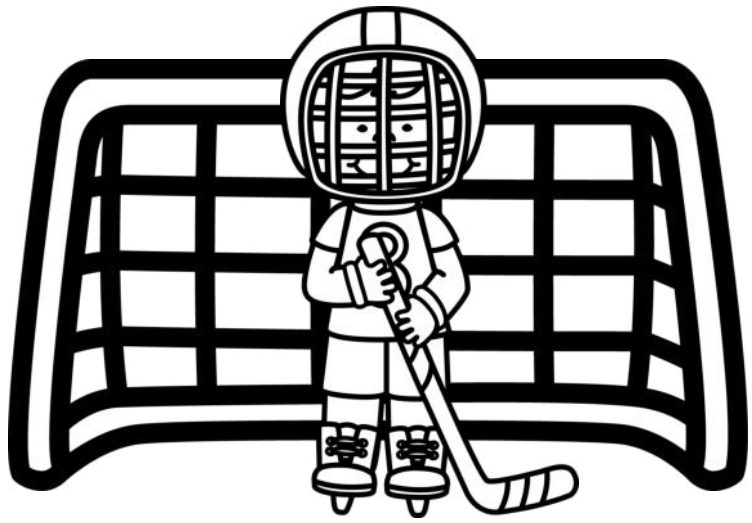
Name:_____

HOCKEY SCORE SHEET

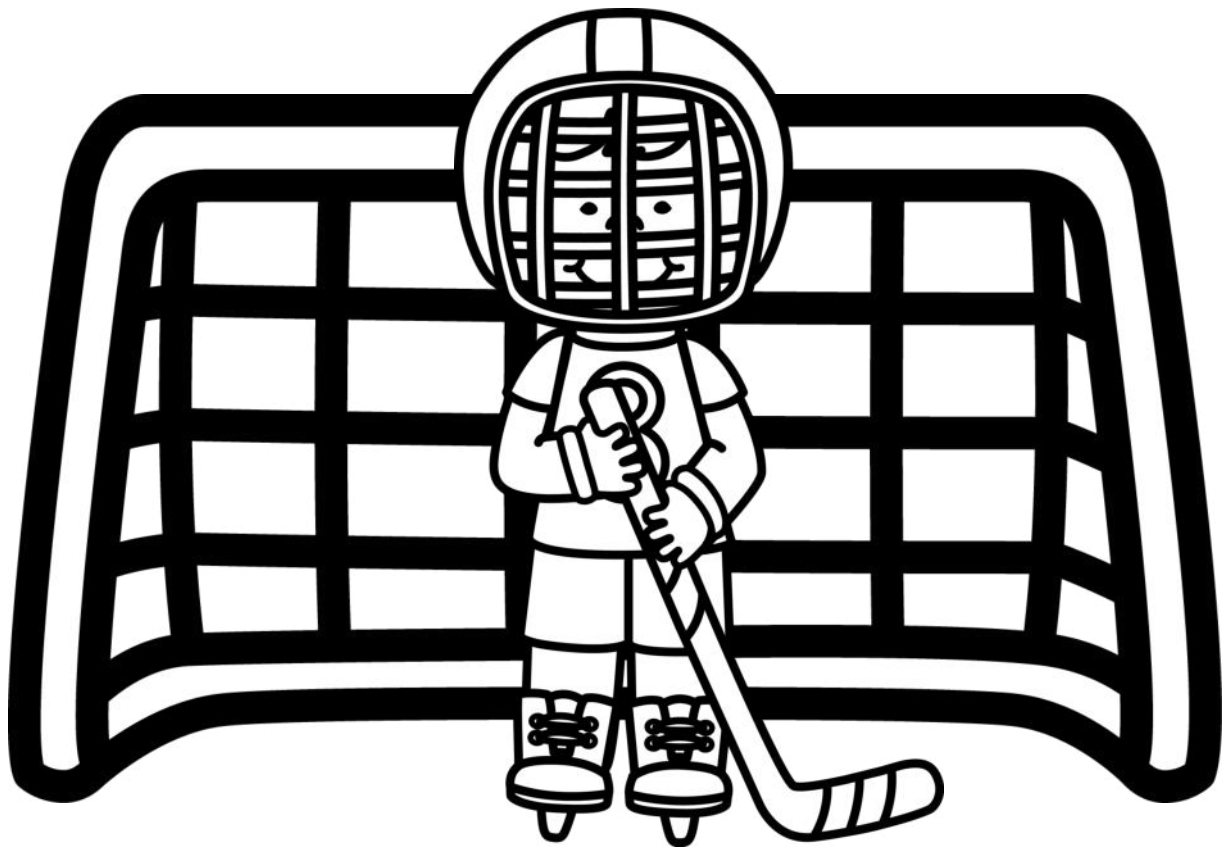
Team	Points

Name:_____

HOCKEY SCORE SHEET



Round	Points
Total	



_____'S

HOCKEY STEM JOURNAL

Dear Students,

You are helping prepare for a winter competition. Part of your job involves making goals and sticks for the hockey players. In order to create your hockey gear you may use any of the materials listed below. Your goal must include a net. When a goal is scored the hockey puck should not pass all the way through the net.

You will have 10 minutes to plan your design individually and 10 minutes to plan as a team. Your team will have 40 minutes to construct your hockey stick and net. At the end of the time limit you will test your gear by playing a game of hockey against the other teams. Good luck!

Hockey Goal Materials:

7 bendy straws 2 feet of tape scissors

3 yards of yarn

Hockey Stick Materials:

2 popsicle sticks scissors 1 foot of tape

Name:_____

ASK

What is the problem you are trying to solve?

_____

IMAGINE

Imagine the best way to solve the problem on your own.
Sketch out your design and brainstorm a list of ideas.

Ideas

_____

_____

_____

Sketch Space

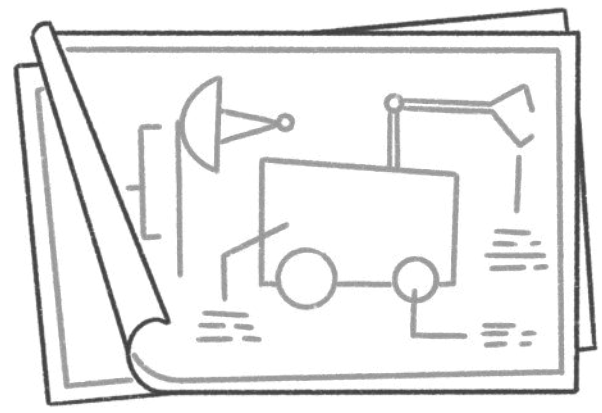
Name:_____

PLAN

With your group, sketch out your plan to solve the problem.

Ideas

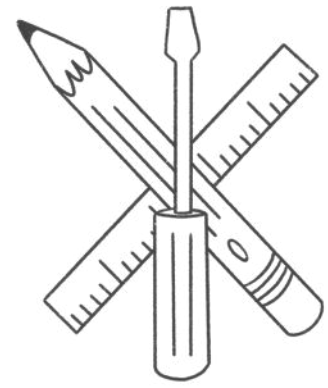
Sketch Space



Name:_____

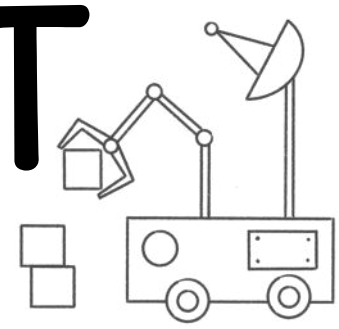
CREATE

Build your Prototype.



EXPERIMENT

Test your Design. Take Notes.



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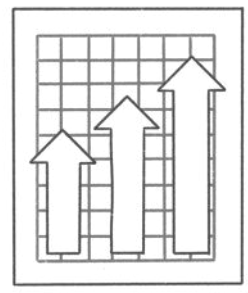
IMPROVE

What could you do to improve your design?



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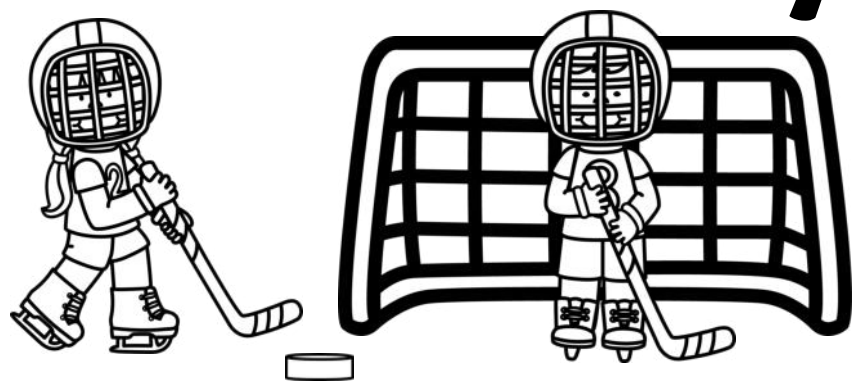
Sketch Space

What is **Hockey**?



Hockey first became an Olympic sport in 1920. The first games for women occurred in 1998. The Olympic Games follow the rules of the International Ice Hockey Federation (IIHF), which differ from the rules of the National Hockey League (NHL). One difference has to do with the size of the ice rink. The NHL rink is narrower than the international rink size.

To play hockey two teams compete against each other, and each team has six players on the ice at a time. The hockey positions include three forwards, two defensemen, and one goalie. The three forwards include a center, right wing, and a left wing. Even though only 6 players on each team are allowed on the ice at a time, the teams consist of twenty players. In total there are twelve forwards, six defense men, and two goalies. These players rotate on and off the ice throughout the game.

A game of hockey consists of three periods each lasting twenty minutes. The goal of the game is to shoot the hockey puck into the other team's net. At the end of the game the team with the most goals is the winner.

Name:_____

When did hockey become an Olympic sport?

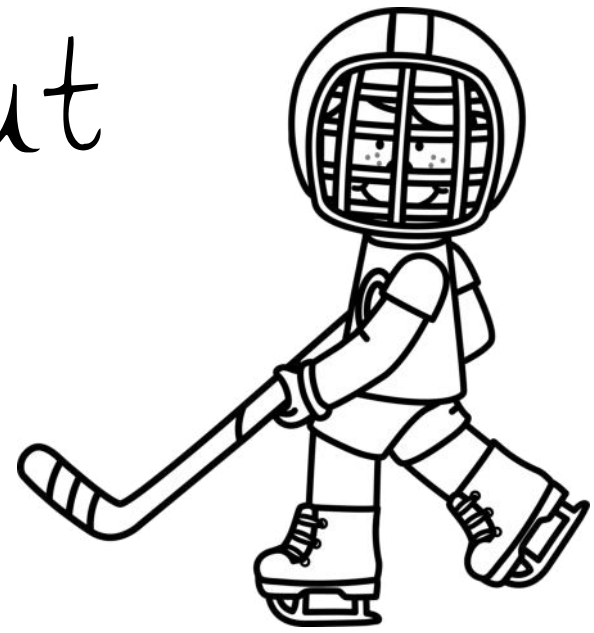
What year was women's hockey added to the Olympics?

How many total players are on a hockey team?

How many periods are in a hockey game?

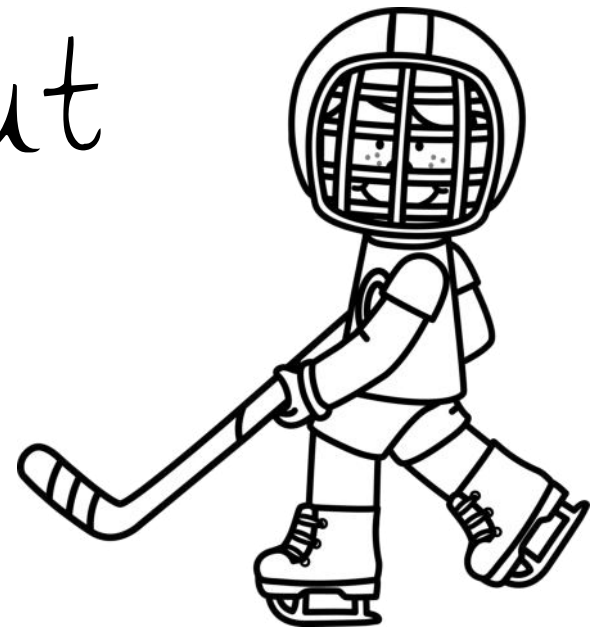
What I Know About

Hockey



What I Know About

Hockey



ABOUT US

Carly and Adam have been creating **STEM curriculum** for elementary students since 2015. In 2018, they created the **Elementary STEM Teachers Club Facebook Group** to bring like-minded educators together to collaborate around STEM topics.

As a result of the collaboration in the STEM Facebook group, they launched the **STEM Teacher Summit online conference** in June of 2020. Carly and Adam believe in the power of teacher collaboration. We Teach STEM Better Together! You can connect with Carly and Adam at **www.carlyandadam.com** as well as on **Facebook**, **Instagram**, and **Twitter**.

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