

6th - 8th Grade

TEACHER PLAYBOOK

INTRODUCTION

A visit to the Chick-fil-A College Football Hall of Fame is an amazing experience for fans of all ages. For students, however, the entertainment factor of a trip to the Hall can be enhanced by the opportunity to connect a beloved sport with classroom learning. Founded in 1951 by the National Football Foundation, the College Football Hall of Fame immortalizes the greatest of the amateur gridiron. 5.1 million people have coached or played the game and less than 1,300 are inductees into the Hall of Fame. The College Football Hall of Fame strives to use its position as a trusted authority within college football to educate, inspire, entertain, and connect audiences while honoring the people, traditions and passion of the game.

The goal of the curriculum contained in this Teacher Playbook is to provide educators with tools to create a unique learning experience for their students – because learning happens everywhere – not just in the classroom. The Teacher Playbook lessons integrate football and STEAM-based content in hands-on projects that allow students to meaningfully apply their skills and knowledge to real-world situations. Aligned with Georgia Standards of Excellence and national standards for science, technology, engineering, math and art, the lesson plans are flexibly designed to allow teachers to tailor the content to meet their learning objectives for their students.



CURRICULUM WRITERS

Lily Binford is a passionate science teacher and curriculum writer who strives to provide dynamic, experiential, place-based learning for students that focuses on solving real-world problems through investigation and innovation. Her three foundations of teaching emphasize building warm, mutually respectful relationships with students, asking rigorous questions, and making content relevant by connecting scientific concepts to everyday life. She strongly believes education should not be contained within the four walls of a traditional classroom but take place anywhere and everywhere, including informal learning experiences like field trips, outdoor explorations and meeting professionals in STEAM industries. Lily taught middle school in Dallas, Texas for six years and currently teaches 7th and 8th grade science at a public charter school in Glenwood Springs, Colorado where she takes students outdoors as much as possible. She holds a Master of STEM Education degree from Southern Methodist University and a Bachelor of Arts in English from the University of Texas at Austin. A native of Dallas, Lily lives in the Roaring Fork Valley of Colorado with her husband James and a Siberian Husky named Haze.

Sherry Dieterich is a computer science and mathematics Teacher at Braswell High School in Denton, Texas. Sherry strives to provide a safe environment in her classroom where students can grow mentally, emotionally and socially. Her goal as an educator is to create well-rounded students who are prepared for the world ahead of them, so they can achieve their highest potential and find their passions. Because Sherry believes that students learn and retain knowledge better with hands-on learning, she is an advocate for providing students with life experiences outside of the classroom. Sherry holds a Bachelor of Science degree in computer science with a minor in mathematics and a master's degree in education administration. A high school teacher for 15 years, she has written curriculum for Denton ISD and Big Thought. Sherry lives in Denton, Texas with her husband and Huey the cat.

Krissi Oden has more than 15 years of experience in art education guided by a philosophy that focuses on a Constructivist approach to teaching and learning. Krissi's goal as an educator is to empower others to celebrate their uniqueness, and to build upon their own experiences and cultures as they learn and grow. She believes it is important to identify and empower spaces such as the College Football Hall of Fame where students can apply concepts they have learned to real world examples, as well as deepen their understanding that learning happens everywhere – not just in the classroom. Krissi has taught art in middle school, high school and at the college level and holds two master's degrees, one in art history and museum education from the University of North Texas and a second in teaching in art education from Texas Woman's University. Currently, she is the Cultural Arts Manager for the City of Bedford, Texas. She lives in Denton, Texas with her husband, daughter, son and their two blue heelers.

Each lesson contains the following components:

- **Lesson Title**
- **Players** - Grade Levels.
- **Equipment** – Supplies required for the lesson as written.
- **Kickoff Question** – An overarching question which kickstarts learning and serves as connective tissue for the entirety of the lesson.
- **Pregame** – Establishing a foundation for learning. Intended to be completed prior to visiting the Hall of Fame, the Pregame provides background information and topics for classroom discussions to ignite student curiosity and prepare them for their explorations at the Hall of Fame and in the classroom.
- **First Half** – Assignments for students to complete as they explore the Hall of Fame, most frequently data collection or sketching. In order for students to absorb as much as possible during their Hall of Fame experience, most lesson activities take place before and after the field trip.
- **Second Half** – Where learning is solidified by connecting classroom content with real-world experiences at the Hall of Fame. Lesson projects challenge students to apply the knowledge and concepts from “Pregame” and “First Half”, utilizing data gathered on the field trip.
- **Extra Point** - Optional art activity or project based on concepts from the lesson.
- **Game Stats** – Fun fact related to the lesson theme.
- **Going Pro** – Information about a career connected to lesson content, including required education and/or training.
- **Standards** – Applicable Georgia Standards of Excellence (GSE) and national learning standards aligned with each lesson’s primary subject content.

TABLE OF CONTENTS

A Blimp’s Eye View (Art).....	6
A Picture is Worth a Thousand Words (Art).....	12
Are Football Teams Gaining Weight? (Mathematics, Art)	18
Field of Dreams (Science, Art)	24
Mindful Practices (Science, Health, Art)	30
My Favorite Tailgate (Mathematics, Art)	38
Put A Lid on It (Science, Health, Art).....	44
Righties vs. Lefties (Mathematics, Art)	52
Riveting Robots (Computer Science, Art).....	58
Run, Jump, Play (Science, Art).....	64
The Ultimate Football Player (Art)	72
Turf War (Science, Art)	78
We’ve Got Spirit, Yes We Do! (English Language Arts, Dance, Music)	84



A BLIMP'S EYE VIEW

STANDARDS

Art:

GSE VA6.CR.1a

GSE VA7.CR.1a

GSE VA8.CR.1a

EQUIPMENT

- Journal and writing utensil
- Student Playbook for every student
- Large paper
- Colored pencils or markers

KICKOFF QUESTION

- Does seeing a familiar object from a new perspective change how we experience or think about it?

PREGAME

(Before the Hall of Fame)

Ask who knows what a “blimp” is. More specifically, has anyone ever seen the Goodyear Blimp?

Share the following information with your students:

- A blimp, also known as an airbus or airship, flies on gas--usually helium. The Goodyear Blimp is perhaps the most well known example.
- For nearly 100 years, the Goodyear Tire & Rubber Company has flown blimps over sporting events.
- An architect designing a stadium also considers how it will look from a blimp. During televised games, the view from the blimp is a common shot.
- Historically, blimps were not always associated with sporting events.
 - The first balloon, or blimp, was created in 1912.
 - In the 1920s, Goodyear blimps appeared across the US not just for people to see but also as military vehicles for the Navy.
 - From 1930-40, Goodyear blimps carried lighted signs with messages and loudspeakers to “blimpcast” live greetings to the public below.

- During World War II, Navy convoys relied on blimps to stay airborne for long periods and monitor the seas.
 - Postwar, the blimps went back to lighting the skies with flying signage.
 - From 1955 to now, Goodyear blimp signage has evolved from large bulbs of one color to screens with moving images, colors and logos.
 - Today blimps are familiar sights at football games especially, known for advertising for nonprofits and helping raise money for charities.
- A blimp’s bird’s-eye view of the stadium and event all at once increases a viewer’s visual understanding of each stadium’s architecture.

Tell students that at the Hall of Fame they will visit “The Goodyear Blimp Experience” on the second floor to get a blimp’s eye view of many college football stadiums in the US.

At the Hall of Fame, every student chooses a favorite team’s stadium and views a video of a Goodyear Blimp flyover of that stadium. Before they leave for the Hall of Fame, they’ll want to write down these four questions to refer to during the video and make notes.

- What do you see on the football field?
- From this perspective, what do you notice about the stadium?
- How is this perspective different from inside the stadium? Can you see more or less? How does the perspective change?

Encourage your students to watch their flyover twice and to notice how the end zones are painted. Then ask:

- How would you change the look of the football field to make it more interesting from a bird’s-eye view?

FIRST HALF

(At the Hall of Fame)

Note: Students will use the Student Playbook for grades 6-8.

Ask students to use their Student Playbooks to take notes at the “Goodyear Blimp Experience” on the Hall of Fame’s second floor. Make sure they have the four questions listed above.

Tell them during the flyover to note the stadium architecture. Every stadium is unique; some are famous for their shapes and colors. For example:

- Harvard Stadium in Boston has a horseshoe shape with a colosseum design on one end.
- Boise State Bronco Stadium, nicknamed “The Blue” for its “Smurf Turf,” is one of the most instantly recognizable stadiums from a blimp.
- The University of Utah’s Rice-Eccles Stadium sits at the base of a beautiful mountain range.
- Faurot Field in Missouri, also in a horseshoe design, has a giant “M” made of painted rocks on one end.

SECOND HALF

(Back in the Classroom)

Tell the students they’ll use their data from the Goodyear Blimp Experience to redesign their favorite team’s football stadium from a bird’s-eye view. Tell them to keep in mind:

- While viewing the stadiums at the exhibit, what got your attention?
- What would you include in a completely new stadium?
- What designs are particularly eye-catching?
- What colors and shapes should be used?
- What about your design makes it distinctive?

After sketching ideas in their journals, students should make a final drawing on large paper. When finished, allow time for everyone to present their designs to the class. Have them discuss their creative choices, why their design is successful, and how the design reflects the team. What about their design is unique? How were they inspired by what they saw at the Hall of Fame?

GAME STATS

- Blimps served as surveillance devices in World War II. Today, they are used mostly as overhead cameras at sports events and as massive flying billboards.

GOING PRO

- **Blimp Pilot:** A blimp pilot must have a commercial pilot’s license. Since no flight school is dedicated to blimps or zeppelins, a new blimp pilot learns on the job from a trained blimp pilot. There are very few qualified blimp pilots, and they are paid to watch sporting events while hovering above the playing field in their airship with one of the best seats in the house.



A PICTURE IS WORTH A THOUSAND WORDS

STANDARDS

Art:

GSE VA6.CR.1a
GSE VA6.CR.1b
GSE VA6.CR.4a
GSE VA6.RE.2a
GSE VA7.CR.1a
GSE VA7.CR.1b

GSE VA7.CR.4a
GSE VA7.RE.2a
GSE VA8.CR.1a
GSE VA8.CR.1b
GSE VA8.CR.4a
GSE VA8.RE.2a

EQUIPMENT

- Journal and writing utensil

KICKOFF QUESTION

- How can a quote inspire you?

PREGAME

(Before the Hall of Fame)

Tell your students that artists and writers create visual, oral, written, and auditory ways for people to experience the world, including the game of football. Drawing from artwork, poetry and other creative forms, they open new perspectives on well-known sports.

- Ask your students if they know of a poem or work of art about football or any other sport.

Grantland Rice was a sportswriter and poet who had a huge effect on how football fans experienced the game and thought of it. His weekly newspaper column, “The Spotlight,” was one of the most influential of his era. As a respected journalist and a key founding member of the College Football Hall of Fame, he also served, in 1951, as the Hall of Fame’s first board president.

Rice coined the phrase, “It’s not whether you win or lose, it’s how you play the game”.

- Ask the students what they think he meant by that phrase.
- Ask how the phrase could be used to inspire players or fans of the game.

No matter the sport, Rice had a fresh, bracing way to write about it. As a journalist and a poet, he used his words to inspire and inform.

Read each of the following Rice quotes to your students. After each one, ask the student what they think Rice was saying.

- “I learned a lot more from defeat than I ever learned from winning.”

- “Keep trying to win; keep playing the game; but keep room in your heart for a song.”
- “Many a losing entry has had every attribute except the belief he was going to win.”
- “Self-confidence is the hallmark of a champion--any champion.”
- “Failure isn’t bad if it doesn’t attack the heart. Success is all right if it doesn’t go to the head.”

Tell the students that the Hall of Fame has a wall of quotes from coaches who have been inducted into the Hall of Fame. Ask them to choose a few quotes that inspire them and write the quotes in their journals. Back in the classroom, the quotes will help inform some of the students’ projects.

FIRST HALF

(At the Hall of Fame)

At the Hall of Fame, remind your students to look for inspirational lines and phrases, particularly on the wall of quotes from coaches inducted into the Hall of Fame. Advise students to take a photo of the quotes or write several in their journal to refer to back in the classroom.

SECOND HALF

(Back in the Classroom)

Have students bring out their quotes from the Hall of Fame. If they’re in photos and not in writing, have the students write them out on a sheet of paper.

Next, ask for volunteers to share a quote they chose. As each is read aloud, ask the students these questions:

- What does the quote mean?
- What makes you think that?
- How is this quote inspirational?

- As you hear this quote, what images form in your mind?

The last question can be tricky, so start by giving an example of your own.

Once everyone has a chance to share, describe the project.

Students will choose their favorite quote from the Hall of Fame and create an image using it. They will likely need to write the quote multiple times to create the image. For example, to create a “drawing” of a football player with his quote, the words of the quote become the lines of the drawing.

To begin, students may sketch their image in pencil. Next, using a magic marker, they write the words of the quote along the lines of the sketch. When they finish, they can erase the pencil lines. The words written in marker now create the shape of the drawing.

Once they’re finished, have every student present their quote drawings and answer three questions:

- What inspired you to choose this quote?
- How does this image relate to the quote?
- How can this quote continue to motivate you?

GAME STATS

- By his own estimate, Grantland Rice wrote more than 22,000 columns, a thousand-plus magazine articles, and 7,000 sets of verse.

GOING PRO

- **Sportswriter:** Most sportswriters have at least a bachelor’s degree in journalism. Besides the degree and strong writing skills, the field requires a deep and vast knowledge of sports and sports players.





Bonds & Nickerson

Small Package, Big Yardage

James Carter, a walk-on running back at Rice in 2001, measured 4 feet 8 inches tall and 150 pounds. He rushed for 1,231 yards at Rice High School in Houston.

He's No Mini-Fridge

William "Bulldog" Perry, the Clemson defensive lineman, weighed 200 pounds when he was 11 years old. "I was big when I was 10."

Improbable Physics

Aaron Gibson, an All-American offensive tackle at Wisconsin in 1990, weighed 300 pounds and ran a 5.25-second 40-yard dash.



ARE FOOTBALL TEAMS GAINING WEIGHT?

STANDARDS

Mathematics:

GSE MGSE6.SP.1

GSE MGSE6.SP.2

GSE MGSE7.SP.1

GSE MGSE8.SP.1

GSE MGSE8.SP.2

CCSS.Math.Content.8.SP.1

CCSS.Math.Content.8.SP.2

Art:

GSE VA6.CR.1a

GSE VA6.CR.1c

GSE VA7.CR.1a

GSE VA7.CR.1c

GSE VA8.CR.1a

GSE VA8.CR.1c

Common Core Mathematics:

CCSS.Math.Content.6.SP.1

CCSS.Math.Content.6.SP.2

CCSS.Math.Content.7.SP.1

EQUIPMENT

- Journal and writing utensil

KICKOFF QUESTION

- How has the size of football players evolved over time?

PREGAME

(Before the Hall of Fame)

Show the children on the chart below how the sizes of football players have gone up.

Since 1869, when college football began, players' sizes and weights have increased. In the past 40 years alone, the average weight of an offensive lineman has gone up almost 100 pounds. This creates a vital role for a team's strength coach, as you'll learn at the College Football Hall of Fame. Strength coaches design and implement training programs that safely help players grow bigger, faster, stronger and healthier.

The table below shows the average weight of college football linemen through the years.

Year and Position	Average Weight
1890 Linemen	172.3
1910 Linemen	195.7
1930 Linemen	195.6
1950 Linemen	217.1
1970 Linemen	231.8
1990 Linemen	266.4
2010 Linemen	284.7

Point out to your students that the average weight of football players appears to increase every 20 years.

In their journals, have students answer these questions:

- Why do you think this happens?
- Which 20-year interval had the greatest increase?
- What do you think might have caused this particular increase?

Give the students the information below about football players' heights.

Linemen need strength and size to block and tackle. Before 1965, linemen were the centers, guards, tackles, and ends. After 1965, the linemen were centers, offensive and defensive tackles, tight ends, defensive ends, and linebackers.

Players known as "backs" excel in speed and agility with ball catching, passing, and carrying. In the early years, the backs were the quarterbacks, fullbacks and halfbacks. More recently, the backs are quarterbacks, fullbacks, running backs, wide receivers, and defensive backs.

The table below shows the increasing height of college football backs.

Year and Position	Average height in feet	Average height in inches
1890 Backs	5'8.8"	
1910 Backs	5'9.3"	
1930 Backs	5'11.0"	
1950 Backs	5'11.8"	
1970 Backs	6'0.6"	
1990 Backs	6'1.8"	
2010 Backs	6'0.3"	

In their journals, have students do these exercises:

- Recreate the table converting the heights to inches, and record the data in the table.
- Calculate the football players' average height between 1890 and 2010.
- Create a graph and record the data using a scatterplot of the data with the height in inches. Be sure to label the graph.
- Describe the data's center, spread, and overall shape; include any outliers.
- Compare their descriptions with a classmate.

FIRST HALF

(At the Hall of Fame)

On the second floor of the Hall of Fame in the Building a Champion area, ask students to identify at least four ways strength coaches can improve player performance. The students will need this information back in the classroom, so they should note their findings in their journals.

At the How Do You Measure Up? wall, help students locate the tallest and shortest players and record their names and heights, then find the heaviest and lightest players and do the same.

SECOND HALF

(Back in the Classroom)

Based on the information from the Hall of Fame, ask students, in their journals, to answer two questions:

- What is the ratio of the shortest to tallest player?
- What is the ratio of the lightest to heaviest player?

Have students share their answers with a classmate. Did their calculations match? If not, have the students work together to determine why. This information, too, goes in their journals.

Form a class a discussion around three questions:

- How might height and weight affect a football player's performance?
- Why do you think players' average height and weight have changed over time?
- How might these changes affect the game of football?

EXTRA POINT

Based on the data regarding changes in football players' sizes over time, what might a future football player look like?

Have your students draw a football player a hundred years from now. Encourage them to use their imaginations--no wrong answers. As they draw, remind them to consider:

- Height
- Weight
- Physical features
- Athletic ability
- Human/cyborg/etc.
- Technology

When all the drawings are complete, invite the students to share their "players of tomorrow" with the class and discuss their creative choices.

GAME STATS

- At 5'10", Doug Flutie was considered too short to be a college quarterback. Yet at Boston College he threw more yards than anyone before him, and he moved on to play professional ball. He won a Heisman Trophy and is honored in the College Football Hall of Fame.

GOING PRO

- **Personal Trainer:** Personal trainers must have CPR training, first-aid certification and a high school degree or its equivalent. Personal trainers work with a variety of clients to improve their physical fitness and overall health. A trainer for a college football team evaluates each player's needs and goals, then models the workouts and sets a schedule to achieve their goals.

A young boy with short dark hair is looking down at a tablet computer. He is wearing a grey t-shirt with a large black number '7' and a lanyard that says 'Chick-fil-A College Football' and 'cphalli.com'. The background is a blurred crowd of people, some wearing sunglasses, suggesting a sports event. The entire image has a blue color cast.

FIELD OF DREAMS

STANDARDS

Science:
GSE S7L2 (Science)

GSE VA6.CR.4a
GSE VA6.CR.6a
GSE VA7.CR.1a

**Next Generation Science
Standards:**

NGSS MS-LS1-3 (Science)
NGSS MS-LS-1 (Science)

GSE VA7.CR.1b
GSE VA7.CR.4a
GSE VA7.CR.6a
GSE VA8.CR.1a

Art:

GSE VA6.CR.1a
GSE VA6.CR.1b

GSE VA8.CR.1b
GSE VA8.CR.4a
GSE VA8.CR.6a

EQUIPMENT

- Journal and writing utensil
- Anchor chart paper
- Anchor chart markers
- Print or online resources about the effects of sleep on body systems

KICKOFF QUESTION

- Why is sleep important to the human body, and how does it affect athletic performance?

PREGAME

(Before the Hall of Fame)

Have students write or say what a person can do to control her health with exercise, nutrition, etc. If no one mentions sleep, ask what role it plays.

Take a casual poll of the class: How many hours of sleep do you think a person needs? Calculate the average of the responses.

Give the class the following CDC (Center for Disease Control) guidelines:

- Babies ages 4-11 months should get 12-15 hours of sleep a night
- Children ages 1-2 years should get 11-14 hours of sleep a night
- Children ages 3-5 years should get 10-13 hours of sleep a night
- Children ages 6-13 years should get 9-11 hours of sleep a night
- Teenagers ages 14-17 years should get 8-10 hours of sleep a night
- Adults ages 18-64 should get 7-9 hours of sleep a night
- Adults ages 65+ should get 7-8 hours of sleep a night

Ask students how these recommendations strike them, and why the hours differ for each life-development stage.

Divide the class into six groups and assign each group a body system:

- muscular system
- nervous system
- immune system
- respiratory system
- circulatory system
- digestive system

Give students printed or online resources about the effects of sleep on the systems in the list. From the resources, have them answer these questions aloud or illustrate them on anchor chart paper:

- Why is sleep important for this body system to function well?
- How can inadequate sleep affect this body system?
- How could this affect a person's entire health and safety?

Post the anchor charts around the room and hold a gallery walk so every student sees how sleep affects all six body systems.

Finally, engage students in a class discussion about why college athletes especially require adequate sleep.

FIRST HALF

(At the Hall of Fame)

As students use the indoor playing field at the College Football Hall of Fame, have them track and record their individual performances on paper. Later together, have them write down how many hours they slept the night before. Ask them to volunteer performance stats and hours of sleep. As they share, ask them:

- What patterns do we see person to person?
- What correlation do we see between athletic performance and amount of sleep?
- Does the amount of sleep over one night significantly affect a person's performance the next day, or is it an aggregate effect of multiple nights of insufficient sleep? How could we design an experiment to find out?

SECOND HALF

(Back in the Classroom)

Students conduct an observational study of their own sleep habits.

Tell students for the next two weeks to note answers to:

- What time did you fall asleep? Was it difficult (took a long time) or easy (went to sleep quickly)?
- How many times in the night did you wake up? For how long?
- What time did you get up in the morning?
- How did you feel when you woke up? How did you feel throughout the day? At any point were you tired? Energized? Alert? Sleepy?
- Log any naps you take.

As a class, discuss the sleep logs with the following questions:

- How did different numbers of hours of sleep relate to your alertness?
- What seemed to be the least amount of sleep you need to function well (do normal activities well) the next day?
- How much sleep do you think is best for you?
- If you take naps, do they help or not?
- What factors seem to affect what time you go to bed? What factors affect what time you wake up? How might you adjust those factors, if needed, to sleep better?

Remind the class that children ages six to 13 should get nine to 11 hours of sleep each night. Children ages 14 to 17 should get eight to 10 hours. Ask whether their sleep logs align with those guidelines. If not, as a class, discuss ways to improve sleep quantity and quality.

EXTRA POINT

Ask if anyone has heard of a “dream journal.”

Explain that a dream journal is simply a record of what you dream about. To be as accurate as possible with the details in your dreams, as soon as you wake up, you write all you can remember. Many artists keep dream journals to inspire their work.

Ask students to keep a daily dream journal for two weeks. Tell them to record as many details as possible as soon as they wake up. As needed, they should feel free to sketch images.

At the end of the two weeks, have the students bring their journals to class, and have each student create a work of art--in any medium--inspired by their dreams. When the art pieces are complete, have the students explain their work in relation to their dreams.

GAME STATS

- In 2010, University of Texas linebacker Sergio Kindle was diagnosed with narcolepsy, a rare sleep disorder making it difficult to stay awake. After intensive treatment from a team of doctors, Kindle was able to pursue a career in professional football.

GOING PRO

- **Sleep Scientist:** A sleep scientist is a medical specialist who researches, diagnoses and treats sleep disorders--typically at a university or sleep clinic, or in a private practice. A sleep scientist attends undergraduate and medical school and is board certified in internal medicine, anesthesiology, pulmonary medicine, pediatrics, neurology, or psychiatry. Sleep scientists and other medical professionals can become board-certified in sports medicine, allowing them to work as part- or full-time physicians for college football teams.



College Football Hall of Fame cfbhall.s

MINDFUL PRACTICES

STANDARDS

Science:
GSE S7L2

Next Generation Science

Standards:
NGSS MS-ETS1-1

Health:
GSE HE6.1.b
GSE HE6.3.a
GSE HE6.4.b

Art:
GSE VA6.CR.6c
GSE VA7.CR.6c
GSE VA8.CR.6c

EQUIPMENT

- Journal and writing utensil
- Printed copies or online access to the four NCBI articles listed below

KICKOFF QUESTION

- What does research indicate are the benefits of mindfulness for college athletes?

PREGAME

(Before the Hall of Fame)

Tell students to be silent for the next few minutes. Dim the room lights. Use any one of thousands of videos or podcasts available online featuring short guided meditations and breathing exercises; or lead the activity yourself.

After the mindfulness activity, lead a discussion on the experience. Ask students how they felt during it and why. Encourage them to share with the class other mindfulness exercises they may know about and use.

Report that the NCAA (National Collegiate Athletic Association) funds research on mindfulness and mental health among college athletes. College athletes face high-stress both on and off the field. Mindfulness practices such as breathing, meditation, affirmations, single-tasking, body scans, and gratitude journaling, may help alleviate some of that stress. To shed light on the topic, students will examine evidence in peer-reviewed studies.

Divide the class into four groups. Assign each group one of the following articles, available for free on the NCBI (National Center for Biotechnology Information) website:

- [Mindfulness training enhances endurance performance and executive functions in athletes \(Nien et al., 2020\)](#)

- [Mindfulness mechanisms in sports: Mediating effects of rumination and emotion regulation on sport-specific coping \(Joseffson et al., 2017\)](#)
- [Collegiate athletes' expectations and experiences with mindful sport performance enhancement \(Mistretta et al., 2017\)](#)
- [Effectiveness of the mindfulness-acceptance-commitment-based approach on athletic performance and sports competition anxiety: A randomized clinical trial \(Dehghani et al., 2018\)](#)

From the assigned study, each group should find and record the following information on paper or on a digital platform to present to peers:

- The purpose of the study,
- The number and demographics of the study participants,
- The biochemical and/or physiological effect(s) of mindfulness, on participants
- The findings of the study (the conclusion), and
- Personal reflection on these findings.

After the presentations, ask the class for any conclusions they can make based on the collective results of all four studies.

To conclude, introduce students to a variety of mindfulness exercises for their own personal use, such as:

- Mindful breathing
 - Close your eyes. Inhale for a count of 8, hold for a count of 7, exhale for a count of 4. Repeat 5-10 times. Throughout, keep a clear mind and focus on the breath.
- Visualization
 - Close your eyes. Think about a single goal you have for yourself. Now envision yourself in the future (tomorrow, next week, or even years from today). How will you feel when you reach your goal? What will you look like? How will you celebrate?

- Gratitude meditation
 - Think of and/or write down three things for which you are grateful today. You may keep these thoughts private or share with a trusted friend.
- Self check-in
 - Think about and/or write down the range of feelings you have right now. This can include physiological (sleepy, hungry) or psychological (anxious, excited, angry, content). Acknowledge these feelings as normal. Now consider how you can address each of these feelings.
- Plan your responses
 - A reaction and a response are two different things. A reaction is impulsive, whereas a response is engineered. Reacting is purely emotional, a response is emotionally intelligent. Plan your response, as much as you can, for the next time you are upset. This might be counting backwards from 10; breathing deeply three times; walking away from the upsetting situation for one minute to process your thoughts; etc.

FIRST HALF

(At the Hall of Fame)

Tell your students to keep an eye out on the second floor of the College Football Hall of Fame for insight into the relationship between mindfulness and college football. How could mindfulness help a player meet the requirements to become a Hall of Famer?

Also encourage your students to take a moment during their visit to practice their own preferred method of mindfulness. This can be done independently at their leisure or facilitated as a simultaneous group activity.

SECOND HALF

(Back in the Classroom)

Give the class this assignment. Students may work independently, in pairs, or in small groups. Develop a system for peer feedback. If

your campus has an athletic department, invite coaches as audience members.

- You are the new coach of an elite college football team. You have read about and understand the benefits of mindfulness and meditation among college athletes, but you learn that the players you now coach are doubtful. Even the assistant coaches aren't so sure. Develop a speech, a video, or a slidedeck to convince these skeptics to incorporate mindful exercises into their daily routine. You must include at least three examples of scientific, research-based evidence, including the biochemical and/or physiological effects of mindfulness.

Practice what you preach: Make mindfulness part of your daily classroom routine. For example, at the beginning, middle, or end of each period, lead the class in one minute of deep breathing. After all, these practices benefit all people, not just college athletes.

EXTRA POINT

Journaling or sketching can be a great mindfulness activity. One drawing technique used for concentration, focus, creativity and relaxation is zentangle.

Zentangle is a style of drawing that includes nonrepresentational structured patterns, or "tangles." There is no planning or sketching. No erasers allowed because this is a meditative form of drawing with no planned outcome and no mistakes.

Show students some examples of zentangles, then have them create their own in their journals. If you google "zentangle," thousands of pattern examples pop up. You might also print out some examples of patterns to give to students as a reference.

If possible, before each class, turn on some relaxing music and allow students a few minutes to zentangle in their journals.

GAME STATS

- In 2019, Chad McGehee was hired by the University of Wisconsin as the world's first and only full-time professional meditation coach. He creates and delivers meditation training in culturally responsive ways for athletes, law enforcement, teachers, students, and more.

GOING PRO

- **Clinical Sports Psychologist:** A clinical sports psychologist or college team psychologist works at the intersection of sports and mental well-being. He or she helps players and teams visualization, goal-setting, team-building, rehabilitation and focus. Most sports psychologists have a master's degree with undergraduate work in a variety of subjects. They may work for university athletic departments, private clients, or professional leagues.





MY FAVORITE TAILGATE

STANDARDS

Mathematics:

- GSE MGSE6.EE
- GSE MGSE7.EE
- GSE MGSE8.EE

Art:

- GSE VA6.CR.1a
- GSE VA6.CR.1c
- GSE VA6.RE.2a
- GSE VA7.CR.1a
- GSE VA7.CR.1c
- GSE VA7.RE.2a
- GSE VA8.CR.1a
- GSE VA8.CR.1c
- GSE VA8.RE.2a

Common Core Mathematics:

- CCSS.Math.Content.6.EE.A
- CCSS.Math.Content.7.EE.A
- CCSS.Math.Content.8.EE.A

EQUIPMENT

- Journal and writing utensil

KICKOFF QUESTION

- How much does tailgating cost?

PREGAME

(Before the Hall of Fame)

Ask students whether anyone has ever tailgated before a football game or other event.

Explain that tailgating is a uniquely American social event, typically in an arena, stadium or parking lot. Like a glorified picnic, tailgaters prepare and serve food such as potato salad, baked beans, hamburgers, coleslaw, hot dogs, kebabs, and steaks.

Tell students that after they visit the Hall of Fame, they will pair up to plan a make-believe tailgate party within the budget you give them.

The party must include:

- two main food items and all necessary condiments
- utensils
- napkins
- drinks

Tell the students they'll get a chance to try to convince people in the class that their tailgate is the one to attend.

FIRST HALF

(At the Hall of Fame)

At the Hall of Fame on the second floor, direct your students to the Coca-Cola's Fans' Game Day and Kia's Ultimate Rigs exhibits with their tailgate displays

Student partners will make notes about what to include in their make-believe tailgate. They'll consider food, budget and how to stage a tailgate party everyone wants to attend.

SECOND HALF

(Back in the Classroom)

Ask students to review their notes and discuss how the tailgate displays they viewed at the Hall of Fame inspired them. Then, allow them to start planning their make-believe tailgates. Within budget, each set of student partners must:

- Decide what food items the tailgate event will feature.
- List what ingredients are needed, excluding standard pantry items such as salt and pepper.
- Online, research the prices for all grocery items.

With those tasks complete, students are ready to:

- Create an equation for food per person, including communal condiments such as ketchup, mustard and mayo.
- Create an inequality for food per person. Include any condiments that guests will share.
- Write and solve an inequality to calculate how many people can attend without exceeding the budget.

When they're finished, invite student pairs to present their work to the class. Tell them to highlight why their particular event will be the most fun to attend.

EXTRA POINT

Put students in small groups and challenge them to take their tailgating party to the next level and design a theme around it. The assignment is to create new displays for the Hall of Fame's tailgating exhibit. As students brainstorm design and theme ideas, give these guidelines:

- What is your party's overall theme?
- Will guests immediately get your theme? How?
- What props will your party have?

- How will your food reflect your theme?
- Will your party require costumes/specific party attire?

Depending on available resources, students may sketch their designs (with explanations) or sculpt them in modeling clay. If possible, students may create large-scale installations of their designs.

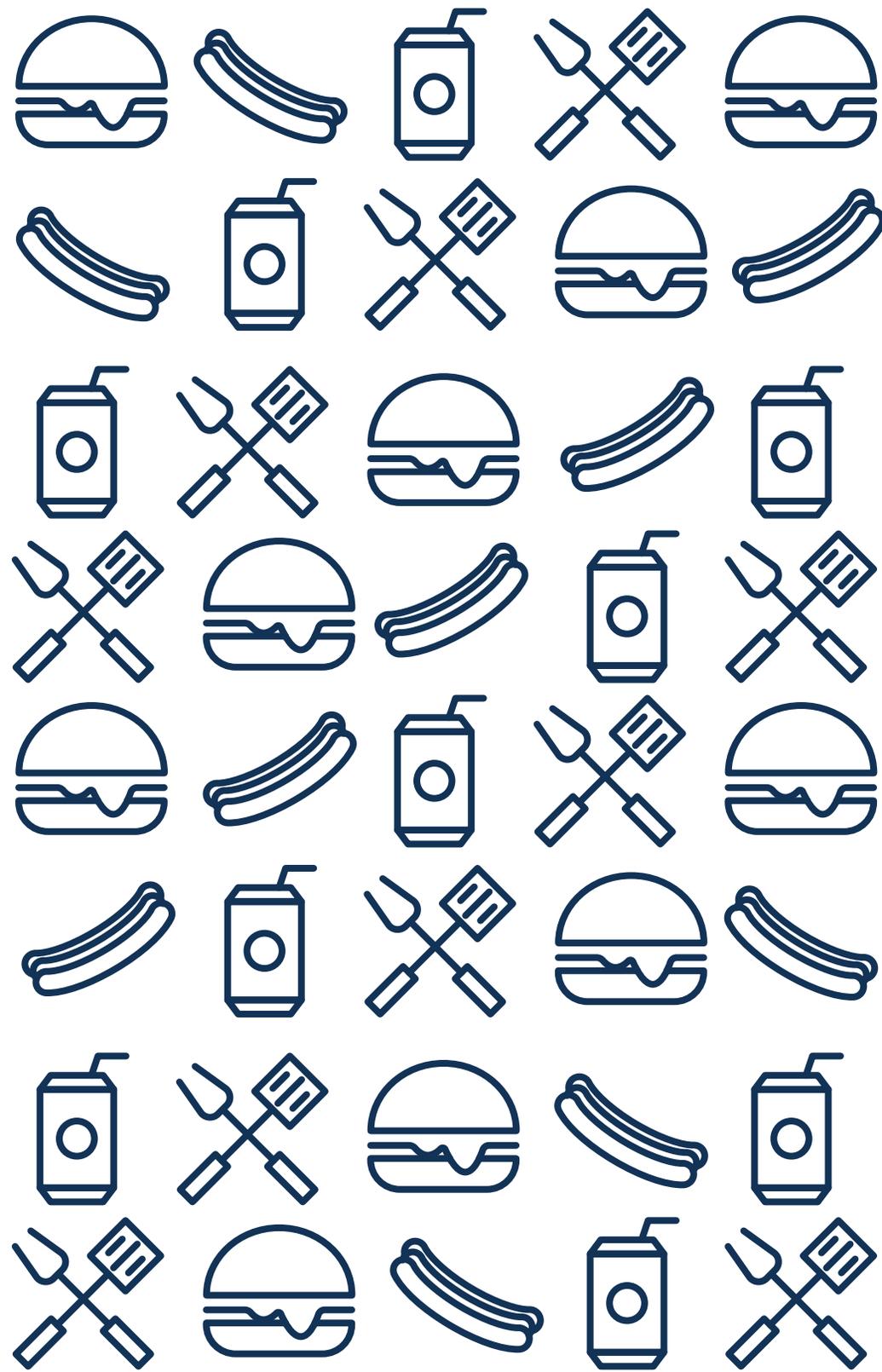
No matter the creation or its form, students should present their ideas to their peers, explain their creative choices and say why their party should be featured in the Hall of Fame's tailgating exhibit.

GAME STATS

- The first "tailgate" was not at a football game. It was during the Civil War in 1861 at the Battle of Bull Run. Civilians brought picnics baskets full of food to enjoy while they cheered on the Union army.

GOING PRO

- **Event Planner:** A professional event planner organizes events for corporations, groups or individuals, typically with a bachelor's degree in public relations, marketing or hospitality. An event planner for a football stadium holds meetings with clients to understand their objectives and budget, manages relationships with vendors and caterers, and oversees all event setup, execution and cleanup.



A young boy with dark curly hair, seen from behind, is looking at a football helmet on display in a museum. The background is filled with other sports memorabilia, including jerseys and helmets, all in a blue-tinted color scheme. The word 'PERFORMANCE' is faintly visible in the background.

PUT A LID ON IT

The Science of Helmet Design

STANDARDS

Science:
GSE S7L2.
GSE S8P3.

Health:
GSE HE6.6.a.
GSE HE7.5.c.

Next Generation Science

Standards:
NGSS MS-PS2-1
NGSS MS-PS2-2

Art:
GSE VA6.CR.1a
GSE VA6.CN.3a
GSE VA7.CR.1a
GSE VA8.CR.1a

EQUIPMENT

- Journal and writing utensil
- Student Playbook for every student
- One plastic egg for every group of 2-4 students
- Five marbles for every group
- A variety of makerspace materials

KICKOFF QUESTION

- Why do football players wear helmets?

PREGAME

(Before the Hall of Fame)

Put the students in pairs and have each pair list ways to protect objects from damage, e.g., safety belts and bubble wrap. Reconvene and have all students share their lists to compile one comprehensive list.

Ask students these questions:

- What are some of the features common to these kinds of protection?
- What happens to certain objects that are left unprotected? How much might it cost?
- How might we improve some of the ways we protect objects?

Now to the human body:

- What can we wear to protect the soles of our feet from uncomfortable surfaces, harsh temperatures and debris?
- What can we wear to protect our knees and elbows when skateboarding?
- What can we wear to protect our heads when we're on a bicycle or horse?
- What can we wear to protect our skin from overexposure to natural elements such as sun, wind, rain, and temperature?

- What can we wear to protect our eyes from chemicals during a lab experiment?
- What can we wear to protect our teeth when playing a sport like hockey?
- What can we wear to protect our ears from very loud sounds?
- What can we wear to protect ourselves from drowning?

Give students this case:

- Ashley is preparing for summer camp, where she knows she'll swim at the lake, ride a mountain bike, make s'mores over a campfire, play basketball on the outdoor court, hike on rocky terrain, canoe on the river on a hot day, and set off a model rocket during a STEM activity.
- Create a complete list of what Ashley should pack for camp that includes all the protective clothing and equipment she needs to stay safe and injury-free. Tell students to be prepared to defend their reasoning.

When students have their lists, hang the lists around the room. Tell the students to check every all lists for items they may have overlooked. Reconvene and create an "ultimate" list of all the protective items Ashley will need.

FIRST HALF

(At the Hall of Fame)

Note: Students will use the Student Playbook for grades 6-8 for the following activities.

Ask students to answer the following questions in their playbook.

- What is the purpose of wearing a helmet?
- What design features make a helmet effective?
- How does a helmet mimic structures found in nature?

Direct students to The Evolution of Equipment exhibit on the second floor, then ask them to read and answer the following in their Student Playbook.

- Brains are the computers of the body, so it's important that they stay safe. Our brains are protected by bones collectively known as the skull. In football, players wear helmets to protect their skulls. What protection can a helmet offer that a skull cannot?

Ask students to read the following and respond in their playbook:

Force is all around us. Not the Star Wars kind, but the push or pull of an object, causing balanced and unbalanced forces. Balanced forces occur when two objects apply equal amounts of power or pressure on each other so that the object doesn't move. Unbalanced forces occur when one object moves the other because it applies more power or pressure.

- Draw a football player who looks just like the one you see, but with another player pushing against him in the opposite direction. If the two players apply equal pressure on each other, is it a balanced or unbalanced force?

Next, ask students to read and answer the the following in their playbook:

Since the late 1880s when football began, helmets have radically evolved. Designers, medical professionals, and physicists continue to explore how to improve even the most modern versions.

- Study the helmets in the display case and find the oldest, and then the newest. Identify two things they have in common? What are two things that make them different from each other?

Finally, ask students to read and respond to the following in their playbook:

- Humans gain a lot of design ideas from organisms in nature in what's called biomimicry. Turtle shells, for example, may have inspired early helmet designs. What machines and technologies might eagles have inspired?

SECOND HALF

(Back in the Classroom)

Show students a plastic egg and open it to show five marbles inside. Say the egg is a human skull; the marbles inside are the brain.

Arrange the class into groups of 2-4 students. Give each group a plastic egg holding five marbles and this challenge:

- Develop a "helmet" for this egg to prevent it from breaking open when it's dropped from 3 meters above the ground. (Measure out 3 meters for the students.)
- Like a real helmet, the egg helmet must be easy to remove.
- Use at least 3 of the different materials provided.
- Use ONLY the materials provided.

Tell students to sketch and label a helmet design so that anyone else could understand its structure and function. (Optional: Students develop their helmet designs using free online tools.) After peer feedback and teacher approval, each group should adjust its design and begin to build a prototype.

Give students a variety of makerspace materials (tape, rubber bands, pipe cleaner, cardboard, etc.). Divide the materials to give the same quantity to each group.

Students may test their designs along the way or wait for a final class demonstration.

Every group presents its design (labeled sketch and prototype) to the class and invites peer feedback. During the presentation, ask the students:

- How did you decide what materials to use?
- What are the disadvantages of your helmet design?
- How effective would your helmet be if your egg dropped from 6 meters above ground? 12 meters? 30 meters?

- If you could use one other type of material not provided, what would it be and why?

Optional extension: Tell the class that a college football team needs a new helmet design. Each group will develop a visual sales pitch for their design offering practical reasons supporting the materials used and helmet efficacy.

EXTRA POINT

Ask students to read these bullets and follow the instructions:

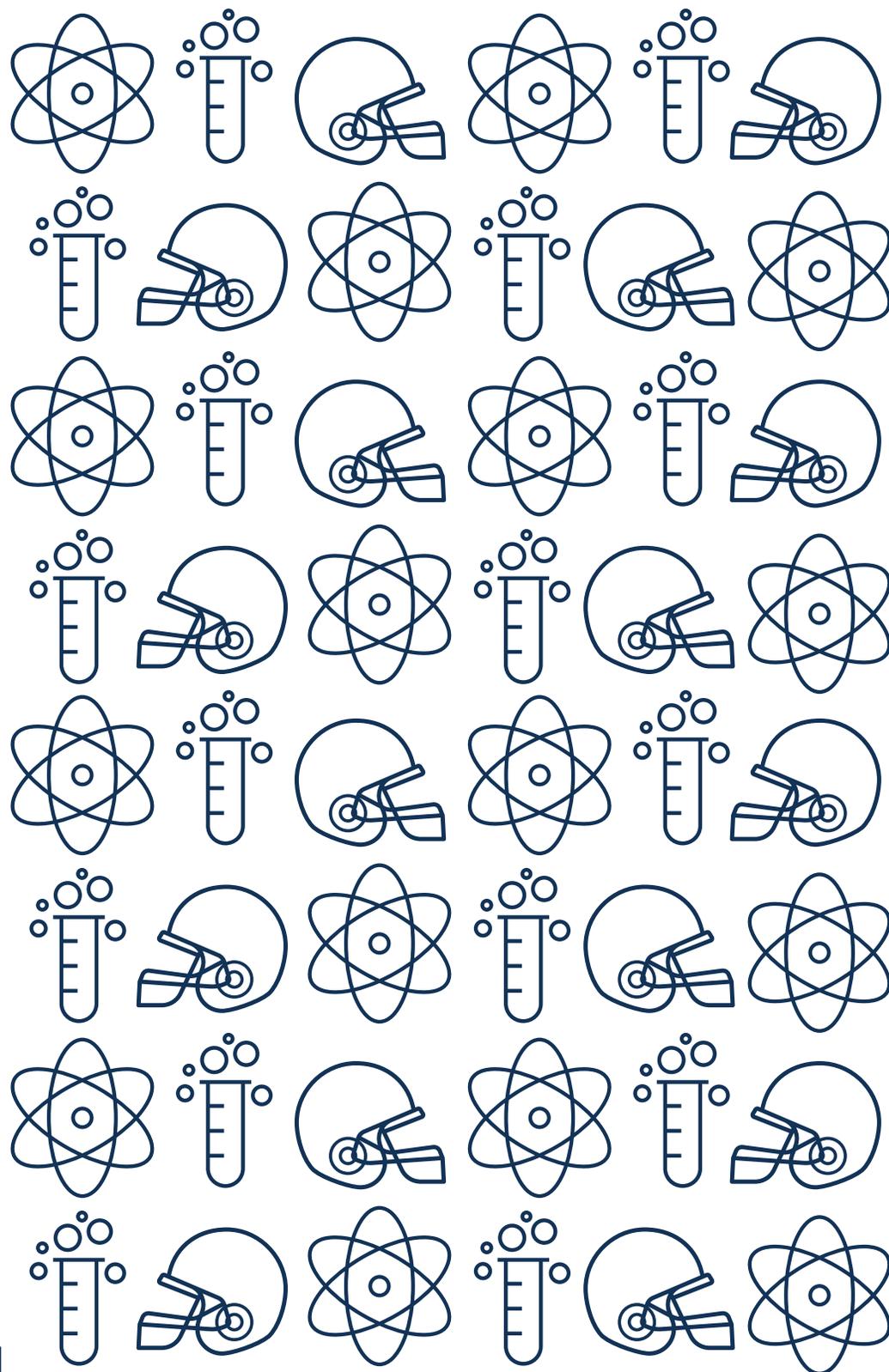
- Football players sometimes sport stickers or decals on their helmets. Some represent that player's individual or team accomplishments. Some may stand for a cause important to the player. Without knowing the player personally, viewers know more about him.
- If you were an athlete in front of hundreds of viewers, what would you want crowds to know from your helmet? Draw a helmet with the images important to you. Ask your friends or family to do the same and compare your choices. Next time you watch a football game, check for helmet stickers and guess what they might represent.

GAME STATS

- Helmets were not mandatory for pro football players until 1943, shortly after John T. Riddell invented the first plastic helmet.

GOING PRO

- **Neurologist:** A neurologist diagnoses and treats disorders affecting the brain, spinal cord and nerves. This type of physician earns a bachelor's degree in a science or medical field and then attends medical school. A residency to gain practical experience in neurology is also required. A neurologist may work in a traditional hospital, research hospital, private practice, or at a university as an academic researcher. Neurologists and other medical professionals can become board-certified in sports medicine, allowing them to work as part- or full-time physicians for college football teams.





U.S. AIR FORCE

AIR RAID

VR FOOTBALL EXPERIENCE

RIGHTIES VS. LEFTIES

The U.S. Air Force presents an immersive, fully responsive QB simulator that puts you in the middle of the game to see if you

can throw your wide receiver before you get sacked!

STANDARDS

Mathematics:

- GSE MGSE6.RP.1
- GSE MGSE6.SP.4
- GSE MGSE7.SP.1
- GSE MGSE7.SP.2
- GSE MGSE8.SP.4

Common Core Mathematics:

- CCSS.Math.Content.6.RP.A.1
- CCSS.Math.Content.6.SP.B.4
- CCSS.Math.Content.7.SP.A.1
- CCSS.Math.Content.7.SP.A.2
- CCSS.Math.Content.8.SP.A.4

Art:

- GSE VA6.CR.4a
- GSE VA7.CR.4a
- GSE VA8.CR.4a

National Arts Standards:

- VA.Cr2.1.6a
- VA.Cr2.1.71
- VA.Cr2.1.8a



EQUIPMENT

- Journal and writing utensil
- Student Playbook for every student

KICKOFF QUESTION

- Are there differences between right-handed and left-handed people?

PREGAME

(Before the Hall of Fame)

- Survey the group for righties and lefties.
- As a class, discuss the difference.
- In their journals, have students recreate this table to use at the College Football Hall of Fame.

Right handed	
Left handed	
Right angle (center)	
Acute angle (to the left)	
Obtuse angle (to the right)	

FIRST HALF (At the Hall of Fame)

Note: Students can use their journals or the Student Playbook for grades 6-8.

- Send students to the Air Force Air Raid on the second floor: Some college football players use this AI (Artificial Intelligence) system to prepare for games.

- Have students sign up to participate in the Air Force Air Raid Experience
- As students await their turn, have them watch other players and make tally marks for each player in the table in their journals or playbooks.
 - A ball thrown near the center is close to a right angle.
 - A ball thrown to the left is an acute angle.
 - A ball thrown to the right is an obtuse angle.

SECOND HALF (Back in the Classroom)

Using their data from the Hall of Fame, have students complete these tasks in their journals:

- Create a frequency table of the data.
- Graph the data using a histogram.
- Add together the right-handed and left-handed people for the total number of people.
- Use that and the tally marks from your table to find:
 - The ratio of people who were right handed, and
 - The ratio of people who were left handed.

Discuss these questions with your class:

- Were there more right- or left-handed people?
- What percentage of this population is left handed?
- How does that compare to the world population of 12 percent?
- In which direction was the ball thrown most?
- What patterns do you notice?
- From the data you collected, what can you infer about left- and right-handed people?
- From the data you collected, what hypothesis can you form?
- Explain your findings using a ratio relationship.

EXTRA POINT

- Ask students if they have ever tried to use only their non-dominant hand. If so, what was it like?
- Was it more difficult?
- How did it feel?
- Do you think with enough practice you could use either hand the same way? Why or why not?

Ask students to choose an object in the classroom, draw it with their dominant hand, and then draw the same object with their other hand. When everyone is finished, discuss the experience and invite volunteers to share their work.

Next have students work up to larger drawings. If possible, have them create a large drawing with only their non-dominant hand.

Finally, have students explore using their non-dominant hand with various types of media: watercolor, crayon, pastel, etc. After some time, discuss which media was most challenging and why that might be.

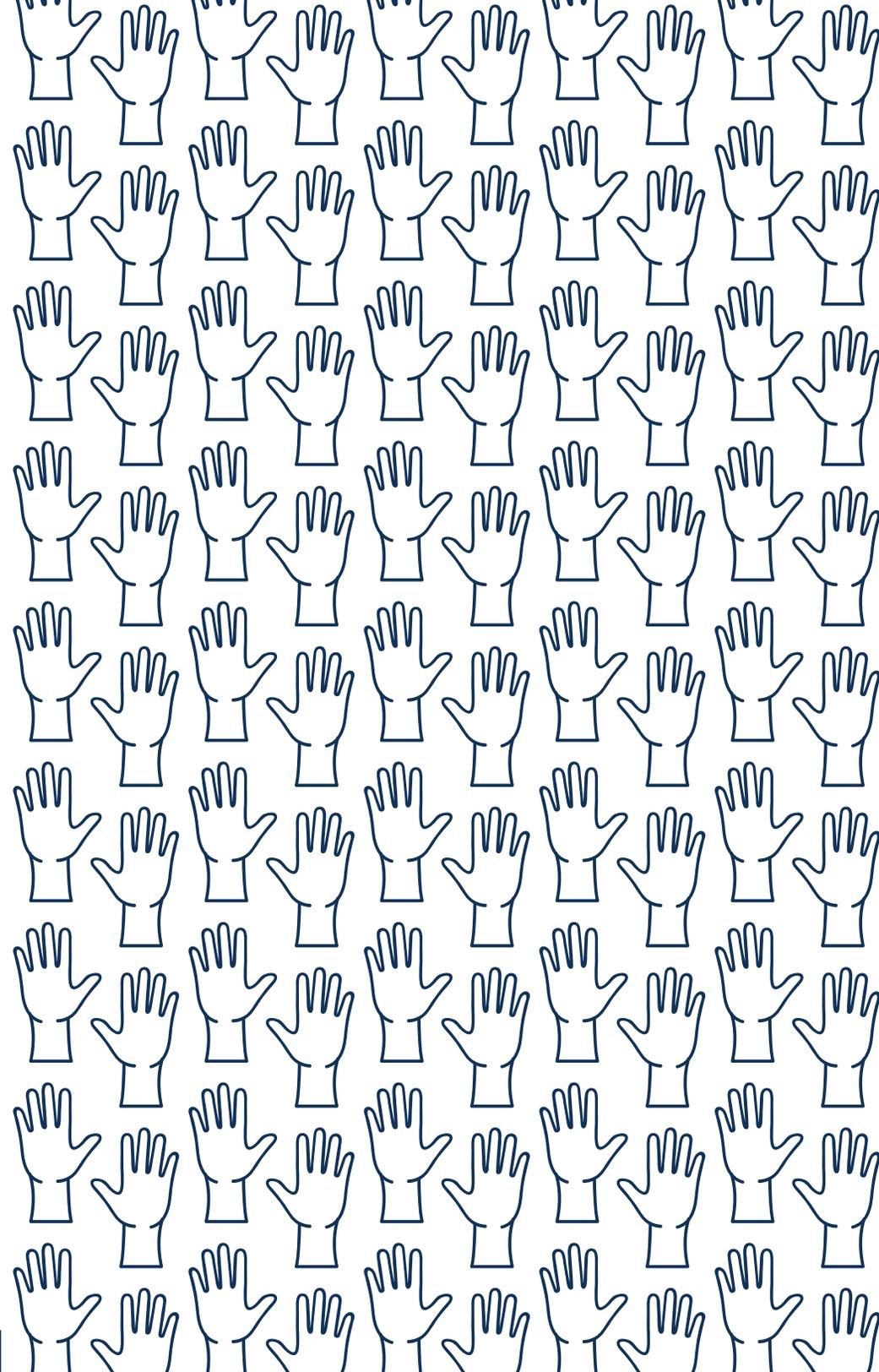
Tell students that although it's much harder using your non-dominant hand, it can actually create some very interesting lines and shapes.

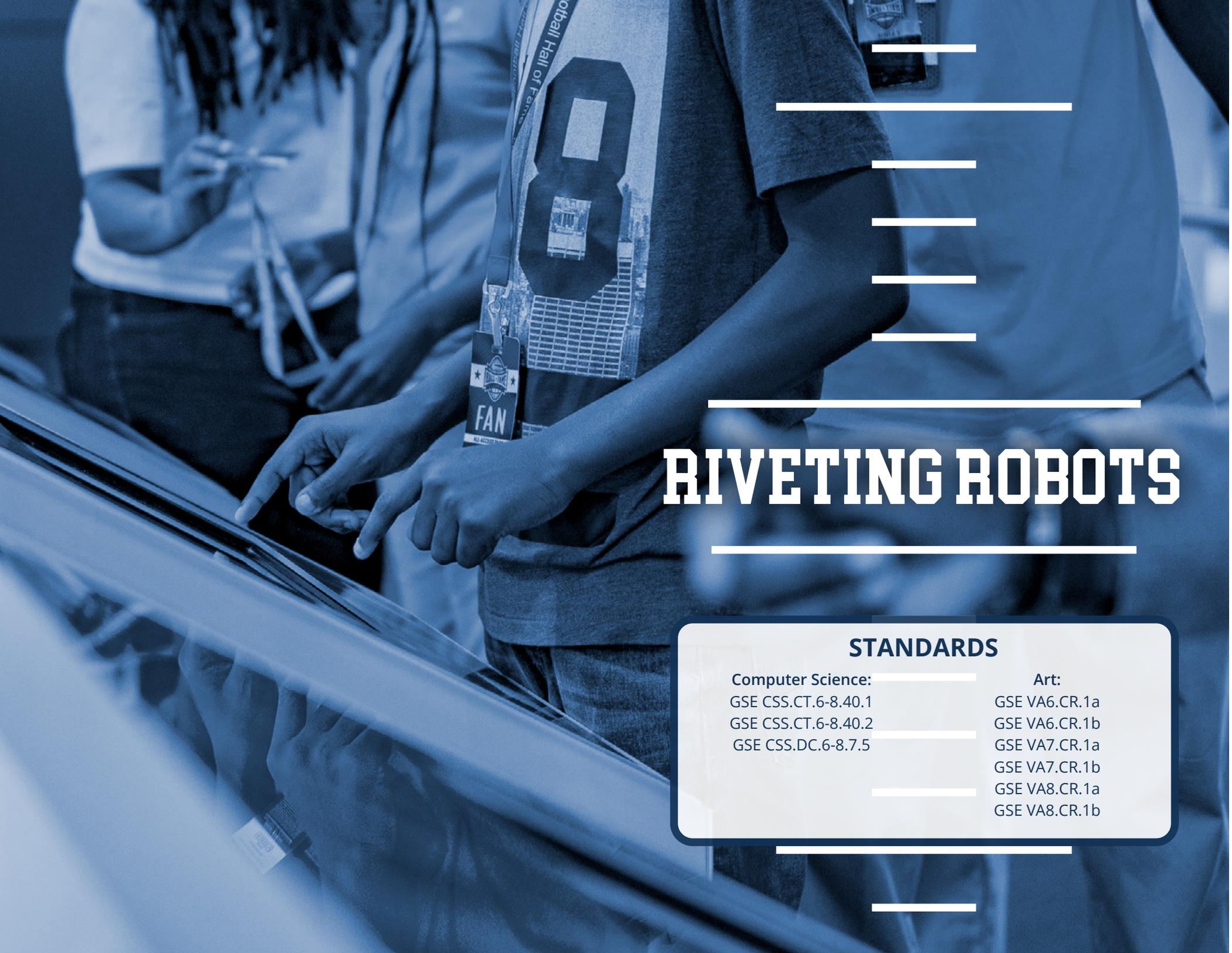
GAME STATS

- Only 12 percent of the world population is left handed.

GOING PRO

- **Behavior Analyst:** Behavior Analysts work with teams to teach and reinforce skills used in competition. They improve training regimes by creating diet and exercise programs which advance specific athletic skills. The position requires a bachelor's degree in psychology or applied behavior analysis.





RIVETING ROBOTS

STANDARDS

Computer Science:

GSE CSS.CT.6-8.40.1
GSE CSS.CT.6-8.40.2
GSE CSS.DC.6-8.7.5

Art:

GSE VA6.CR.1a
GSE VA6.CR.1b
GSE VA7.CR.1a
GSE VA7.CR.1b
GSE VA8.CR.1a
GSE VA8.CR.1b

EQUIPMENT

- Journal and writing utensil

KICKOFF QUESTION

- In what ways may robots replace humans?

PREGAME

(Before the Hall of Fame)

With your students, discuss these facts and questions:

- To create a unique experience for everyone, the College Football Hall of Fame uses RFID technology.
- RFID stands for Radio Frequency Identification.
- RFID technology compares to barcode scanners, except:
 - Barcode scanners require a straight line to scan and can only scan one thing at a time.
 - RFID can read multiple codes at the same time and only needs to be near the reader.
- RFID often reads things we may be unaware of. When is that too much?
- Where do you think you've seen RFID in use? Make a list in your journal.

Tell students that robots use RFID technology. Have them research areas where robots are currently using RFID technology and share with the class.

FIRST HALF

(At the Hall of Fame)

As they enter the College Football Hall of Fame, remind your students to receive and register their All-Access Pass, which allows the building to recognize them as they move about the Hall of Fame. The students will receive an RFID-enabled badge.

- As students tour the Hall of Fame, ask them to record in their journals every place where the building knows their name.
- Also, ask students to consider and make notes on how their experiences would be different if a human were in those places instead of the RFID reader.

SECOND HALF

(Back in the Classroom)

As a class, discuss these questions and have your students note in their journals.

- How would a person in the place of an RFID reader change your visitor experience?
- List the times a human would be better.
- List when a machine would be better.
- How are the lists similar or different?
- Robots are programmed for many tasks. How could a robot programmed just for you affect your life?

As a group, discuss how robots perform step-by-step and make decisions.

Have students individually:

- Think of something they do everyday. Make a meal, for example, or get ready in the mornings.
- For that activity, create an algorithm, a flowchart, and design a program. Be sure to include decisions.

EXTRA POINT

Have your students brainstorm the best places in the school for RFID technology.

Discuss the following:

- In the school, would it be more beneficial for spaces or objects to recognize you?
- What spaces or objects do you think should have the technology?
- Why do you think this would be a good thing? What benefits would it bring?
- When is it not a good thing?

Put students in pairs or groups of three to brainstorm designs for RFID technology in the school or classroom. Display these questions in the room for easy reference or have students write them in their journals:

- Should the technology be part of the room or an object inside the room?
- Should it be noticeable or hidden? Why?
- What types of information should the object recognize?
- How could the technology help the person using it?

Students should sketch ideas and create and polish a final drawing in color. If possible, have them create a prototype in modeling clay.

When finished, have students present their ideas to the class and explain how and why their design benefits the user.

GAME STATS

- The College Robotic Football Conference hosts two events for robot teams from engineering schools. At the Combine, individual robot players compete in activities such as QB target practice, running, weight pushing, obstacle course navigation and kicking. At the Robotic Football Playoffs, robot teams from each college compete for the Brian Hederman Memorial Trophy.

GOING PRO

- **Sports Engineer:** Sports Engineers hold an advanced degree in mechanical engineering, industrial design, bioengineering or material science. Sports engineers design athletic equipment and facilities to be both effective and safe, sometimes incorporating RFID technology. They also work with individual teams, analyzing player statistics and creating coaching tools that will improve performance.

PERFORMANCE CHALLENGE

PERFORMANCE CHALLENGE

DO YOU HAVE WHAT IT TAKES?

Now is your chance to put yourself through two of the same challenges that NFL football players experience every year. How fast can you run? How high can you jump?

Like a pro, show off your power and speed. Try the vertical jump and 40-yard dash to see how you measure up.

VERTICAL JUMP

RUN, JUMP, PLAY

GIVE IT EVERYTHING

ARE YOU READY TO JUMP?

STANDARDS

Science:
GSE S7L2

Next Generation Science
Standards:
MS-PS1-4
MS-LS1-3

Art:

GSE VA6.CR.6d
GSE VA7.CR.6d
GSE VA8.CR.6d

EQUIPMENT

- Journal and writing utensil
- Student Playbook for every student
- A timer for every two students
- Enough 5' sheets of butcher paper for every two to four students
- Markers

KICKOFF QUESTION

- How do various exercises affect our body's systems?

PREGAME

(Before the Hall of Fame)

Show students how and where to find their own heartbeats.

- **Foot:** Place your index and middle fingers above the highest point of the bone along the top of your foot. You may have to move your fingers along the bone or slightly to either side to feel the pulse.
- **Wrist:** Use the tip of the index and third fingers of your other hand to feel the pulse in your radial artery between your wrist bone and the tendon on the thumb side of your wrist. Apply just enough pressure to feel each beat.
- **Neck:** Press your first finger and middle finger to the side of your neck, just under your jaw and beside your windpipe. Don't use your thumb. Press your skin lightly to feel your pulse. If you can't find it, try pressing a bit harder or move your fingers around.

Ask everyone to find their pulse and count the beats, then put the students in pairs. Each pair has a Student A and a Student B. Give Student B a timer. Student A must stand or sit for 30 seconds to ensure a normal heart rate, then find her pulse. Student B starts his timer to measure one minute while Student A counts her heartbeats. When the minute ends, she writes down her final heartbeat count.

Now, Student A ups her heart rate by running or jumping in place. (Students with limited mobility can breathe faster to increase their heart rates.) Repeat the first procedure: Student B sets the timer for one minute while Student A counts her heartbeats. When the timer sounds, she records her heartbeats.

Option: Student A and Student B switch roles so that Student B also determines his heart rate at rest and after exercise.

As a class, discuss the results with these questions:

- Was your heartbeat faster at rest or after exercise? Why is that?
- How long do you think it took your heart to return to its resting rate after you exercised?
- What were some other ways you could feel your body respond to the exercise? [e.g., sweating, temperature increase, turning red, getting thirsty, etc.]

Create a classwide graph on which every student anonymously plots their two heart rates (at rest and after exercise). As a class, find the averages of either. You may also want to point out anomalies (rates that were especially high or low compared to the rest of the class).

FIRST HALF

(At the Hall of Fame)

Note: For these activities, students will use the Student Playbook for grades 6-8.

Direct students to the Kia Performance Challenge on the second floor. Students should read and respond to each paragraph below in their Student Playbook:

- Coaches and trainers teach athletes to warm up before a workout. Before a big game, you may see players stretching their legs and arms on the sidelines, preparing their muscles in order to help prevent injuries. What are some other ways athletes prepare their bodies for an important game? (Hint: What might they eat or drink? What about sleep?)

- If you take apart a retractable (click) pen, you're likely to find a mechanical spring inside. When the spring is in a tight coil (pushed together), it stores potential energy, waiting for release. When it's let loose -- Boing! -- a burst of kinetic energy. When you perform the vertical jump, how are your legs like a mechanical spring?
- Every 60 seconds your heart--part of your cardiovascular system--pumps 5 liters of blood throughout your body . . . more than enough to fill two giant soda bottles. The blood travels on a circuit, leaving and returning to the heart in 45 seconds when you're at rest (little movement). When you run the 40-yard dash, does your heart rate increase, decrease, or stay the same? How many seconds do you think it takes your blood to travel one circuit?
- Humans decrease their internal heat through sweat, when our skin pushes out heat in liquid form through microscopic holes called pores. Also called perspiration, this liquid is mostly water with chemical compounds like ammonia, sugar, and salt. Why should you be concerned if you are exercising hard but your body is producing no sweat?

SECOND HALF

(Back in the Classroom)

Set up groups of 2-4 students each and give each group a sheet of butcher paper about 5' long. In each group, one student lies on the butcher paper while the rest uses markers to trace the outline of his body.

After the first student stands up and moves, the group should fill in the outline showing all the ways strenuous exercise affects various parts of the body. (Option: Students with Internet access can research some of these effects.) Students should use words and drawings to depict the effects, such as:

- increased heart rate
- increased blood flow
- increased breathing rate
- increased internal and external temperatures
- fatigue
- reddening of the skin (increase in lactic acid production)
- sweat
- hunger
- thirst

As they label and caption different effects, have your students include the names of body systems (respiratory, digestive, endocrine, etc.). Ask them also to include the potential long-term effects of regular exercise (decreased blood pressure, muscle development, etc.) on the organs and organ systems.

Have each group show their drawings to the group as a gallery walk or in a presentation. You also may display them around your classroom or throughout your campus.

EXTRA POINT

Ask students how they might depict objects or bodies in motion in drawings.

- How would you draw a figure to look as if it's running?
- How would you draw a ball so it appears to be bouncing?

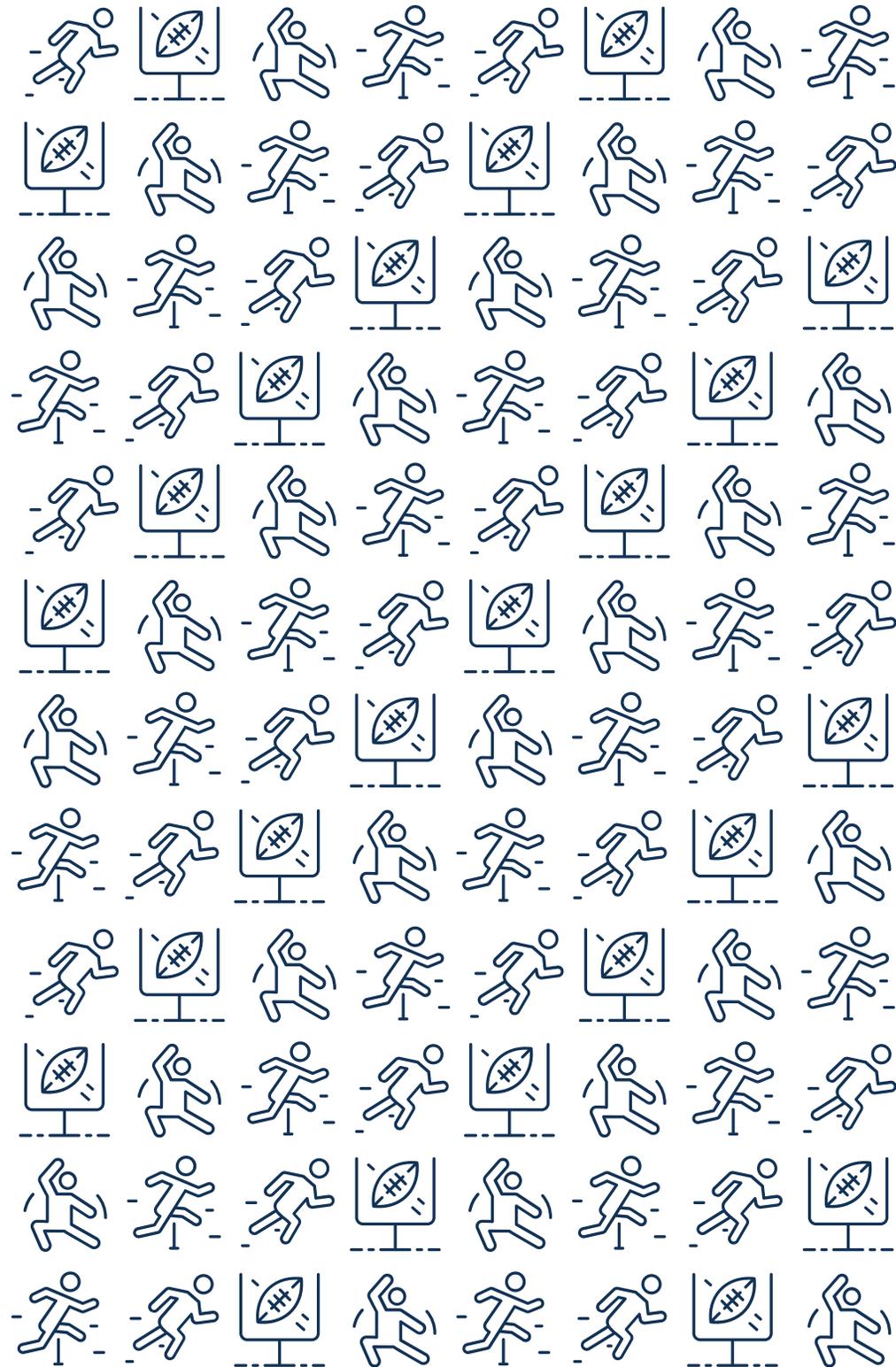
Many artists will simply draw lines behind the object as shown in this example with a ball. Ask the students to practice drawing this ball with motion lines, and then move on to bigger objects, such as a car or a figure. This project can be a series of sketchbook drawings or more refined larger drawings for presentation.

GAME STATS

- In ancient Greece, bodybuilders relied on their own body weight for exercises such as pushups and pullups. When their body weight was insufficient, they'd lift stones, logs, and even large animals.

GOING PRO

- **Cardiologist:** A cardiologist is a physician focused on heart health, able to diagnose and treat patients with cardiovascular issues. Cardiologists perform tests, prescribe treatments for chronic conditions and conduct surgeries as needed. They earn a bachelor's degree and attend medical school where they specialize in cardiology. They work at research hospitals, clinics or in private practice. Cardiologists and other medical professionals can become board-certified in sports medicine, allowing them to work as part- or full-time physicians for college football teams.





THE ULTIMATE FOOTBALL PLAYER

STANDARDS

Art:

GSE VA6.CR.1a
GSE VA6.CR.1d
GSE VA6.PR.1b
GSE VA7.CR.1a

GSE VA7.CR.1d
GSE VA7.PR.1b
GSE VA8.CR.1a
GSE VA8.PR.1b

EQUIPMENT

- Journal and writing utensil
- Student Playbook for each student
- Large paper
- Markers and colored pencils

KICKOFF QUESTION

- What characteristics and skills would you put together to create the ultimate football player?

PREGAME

(Before the Hall of Fame)

Ask students what it takes to be inducted into the College Football Hall of Fame. Is it more than physical ability? What characteristics do Hall of Famers share?

When every student has had a chance to weigh in, report that every player in the College Football Hall of Fame must meet specific criteria. For example:

1. The candidate received First Team All-America recognition by a selector organization recognized by the NCAA and utilized to comprise their consensus All-America teams.
2. Completed their final year of intercollegiate football.
3. While college football achievements are primary, in their community life the player reflects the ideals of football. Judges may also consider academic honors and whether the player earned a college degree.
4. They played their final year of intercollegiate football in the last 50 years. Professional players and coaches must be retired.
5. A coach is eligible three years after retirement or, if age 70 or older, immediately after retirement. Active coaches must be at

least age 75, have been head coach for 10 years minimum, and coached at least 100 games with a .600 winning percentage.

Discuss these requirements with the students.

- Are any of them a surprise?
- Why should a candidate also be a positive role model or good citizen?

Tell the students that on the Hall of Fame's third floor they will see touch screens with information about every player ever inducted into the College Football Hall of Fame. At those screens they will survey the players, choose their favorite team and find the Hall of Famers from that team. When they find their players, they will write this information in their journals or playbooks:

- What positions did the players fill?
- What do they have in common?
- How are they different?
- How did these players give to the community or embody the qualities of a model citizen?

FIRST HALF

(At the Hall of Fame)

Note: During their Hall of Fame visit, students can refer to the Student Playbook for grades 6-8.

At some point in the visit, send your students to the third floor to find their favorite team and record the information reviewed before you left. The touch screens will have stories, videos, and stats. Allow time for students to find and write down all the information they can.

SECOND HALF (Back in the Classroom)

Now every student will design or create the “ultimate” football player with the strengths and skills to play the following positions well enough to qualify for the College Football Hall of Fame.

Quarterback: As the leader of the team, the quarterback decides what plays will be called and signals the plays to the other players. After receiving the ball from the center, they either hand off the ball to the running back, throw it to a receiver or run with the ball. Important attributes for a quarterback include the ability to throw the ball far and accurately, as well as think on their feet and react quickly when a play doesn’t go as planned.

Running Back: This player’s job is to run with the football toward the end zone to score a touchdown. Running backs are also referred to as tailbacks, halfbacks and rushers. A running back needs to be able to run fast and maneuver quickly to dodge tackles.

Wide Receiver: The successful wide receiver moves quickly past defenders to catch the football and run as far as possible toward the end zone. Wide receivers must have good hands to catch the passes thrown to them by the quarterback and speed to elude defenders.

Defensive Lineman: The main job of the defensive lineman is to keep the other team from scoring. Depending on their position in the line, they work to overcome offensive blocking, pressure the opposing team’s quarterback, disrupt the offense’s backfield formation, and stop running plays by tackling the ball carrier or pushing them out-of-bounds. Linemen need to be big, strong and powerful.

Linebacker: Linebackers can have a wide range of duties as they defend against both running and passing plays. They are required to be all-around athletes with strength and speed so they can stop ball carriers, chase down the opponent’s quarterback, and cover fast-running wide receivers.

Secondary: Players in the secondary defense such as the safety and cornerback provide the last line of defense against the opposing team’s end zone. Positioned deep and wide on the field, defensive backs must be fast, tough and outstanding tacklers.

After your students sketch preliminary ideas, each creates his or her “ultimate” player on a large sheet of paper. What are the player’s physical qualities? What intangible qualities (ones you can’t see) does the player require?

Every drawing should show the qualities of good artwork, including proper use of the elements and principles of design. Encourage students to use a variety of media--and to emphasize key features, movement, color, etc,

Now have every student write out his or her player’s characteristics and qualities, and why they’re important. Write at least one paragraph explaining how those qualities come together to create the ultimate football player.

Remind the students to describe what kind of person the player is; a Hall of Famer also must have a proven record of good citizenship both on and off the field. How does the player give back to the community? How does the player embody the qualities of a model citizen?

When they’re finished, the students should present their ultimate players to the class and describe each of the characteristics they chose and why. Display drawings and written descriptions with the piece in the classroom or in another space for exhibit.

GAME STATS

- Of the 5.1 million people who have coached or played college football, fewer than 1,300 have been inducted into the Hall of Fame.

GOING PRO

- **College Football Coach:** A college football coach has at least a bachelor’s degree. Often coaches hold a master’s degree or higher, along with various certifications. Most college football coaches began at the high school level, where they also taught classes (requiring teacher certification), then moved up through smaller colleges to the university level.



TURF WAR

STANDARDS

Science:

GSE S6E3
GSE S6E6
GSE S7L4

Art:

GSE VA6.CR.1a
GSE VA6.CR.1e
GSE VA7.CR.1a
GSE VA7.CR.1e
GSE VA8.CR.1a
GSE VA8.CR.1e

**Next Generation Science
Standards:**

NGSS MS-ESS3-3
NGSS MS ESS3-4

EQUIPMENT

- Journal and writing utensil
- Anchor chart paper
- Anchor chart markers
- Internet access for students' basic research
- Square sample of turf / synthetic grass (optional)

KICKOFF QUESTION

- Which is better for football fields: synthetic grass or the real thing?

PREGAME

(Before the Hall of Fame)

On an anchor chart or a whiteboard, create a simple T-chart. Title one side “real” and the other “synthetic.” Tell students synthetic means the opposite of real--and ask for synonyms (fake, artificial, false). Brainstorm examples of things that can be either real or synthetic; write students' responses in the T-chart.

Looking at the examples, ask students to find a partner and discuss these questions:

- What is the advantage to things that are real?
- What is the advantage to things that are synthetic?
- Which is better: real or synthetic? Does it depend on the object in question, or is there one answer for everything?

Tell your students that sports fields--indoor and outdoor--are covered in either real grass or synthetic grass, also known as turf. (If students use the term Astroturf™, let them know that it is a common term and a specific patented product used widely in the second half of the 20th century.) If possible, bring a sample square of turf for students to pass around.

Divide the class into Group A, which is “pro-grass,” and Group B, “pro-turf.” Each group may be subdivided into groups or pairs to collaborate. Tell Group A to develop a thoughtful, evidence-based argument in favor of grass as a football-field surface. Group B does

the same thing in favor of turf. Each group must address certain factors. (Feel free to add to this list, and explain as needed.)

- initial cost (installation)
- maintenance (including resources such as labor, water, fertilizer, paint)
- environmental impact
- player injuries
- weather elements (temperature, precipitation, humidity)

Students may address each factor generally or specifically, as you instruct. For example, you may require them to list the exact estimated cost of an irrigation system or simply mention that real grass needs regular watering while turf does not. Give students Internet access for their research, especially if you require more precise data.

When all small groups have had time, have A groups and B groups convene separately for each to create a comprehensive list of reasons why its surface material beats the alternative.

Have each large group elect a representative to present their comprehensive list. Once both groups present, in an anonymous poll ask: Which surface material is better overall for football fields? Share the results. Optional: Have students write a short persuasive essay reflecting either the class consensus or their individual opinion.

FIRST HALF

(At the Hall of Fame)

At the College Football Hall of Fame, and when it's safe, have students touch the surface material on the floor of the Indoor Playing Field. Ask them how it feels like and unlike real grass. Encourage them to ask the staff whether this is the turf used on college football fields, and if not, why not.

Students may also study photographs in the various Hall of Fame exhibits to determine whether the surface material pictured is grass or turf. Tell them to note observational evidence.

SECOND HALF

(Back in the Classroom)

Introduce three terms to the class:

- contaminants
- habitat loss
- runoff

Ask your students what they know or have heard about these terms. As a class, for each term develop definitions and examples.

Put students in pairs and provide Internet access for basic research. Tell students to investigate the environmental effects of football fields with real grass and those with synthetic. Encourage them to use the three new terms (contaminants, habitat loss, and runoff) in their research.

Show students a Venn diagram and have them create their own on anchor chart paper. One circle is “Real Grass,” the other is “Synthetic Grass.” Based on their research, students should list the environmental effects of each type of surface material. The middle, where the circles overlap, is for any environmental effects that both covers cause. Next to each effect, students should write a “+” or “-” to indicate whether it’s negative or positive. Humans can have both negative and positive impacts on the environment, e.g., artificial coral reefs, composting. In their research students may discover one or more ways in which sports field surface material has a potentially positive effect on the local environment.

Hang the student posters around the room for a gallery walk. To facilitate constructive feedback, have students affix their questions and comments in sticky notes on the posters.

Encourage students to look up their favorite college or professional teams to learn which type of surface material they use.

EXTRA POINT

Most football fields sport either synthetic or real grass, as discussed in the lesson. What else could they be made from?

Challenge students to imagine what other materials a football field could be made from--from something as simple as dirt to something as far-fetched as tortillas.

Ask them to sketch their “fantasy fields” on paper. As a student settles on an idea, have them draw it on a large sheet of paper and color it in detail. Have all students present to the class and defend why their idea would be the most fun/successful/challenging/etc.

GAME STATS

- Astroturf™--so named because it was first installed in Houston’s famed Astrodome--was the original fake grass in domed stadiums in the 1960s. By the 1990s, it had fallen out of favor due to a high rate of player injury, although it is still the preferred surface for high-level field hockey competitions.

GOING PRO

- **Landscape Architect:** A landscape architect designs functional, attractive gardens, parks, playgrounds, campuses, and other public spaces, originally drawn by hand or using computer-generated blueprints. Landscape architects’ design decisions must consider regional climate, native species, human behavior, supply and construction cost, client budgets, and more. Most landscape architects attain a bachelor’s degree in a related field and serve as an intern before launching into an independent career. Some landscape architects work exclusively on designs for large-scale sports facilities such as stadiums.



**WE'VE GOT SPIRIT,
YES WE DO!**

STANDARDS

English Language Arts:

GSE ELAGSE6W3.d

GSE ELAGSE7W3.d

GSE ELAGSE8W3.d

Dance:

GSE MSD.CR.1

Music:

GSE MSBB.CN.1

Common Core English

Language Arts:

CCSS.ELA-LITERACY.W.6.3.D

CCSS.ELA-LITERACY.W.7.3.D

CCSS.ELA-LITERACY.W.8.3.D

EQUIPMENT

- Journal and writing utensil

KICKOFF QUESTION

- What does it take to create school spirit?

PREGAME

(Before the Hall of Fame)

Use these questions to stir up a class discussion:

- What is school spirit?
- What sorts of things help create school spirit?
- What is a fight song?
- How do fight songs help create school spirit?

Tell your students that by definition a fight song rouses enthusiasm--mostly at sporting events. It pulls audiences into the game and stirs up excitement.

Typically, the words to a fight song refer to the history of its team or where it's based. College teams' songs tend to have interesting backstories.

Go with your students to this link to discover the histories and inceptions of some colleges' famous fight songs:

[A Brief History of Beloved College Football Fight Songs](#)

When your research and discussion are complete, tell your students to.

- Select a college and research its fight song. Write the lyrics in your journal.
- Say what you believe the lyrics mean.
- Write how you might change the lyrics.

Now invite your students to share which lyrics they chose, and how they might change those lyrics, and why.

FIRST HALF

(At the Hall of Fame)

As you arrive at the Hall of Fame, remind your students to:

- Find the Fight Song Karaoke display on the second floor in the gameday area.
- Find their favorite fight song and sing along!
- In their journals, write what lyrics or words they consider most important to the song.

SECOND HALF

(Back in the Classroom)

Back in the classroom, ask your students to bring out their notes about the fight songs they chose at the Hall of Fame. Discuss these questions:

- What lyrics did you highlight?
 - Write the lyrics on the board or where everyone can refer back to them.
- Why did you choose those lyrics?
- How do those particular words or phrases promote school spirit?

Next, explain to students that they will create a new fight song--or school spirit song--for their school. They may do this individually or in small groups. To begin, have them refer to their journals to answer these prompts:

- What makes my school unique?
- What adjectives describe my school?
- Does my school have a mascot? If so, how might I incorporate it into my song?

- What words from the Hall of Fame might I incorporate into my song?

When students finish their songs, ask them to share with their peers. Have each presenting student explain how their song promotes school spirit and how a song at the Hall of Fame inspired their lyrics.

EXTRA POINT

After students create their songs, have them perform the songs for the class. Challenge the budding lyricists to create movements to their words, just as many college fight songs do.

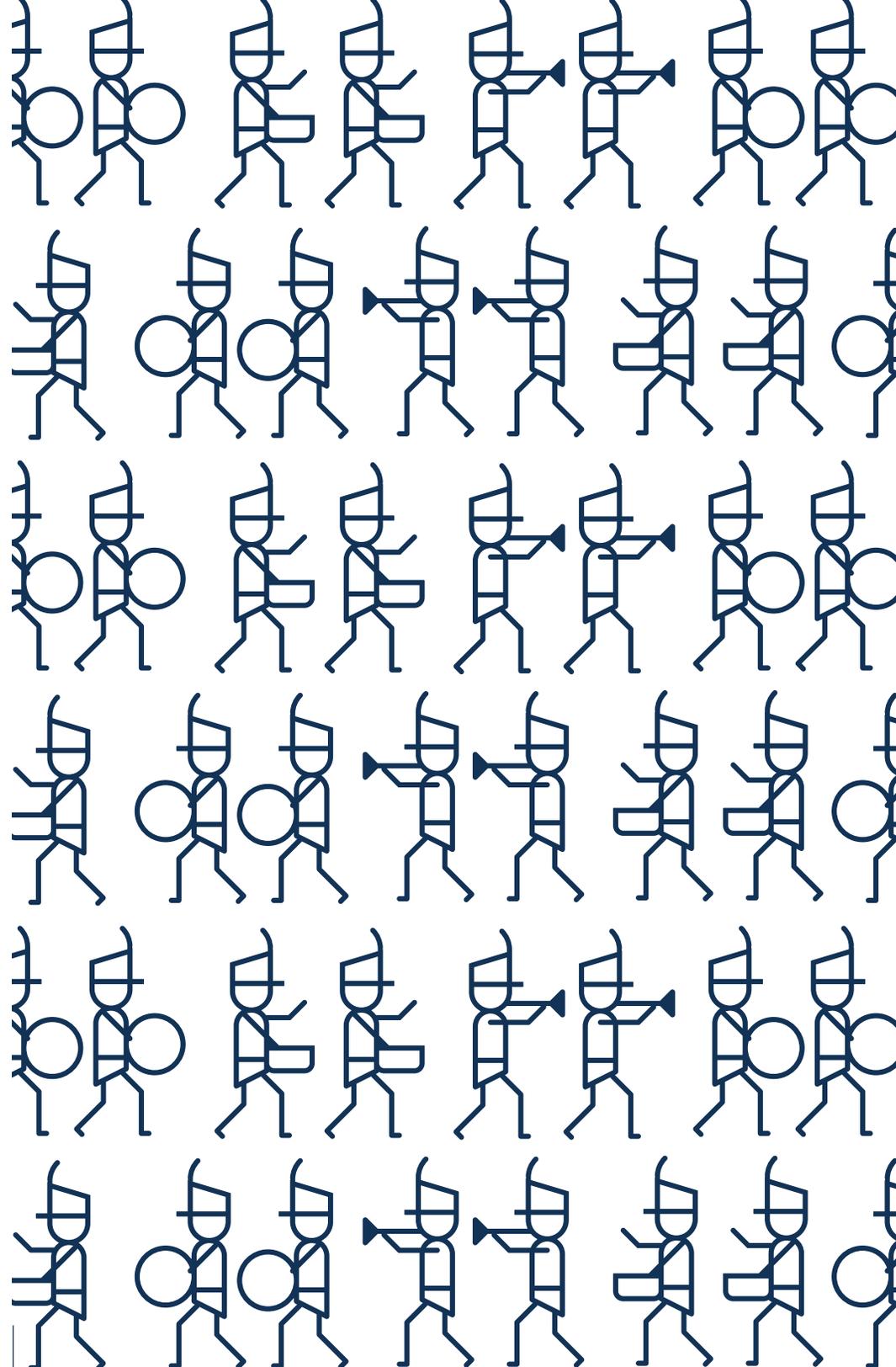
If possible, have students video themselves performing movements to their fight songs and play the videos for the class.

GAME STATS

- The oldest collegiate fight song in the US is from Boston College. “For Boston” was composed in 1885 and is still in use today.

GOING PRO

- **Choreographer:** A choreographer designs and directs dance or stylized movements in all types of productions, including those on a football field. Drill and dance teams, twirlers and marching bands all depend on choreographers to help them create spectacular pregame and half-time shows. While many choreographers have a bachelor’s degree, for people with extensive dance training, a high school diploma is sufficient.



NOTES, THOUGHTS & SKETCHES

Title Sponsor



U.S. AIR FORCE™

Supporting Partner



Medical Properties Trust

