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360 ALLSTARS

STUDY GUIDE

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360 ALLSTARS

School Matinee

Monday, November 10, 2025

Recommended for students in grades PK-5



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**All History and Social Sciences SOLs are based on the 2025 Instructional Guide revisions.*



WE WANT EVERYONE TO ENJOY THE SHOW

Please prepare your students for their visit to the Center for the Arts by practicing audience etiquette before you attend a live performance. The following guidelines will ensure that everyone can enjoy the show:

- Arrive early to find your seat and settle in before the show begins! This is for the safety of the students and artists, as the lights go down promptly at show time. If you happen to arrive after the performance has started, the ushers will help you find a suitable time to be seated without disrupting the experience for others.
- For the enjoyment of all, please turn off any devices that may create light or sound during the performance.
- While we love capturing memories, please note that photography, audio, or video recording are not permitted in the theatre.
- Food, gum, and beverages are not allowed inside the theatre.
- Buckle up! Keep all feet on the ground and hands, legs, and bodies in the seats at all times so everyone has a great view of the stage.
- Many performers enjoy engaging with the audience and may invite you to clap, sing along, or even dance in your seat! Feel free to join in and have fun, but save conversations for the journey back to school to maintain the magic for everyone.

ABOUT THE PROGRAM

360 ALLSTARS

A non-stop, energy-packed party complete with dancing, rapping, beatboxing, acrobatics, BMX biking, basketball, and more, 360 ALLSTARS is a spectacular fusion of the extraordinary artistry that emerges from street culture.

Boasting a stellar international cast of World Champion- and World Record-holding athletes and artists and featuring a live soundtrack delivered by award-winning musicians coupled with colorful video projections, the show has had sold-out runs on Broadway, as well as at the Sydney Opera House and Edinburgh Fringe Festival. Seen by over a million people worldwide, 360 ALLSTARS entertains audiences of all ages.

Australian musician Gene Peterson founded Onyx Productions in 2011 to produce his own work. Two years later, Onyx Productions sailed to worldwide success when he launched the megahit variety show 360 ALLSTARS, with Peterson himself providing live percussion.



ESSENTIAL VOCABULARY

Acceleration: How quickly an object's speed or direction changes (like a car speeding up/slowing down or a ball changing direction on a soccer field).

Axis: An imaginary line around which something spins. Imagine a merry-go-round; the axis is the pole in the center that the riders spin around.

Breaking: A cool style of dance with athletic moves like spins and flips, all to the beat of fun music.

Canon: In music, a canon is like a "follow the leader" game! A melody (or song) is played, and then one or more other voices or instruments start singing or playing the same melody, but at a slightly different time, as if following the first one. A famous musical example is *Row, Row, Row Your Boat*.

Culture: The customs, arts, social institutions, and achievements of a particular nation, people, or other social group.

Force: A push or pull that makes something move, stop, or change direction.

Friction: A force that slows things down when one object rubs against another. For example, when you rub your hands together, friction creates heat, which is another way friction slows down movement by converting it into other forms of energy.

Gravity: The force by which all objects in the universe are attracted to each other. On Earth, objects fall to the ground because of gravity's pull.

Looper: A looper is a small device that will record and play back whatever instrument (or voice) is recorded into it.

Melody: The tune of a song or piece of music. It's the sequence of musical notes that you can sing or whistle, and it's usually the most memorable part of a song. Think of it as the main tune or the part of the song that you can recognize and remember.

Percussion: Making sound by beating, striking, or shaking a musical instrument or other surface.

Revolve: To turn around or spin, like a carousel or a spinning top. It can also mean moving in a circle around something, like the Earth revolving around the Sun.

Rotate: To turn something around a center point, like spinning a wheel or turning a doorknob.

Rounds: A specific type of canon where each voice, after finishing its part, starts the melody over again at the beginning, creating a continuous, cyclical effect where the voices seem to follow each other in a circle.

Rhythm: The pattern of sounds, silences, and emphasis that creates movement and flow over the beat of a song.

VOCABULARY, cont.

Speed: How quickly something moves or travels a distance.

Step-Touch: A basic dance step where you move one foot forward and then bring the other foot to touch next to it. It's a simple step that can be done in different directions (forward, backward, sideways, or diagonally).

Teamwork: Working together with other people to achieve a goal or solve a problem. Teamwork is about everyone helping each other, sharing ideas, and making sure everyone contributes.

Tempo: How fast or slow a steady beat is played.

LEARNING ACTIVITIES

Fine Arts

Loop Pedal Logic

Begin by introducing the concepts of **loops**, **rounds**, and **canons** to the students. Explain that a loop pedal is a tool that lets musicians record short parts of music and then play them over and over again. This is great for creating layered music. A canon is a special way of making music where different voices or groups start singing the same song at different times, creating a layered effect (which can be like a looping effect). The most famous round is *Frère Jacques*.

To help students visualize the layering and repetition of music, give each student a paper plate or a circle of construction paper. Each group will be a team and should decorate their plate with their discussed and agreed upon team colors and/or team name. If desired, attach a string or ribbon to make a wearable "musical plate," similar to a necklace. This plate will act as a visual tool when the students perform rounds later in class.

Now, students will put the concept of loops and rounds into practice with an interactive group music activity. Start by singing *Frère Jacques*; *Row, Row, Row Your Boat*; or *Kookaburra Sits in the Old Gum Tree* as a class. Once they're familiar with the song, divide the class back into their small paper plate groups, with each group starting the song at a different point. When it is that group's turn to join in and sing the **melody**, they should stand or hold up their musical plates to symbolize their group is joining the round. This will visually show how layers are added (and eventually, dissipate).

If you have access to a loop pedal, demonstrate how students can create their own loop by recording a simple melody or **rhythm** and then layering more sounds on top. Have

LEARNING ACTIVITIES

the class work together to create a simple round with one group starting the melody and each following group joining in at different intervals. If you're using a loop pedal, record the first group's sound and use the loop pedal to repeat it while the other groups begin singing at different times.

If you don't have access to a loop pedal, assign each group an instrument in your classroom (tambourine, shaker eggs, etc.) to accompany their singing. Establish prior what rhythm they want their instrument to hold, while their voice simultaneously holds down the melody. Now, as each group sings the melody, they should hold up their musical plates and play their instrument, symbolizing when their group joins the round.

After completing the round and loop activities, gather the students for a short reflection:

- What did you notice about how the music sounded when different groups started at different times?
- How did using the loop pedal make the music feel? Was it different than when we sang the round without it?
- How did your musical plate help you understand the round?

Reinforce how rounds and loops both create layered, repetitive music that can be built with many voices or sounds.

Optional Extension: Students can create their own simple melody and teach it to the class, using the round technique to bring it to life.

- ▶ **Virginia Music SOLs:** 2.1b, 2.10, 3.1b, 3.10, 3.13e, 4.10, 5.10
- ▶ **VADOE Cross Curricular Learning:** Mathematics, Science

LEARNING ACTIVITIES,

Breaking it Down

Breakdancing, also known as b-boying/b-girling or **breaking**, is a dynamic and expressive form of street dance that has captivated audiences around the world since its emergence in the 1970s. Originating in the Bronx, New York as part of the broader hip-hop culture, breakdancing blends acrobatics, rhythm, and creativity into an art form that allows dancers to showcase their individuality and style. For young students, breakdancing offers a unique opportunity to engage with rhythm, physical movement, and cultural history in an exciting, hands-on way.

To introduce the students to breakdancing's cultural roots and inspire their creativity, refresh students on the 360 ALLSTARS performance, which gives students an understanding of how breakdancing can be both a personal form of self-expression and a high-energy performance art.

Start by explaining the origins and evolution of breakdancing. Discuss its roots in the Bronx during the 1970s, where dancers would “battle” with each other in the streets, showing off their unique styles. Today, breakdancing is a global phenomenon, with competitions and showcases happening worldwide. Explain that breakdancing is often done in “battles,” where dancers show off their skills, creativity, and style. In these battles, improvisation is key, and dancers engage in friendly competition, constantly pushing the limits of their movements.

A good warm-up is essential for preventing injury and preparing students for the physical demands of breakdancing. Guide the students through a series of stretches, including neck rolls, arm circles, leg stretches, and torso twists. Incorporate simple rhythmic exercises such as body rolls and shoulder shrugs to familiarize students with the movements often seen in hip-hop and breakdancing.

Introduce the foundational breakdancing moves that will form the basis of students' routines. These moves allow students to build their skills progressively and develop a strong foundation in breakdancing.

- The toprock is the standing movement in breakdancing. It involves rhythmic steps and arm movements. Teach the students a basic **step-touch** pattern to the beat. Students can experiment with adding their personal style and flair. Encourage students to use their arms and upper body to add personality to their toprock — it's all about showcasing style.

LEARNING ACTIVITIES, cont.

- The six-step is a fundamental footwork move that involves a series of steps performed in a circular pattern on the floor. When practicing, focus on smooth, controlled movements. It's essential to move with the music, letting the rhythm guide each step.
 - Step with the right foot.
 - Cross the left foot over.
 - Move the right foot around.
 - Step with the left foot.
 - Move the right foot back around.
 - Step with the left foot to finish.
- Freezes are dramatic poses where the dancer balances in a specific position, usually after executing a sequence of moves. The baby freeze is a beginner-friendly freeze where the dancer supports their body weight on their hands and head. Remind students to stay safe when attempting freezes and encourage them to build strength gradually.
- More advanced breakdancing moves:
 - The windmill is a spinning move performed on the floor where the dancer rotates their body in a circular motion using their arms and legs. This move can be broken down into steps and introduced after the students are comfortable with the six-step.
 - Like a windmill but with more acrobatic flair, the flare involves swinging the legs around in a wide, circular motion while balancing on the hands.

Divide students into small groups. Each group will practice incorporating the toprock, six-step, freeze, and perhaps the windmill into a mini routine. Students should focus on timing, rhythm, and adding to their personal style. After practicing, allow each group to perform their routine for the class. This encourages teamwork and helps students become comfortable performing in front of others.

Guide students through a slow-paced cool-down, including gentle stretches for the arms, legs, and back. Encourage deep breathing to help students relax after their high-energy dance session.

Reflect with students on the strength and control needed to master breakdancing's technical elements. The 360 ALLSTARS performance is a powerful reference point to inspire students' continuation of practice in dynamic, professional performance that showcases the fusion of acrobatics, rhythm, and self-expression.

- ▶ **Virginia Dance SOLs:** K.13, K.18, 1.13, 1.18, 2.13, 2.18, 3.13, 3.18, 4.13, 4.18, 5.13, 5.18
- ▶ **VADOE Cross Curricular Learning:** History and Social Science, Physical Education

LEARNING ACTIVITIES, cont.

Health Education

Brains of BMX

A large part of the perfect BMX routine relies on an unexpected tool: the helmet! Helmets are intended to keep the wearer safe and protect the brain in case of injury. Start your science lesson by showing a [short video](#) of a BMX biker performing stunts. Ask students, "What could happen if a BMX rider didn't wear a helmet?"

Discuss with your students the importance of protecting the brain during physical activities like BMX biking. BMX riders need to protect their brains from injury, especially since BMX involves jumps, flips, and high-speed tricks. Many parts of the brain function during BMX biking, including:

- **Cerebellum:** Keeps the rider balanced during stunts
- **Encephalic Trunk:** Allows BMXers to catch their breath between movements
- **Brain Cortex:** Helps BMX riders control their movements and make quick decisions

After watching the video linked above, ask students if they can point to the cerebellum and other parts of the brain on their own heads. Ask students some of ways the video suggested we protect our brains.

Explain to your students that helmets are the best way we can prevent head trauma or brain injury during sports. Discuss the role of helmets in protecting the brain by absorbing shock, preventing injury, and keeping the skull safe from impacts. Explain the materials typically used in helmets (e.g., foam, plastic shell) and how these materials help absorb impacts. Show students examples of BMX helmets (or pictures) and discuss their features.

Split the class into small groups of four to six students. Explain that each group will work together to design the perfect BMX helmet. Have students think about what makes a helmet safe. Ask questions like:

- What materials would make the helmet strong and light?
- How can we make the helmet comfortable for the rider?
- How can we add extra features like ventilation or extra protection for key areas of the brain?

LEARNING ACTIVITIES, cont.

Provide paper and drawing materials for students to sketch their helmet designs. Encourage creativity in their designs while ensuring they think about safety. Students should consider the following elements in their designs:

- **Protection** (How well does the helmet protect the head during a fall? Does it cover key areas of the brain?)
- **Comfort** (How comfortable is the helmet? Is it adjustable, breathable, or padded?)
- **Materials** (What materials can be used to ensure the helmet lasts and absorbs impacts well?)
- **Aesthetics** (How can the helmet be stylish and fun for BMX riders?)

Once the sketches are complete, students can use cardboard, foam, paper mâché, or other materials to create a simple prototype of their helmets. They can glue and tape the materials together to create a model of their designs. Encourage students to add custom paint jobs, logos, or decals to their helmet designs to make them more personalized, mimicking real BMX riders' helmets.

After completing their designs, each group will present their helmet model to the class. As they present, ask them to explain how their design protects the brain, the materials they used and why, and any special features that could improve safety or comfort for the rider.

Optional Extensions

- Have students solve fun brain challenges, like memory games or quick-thinking riddles. Emphasize that just like BMX riders train their bodies, they can also train their brains to think quickly and creatively!
- Organize a "helmet expo" where each group presents their helmets to the class, explaining their design choices based on safety, comfort, and creativity. If possible, invite a BMX rider or safety expert to give feedback on the designs and award winners.
- Check out the [Helmet Lab at Virginia Tech](#) for a closer look into the science of helmet engineering.

- ▶ **Virginia Health Education SOLs:** K.2k, K.3a, 1.1a, 1.3h, 2.3a, 4.1j, 4.2j
- ▶ **VADOE Cross Curricular Learning:** Fine Arts, Science

LEARNING ACTIVITIES, cont.

History and Social Sciences

Basketball Buzz

Begin by discussing the origin of basketball, created by James Naismith in 1891. Naismith, a physical education instructor, developed the sport as a way to keep his students active during the winter months. Naismith's game, initially played with a soccer ball and two peach baskets, evolved into the modern game we know today. Share key milestones in basketball history:

- **1891:** The creation of basketball by James Naismith.
- **1936:** Basketball becomes an official Olympic sport at the Berlin Summer Olympics.
- **1960s-1980s:** The rise of NBA superstars like Bill Russell, Wilt Chamberlain, and Magic Johnson.
- **1990s-Present:** Global expansion of the NBA and WNBA and the internationalization of the sport, with players like Michael Jordan, Yao Ming, and Lauren Jackson increasing the game's worldwide popularity.

Ask your students to think about how basketball has impacted culture. Discuss how basketball has been a means of civic change and personal expression. For example, the NBA played a critical role during the Civil Rights Movement in the 1960s and 1970s, with Bill Russell and Kareem Abdul-Jabbar being some of the first athletes to use their platforms to challenge racial inequality and injustice, both on and off the court. Basketball's role in popular culture grew in the 1990s, when the Women's National Basketball Association (WNBA) was created in 1996 and grew rapidly from eight to 16 teams in under 10 years.

Incorporate the performance of 360 ALLSTARS, with its blend of all things basketball, acrobatics, and hip-hop music. Explain how the performers showcase the athleticism, creativity, and cultural relevance of basketball, combining high-level basketball skills with dance, gymnastics, and flair. Ask your students what aspects of the performance they found most exciting or innovative.

To wrap up the lesson, break the students into small groups to recreate a key moment in basketball history. Each group will receive a historical moment and a basketball to reenact the scene. Some examples include:

- **The Creation of Basketball:** Have the students create the "new sport" of basketball and describe how it might work, just as Naismith did in 1891.
- **The Civil Rights Movement and Basketball:** Students can act out the pivotal story of how the NBA served as a pioneer for desegregation in the 1950s.

LEARNING ACTIVITIES, cont.

- **Wilt Chamberlain's 100-Point Game:** Students can display the record-breaking performance of Wilt Chamberlain in his 100-point scoring game, symbolizing individual dominance in the sport.
- **Slam Dunk:** Have a group speak on the importance and thrill of Lisa Leslie, the first woman to dunk a basketball in a WNBA game.
- **The Globalization of the NBA:** A group could present how the NBA's international players (like Yao Ming or Dirk Nowitzki) helped make basketball a worldwide sport.
- **Female Forces in the NBA:** Students can highlight Becky Hammon becoming the first full-time assistant coach in the NBA, a historic moment for gender equality in basketball that has opened doors for more women in coaching roles across the NBA.

Encourage each group to write their ideas down as notes or short scripts so they can sustain a clear presentation. Each group will act out their historical moment in front of the class, highlighting the significance of their event.

After the presentations, bring the class together for a reflection on what they learned:

- What was the most interesting fact you learned about basketball history?
- How has basketball influenced modern culture and society?
- How do you think basketball will continue to evolve in the future?

Wrap up the lesson by emphasizing the global nature of basketball today and how the sport has evolved to reflect societal changes, from Naismith's invention to the 360 ALLSTARS performance.

- ▶ **Virginia History and Social Science SOLs:** 2.10a, 3c-3e, 3i, 3.1i
- ▶ **VADOE Cross Curricular Learning:** Physical Education



LEARNING ACTIVITIES, cont.

Physical Education

Health in Motion

In the dynamic world of acrobatics, as seen in 360 ALLSTARS, there are rich learning opportunities for creativity, coordination, body awareness, and collaboration. Inform students that today, they will rotate through five acrobatics-based stations, each designed to challenge balance, strength, flexibility, and imagination.

Warm-up movements can include:

- **Acrobat Hops:** Jumping jacks or vertical hops to wake up the legs
- **Tumbler Rolls:** Log rolls or rock-and-rolls across gym mats
- **Contortionist Stretch:** Gentle side bends, tall reaches, and forward folds

Divide the class into small groups. Students will rotate through four acrobatic stations, spending four to five minutes at each location. Provide guidance and supervision, reinforcing safety, teamwork, and body control at all times.

Station 1: Acrobat Freeze

Instruct your students to collaborate in order to build specific balance poses, reinforcing trust and communication. End the station by making a group pyramid.

- **K-2:** Back-to-back standing, standing balance lean, see-saw pose, double tree pose, double chair pose
- **3-5:** Standing forward fold, boat pose, square pose, double bridge pose, lifted plank pose

Station 2: Tumbling 101

Students will practice age-appropriate tumbling techniques (forward rolls, rock-and-rolls, shoulder rolls, etc.) ending each tumble with a dramatic performance pose.

Station 3: Balance Beam

Encourage your students to walk across balance lines or low beams, incorporating pauses and poses throughout. If safe, provide your students with a scarf for movement and flair.

LEARNING ACTIVITIES, cont.

Station 4: Cyr Wheel Simulation

Since you won't find a Cyr wheel in your standard gym equipment, break out the hula hoops and have your students first practice the act of hula hooping, followed quickly after by trying one of the following hoop tricks:

- Hula hoop jump through
- Chest hula hoop
- Kneeling hula hoop
- Arm hooping

After ending the station rotations, guide students through a gentle transition out of dynamic movement using visual imagery and breathwork. Ask your students:

- What part of your body worked the hardest today?
- Why is it important to move in lots of different ways?
- How did you feel while balancing, rolling, or working with a partner?

For an exit ticket, ask students to name their favorite skill of the day and the body part it used most.

► Virginia Physical Education SOLs: K.1g, 1.1b-e, 2.1a-b, 3.1c, 4.1b, 4.1e, 5.1b

► VADOE Cross Curricular Learning: Fine Arts, Science



LEARNING ACTIVITIES, cont.

Science

360: A Full Rotation

In the world of science, “360” refers to one complete rotation around a circular path. The idea is simple yet powerful: when an object completes a 360-degree turn, it has made a full circle and returned to its starting point. To help students visualize this, draw a large circle on the whiteboard and label it with “360°.” Discuss examples of full rotations that students can relate to:

- The spin of a basketball
- The rotation of the Earth
- The differential spin of the sun
- Objects within the 360 ALLSTARS performance (turntables, backflips, acrobatic rings, wheels on BMX bikes, etc.)

These phenomena, while different in scale and context, share the common theme of rotation. Ask your students how rotations in 360 ALLSTARS made the performance more exciting and engaging, following up by asking, “How do full rotations help us in sports and in nature?”

Explore the physical significance of rotating objects through one (or more) of the following activities, which are designed with student skillset in mind — feel free to pick the one that works best for your class:

Activity 1: Axis of Rotation

Materials Needed

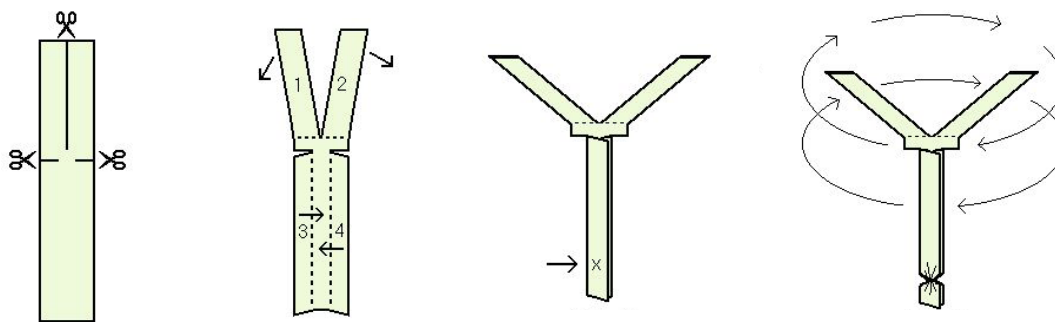
- Paper
- Scissors

Rotation is the action of turning around a fixed center point or axis. Two dimensional objects, like a CD, rotate around a stationary center point while three dimensional objects turn around a stationary axis, which is like an imaginary line running through the object.

LEARNING ACTIVITIES, cont.

To see axis rotation in action, have your students make a paper helicopter.

- Fold a piece of copy paper in half from side-to-side. Fold the paper in half again in the same direction.
- Unfold the paper and cut along the fold lines to form four strips about 2 inches (5 cm) wide.
- The pattern shows where one of the paper strips is to be cut and where it is to be folded (the two horizontal cut lines are midway between the top and bottom of the strip).
- The last step for preparing the helicopter is to bend the folded end of the tail up. Then bend the right wing forward toward you and the left wing backwards.
- Before testing the helicopter, ask kids to predict which direction the paper will rotate. This is also called a **hypothesis**.



Now it is the time to test the predictions (hypotheses). Give the following instructions:

- Hold the body of the helicopter with your thumb and index finger placed under the wings.
- Hold your arm as high as possible and drop the craft. Try not to let the craft hit against your body or clothes. It's important to keep your feet on the floor while dropping the aircraft so you are not making wind with your body to accidentally shift it one way or the other.
- If the paper doesn't rotate well, it's because the wings have been bent too much. Correct this problem by laying the paper flat and gently rub your fingers over the wings.

Observing the falling helicopter from above, the wings rotate in a counterclockwise direction around the axis.

Discussion Questions

- Why does the helicopter rotate counterclockwise?
- How could we get it to rotate clockwise? (Encourage students to flip the directions the blades are pointing to see if they can achieve a clockwise result.)

LEARNING ACTIVITIES, cont.

Activity 2: Rotational Paths

Materials Needed

- Large cardboard circles or markers on the floor to create rotational paths

Create a large circle on the floor or use large cardboard circles to represent rotation paths. Ask students to stand at the starting point of the circle and perform a 360-degree turn. They should rotate, as a unit, in a full circle and end up facing the same direction they started. Once they've mastered the full 360-degree turn, ask them to try spinning with their eyes closed or while balancing an object (for example, a small basketball or hula hoop). As an additional challenge, have them rotate in both directions (clockwise and counterclockwise) and see how the experience feels.

Discussion Questions

- How does it feel to spin around in a full circle? Was it harder or easier to do it in one direction compared to the other?
- How does the Earth's rotation differ from the way we rotate our bodies? (The Earth rotates in space, while we rotate on the ground.)

After the activities, bring the class together for a final reflection:

- What did you learn about 360-degree rotations today?
- Can you think of other examples of full rotations in sports, nature, or everyday life?
- Why do you think rotations are important in both science and performance?

By examining rotations in the context of the acrobatic routines on display in the 360 ALLSTARS performance, the Earth's rotation, and basketball spins, students are able to connect science with creativity and culture. Whether spinning a paper helicopter, practicing a dance move, or considering the Earth's movement in space, these activities encourage your students to think big with a deep appreciation for the role of rotations in both nature and human invention.

Optional Extension: Create kinetic sculptures or art projects that involve spinning components, helping students visualize how rotational motion can be incorporated into creative projects.

- ▶ Virginia Science SOLs: K.2, 1.2a, 2.2a-b, 3.2, 4.5a, 5.2a-c
- ▶ VADOE Cross Curricular Learning: Mathematics

LEARNING ACTIVITIES, cont.

Science of Movement

360 ALLSTARS is full of compelling connections between the physics of movement, performance arts, and real-world applications. Since the group is known for its high-energy, gravity-defying performances that blend circus arts, breakdancing, BMX, basketball, and other acrobatic feats, its work provides the perfect dynamic example of the physics principles such as gravity, rotation, acceleration, and friction. In this series of lessons, students will learn about the science of movement. Through daily activities and practice, your class will gain a great understanding of science through these hands-on and engaging lessons!

Day 1: Gravity

Materials Needed

- Pencil
- Rubber Band

Start by introducing **gravity** and how it influences movement on Earth. Explain that gravity pulls everything toward the center of the planet, which is especially noticeable in the way the performers of 360 ALLSTARS can defy gravity through flips, jumps, and basketball stunts. They perform incredible tricks like spinning in the air or jumping to great heights, yet gravity always pulls them back to the ground. Ask your students how they think gravity impacts their performance and whether their show would look and feel different without gravity on their side.

To demonstrate this concept, have students hold their pencil by the eraser end and point the tip up. Loop the rubber band over the pencil so it falls to your fingers and encourage students to slowly start to twirl the pencil. Keep twirling the pencil faster and faster until the rubber band flies off the tip.

Let the students try changing the angle of the pencil as they twirl it (pinch the eraser end with your finger and thumb, make a cone shape, make a circle shape, spin the pencil upside down, etc.)

In this activity, the pencil acts like a person's body and the rubber band acts like a hula hoop. Just like with a real hula hoop, students should find that if they did not spin the pencil fast enough, the rubber band would fall. Spinning the pencil faster and/or making the cone you trace with the pencil wider will ensure the rubber band's movement upward, eventually flying off the tip!

Explain to students that gravity has a large effect on hula hooping. The force of gravity pushes the hula hoop down; if the pencil isn't spun fast enough, creating an opposing force on gravity, the rubber band will fall off. However, the faster you spin your pencil, the more you can counteract gravity, allowing your pencil to fly upwards! Ask students what are other examples of gravity at work that they can think of in their everyday life?

LEARNING ACTIVITIES, cont.

Day 2: Rotate and Revolve

Introduce the concept of **rotation** by discussing how objects can spin around a central axis. Just like the Earth rotates to create day and night and the earth revolves around the sun, objects in 360 ALLSTARS rotate midair, and the performers **revolve** around each other during the performance. For this activity, partner students in groups of two and assign one student to be the Earth and the other to be the sun. Be sure to remind students of the expectations for behavior, especially as you call out the following cues, “Simon Says” style:

- **Rotate:** All students should spin slowly in a counterclockwise motion.
- **Revolve:** The student who is the sun stays in place as the student who is the Earth slowly walks counterclockwise around them.
- **Rotate and Revolve:** The students combine the two movements so that the sun is rotating, and Earth is revolving around the sun while rotating.

For a further challenge, ask your students to model specific times of day (sunset, sunrise, noon, midnight, etc.).

To close the lesson, highlight a breakdancer from 360 ALLSTARS performing a windmill or a headspin (both rely heavily on rotational motion). Ask students to think about how the dancer spins around an axis and why their bodies keep rotating when they don’t touch the ground. How does their speed or body position affect the rotation?

Day 3: Friction

Materials Needed

- Small toy cars and/or windup toys
- Various materials (e.g., fabric, sandpaper, plastic sheets, carpet, etc.)
- Ramps

On Day 3, students will learn about **friction**, the force that resists motion. In the world of 360 ALLSTARS, friction plays a big role in how performers control their stunts, such as landing after a flip or maintaining grip while dribbling multiple basketballs.

Allow students to experiment with different materials (e.g., smooth plastic, rough fabric, soft carpet, etc.) and attempt to roll toy cars and/or windup toys across the surface of the materials. Students will observe how different surfaces create different amounts of friction, which affects how quickly the toy car slows down or stops.

LEARNING ACTIVITIES, cont.

After discussing friction, students will participate in a friction challenge, where they will race their toy cars on different surfaces to see which one slows the car down the fastest. Relate this to how 360 ALLSTARS performers must control their speed and movements using friction (e.g., “How does friction help the rider maintain control over the bike during stunts?” or “How does friction between the ground and a dancer’s hands or feet help them stick their moves?”).

If the above materials are unavailable, feel free to utilize the Friction Activity in **Online Resources**.

Day 4: Speed and Acceleration

Materials Needed

- Small balls (ping pong, tennis, golf, etc.)
- Stopwatch
- Ramps

On Day 4, students will explore the concepts of **speed** and **acceleration**, understanding how objects can speed up or slow down depending on how forces are applied. Performers often rely on rapid acceleration to perform high-speed tricks, whether in breakdancing or BMX.

Set up ramps and allow students to roll small balls down them, timing how long it takes for each item to reach the bottom of the ramp. Experiment with different ramp angles to see how the steeper the ramp, the faster the ball accelerates.

Challenge students to accelerate their items by applying more force, just like a BMX rider accelerating to launch off a ramp for a trick. Compare how speed changes with increased force. Talk about how 360 ALLSTARS performers, such as BMX riders, accelerate rapidly through their tricks. Ask students to think about how acceleration (the speed of getting faster) helps these performers get the momentum they need to perform aerial stunts.

LEARNING ACTIVITIES, cont.

Day 5: The Final Countdown

Materials Needed:

- Cardboard boxes
- Small balls or toy cars
- Hula hoops
- Various materials (e.g., fabric, sandpaper, plastic, etc.)
- Markers and tape

On the final day, students will create their own motion obstacle course that incorporates the concepts of gravity, friction, and acceleration. This course will have different sections where students test the effects of forces:

- **Gravity Test:** Students must attempt to defy gravity by keeping a hula hoop up for at least 10 seconds.
- **Rotation Spinner:** Students spin a ball or object like the performers.
- **Friction Challenge:** Students test how friction affects motion by racing small cars or balls across a series of surfaces.
- **Speed Race:** The final segment of the course, students must see how quickly they can run up to a cardboard box and apply force to break it down.

As students complete the obstacle course, they will explain how gravity, rotation, and friction affect the motion of objects at each station, mirroring the real-world applications they saw in the 360 ALLSTARS performance. Ask students to recall how the performers used all of these principles (gravity, rotation, friction, and speed) to create their incredible stunts. Just like the performers, students will see firsthand how these scientific forces come together to create smooth, coordinated, and gravity-defying movements.

► **Virginia Science SOLs:** K.2, 1.2a, 2.2a-b, 3.2, 4.5a, 5.2, 5.3

► **VADOE Cross Curricular Learning:** Fine Arts, Mathematics

Social Emotional Learning

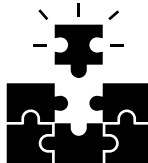
Teamwork 24/7

Start your lesson by discussing with students how each athlete in 360 ALLSTARS contributes to the group and how their individual strengths work together to create something amazing. Ask your students:

- What did each performer bring to the team?
- How would the performance change if one person didn't do their part?
- Can you think of something you've done where you had to work together like that?

LEARNING ACTIVITIES, cont.

Use a simple anchor chart to map out how teamwork looks, sounds, and feels. Let students contribute ideas. This helps set a foundation for common expectations and vocabulary. Your anchor chart may look like this once complete:

LOOKS LIKE	SOUNDS LIKE	FEELS LIKE
		
High fives 	"I can help!" 	Proud 
Helping others 	"Let's try your idea" 	Supported 
Taking turns 	"Great effort!" 	Included 

Next, give each student a Teamwork Tracker sheet (on the next page). This tool prompts students to reflect on their roles as teammates! Emphasize to students that this isn't just a worksheet; it's a mirror that encourages honesty, recognition, and growth.

End the lesson by having your students post the trackers on a Teamwork Wall. Later in the year, give your students a fresh copy and ask them to reflect on what has changed, improved, or continues to be a struggle.

- ▶ **Virginia Social Emotional Learning SOLs:** SoA1: Ka, ReS1: Ka, SoA1: 1-2a, ReS1: 1-2a, SeM1: 3-4c, ReS1: 3-4a
- ▶ **VADOE Cross Curricular Learning:** English

TEAMWORK TRACKER

Name: _____

Date: _____

Today I showed teamwork by...

One challenge I had was...

Next time, I want to...

Teammate Shoutout!

_____ showed great teamwork because...

ADDITIONAL RESOURCES

Community Resources

[Blacksburg Parks and Recreation](#) and [Christiansburg Parks and Recreation](#)

Blacksburg Parks and Recreation and Christiansburg Parks and Recreation both offer a variety of sporting opportunities for youth and adults alike, including basketball, baseball, skateboarding, and sports clinics.

[Kids' Tech University](#)

The Kids' Tech University (KTU) program is different from other kids' programs because it puts real researchers in front of children to give exciting interactive sessions on those infamous "why" questions that have always intrigued young people. The goal is to get them excited about science and technology by investigating a broad array of topics. Through the program, kids can envision themselves as scientists, the true explorers and adventurers of the 21st century.

[New River Valley Youth Cycling Alliance](#)

New River Valley Youth Cycling Alliance (NRVYCA) is a non-profit organization focused on developing and supporting the youth cycling community in the beautiful New River Valley. NRVYCA hosts and coordinates year-round activities that include youth bike racing, group rides, skills sessions, bike safety, trail and public lands stewardship, and physical fitness in a fun, supportive, and inclusive environment.

[Virginia Techniques Training Center](#)

Virginia Techniques is a space designed for students to reach their full potential, safety, and success. The gymnastics, acrobatics and ninja zone programs help develop self-esteem, confidence, coordination, flexibility, and strength while having fun.

[VTDITC](#)

Digging in the Crates: Hip-Hop Studies at Virginia Tech (VTDITC) is a practitioner-focused, student-driven, culturally responsive community engagement program that prioritizes experiential learning. The multifaceted and ever-evolving program is based in Southwest Virginia on Virginia Tech's Blacksburg campus. VTDITC was co-created by a diverse transdisciplinary team and is in the ninth consecutive year of academic and outreach programming.

Please note that the Center for the Arts at Virginia Tech does not officially affiliate or partner with all the above organizations; the above list is merely a sample of local opportunities that may prove valuable to you and your students.

ADDITIONAL RESOURCES

Literary Resources (Grades K-5)

- *All About Issac Newton: A Kid's Guide to the Scientist Who Discovered Gravity* (Skah Rukh)
- *A Little Spot of Teamwork* (Diane Alber)
- *B Is for Breakdancing* (Tamara Pizzoli)
- *Breaking to the Beat!* (Linda J. Acevedo)
- *Game Maker: A Creative Kid Becomes the Father of Basketball* (Brian Hanni)
- *I Am Gravity* (Henry Herz)
- *Jose the Flying Acrobat* (Ori Avnur)
- *The Magical Yet* (Angela DeTerlizzi)
- *My Daddy Has 100 Pedals* (Billy Cardigan)
- *My First Next BMX Race* (Brittney Love)
- *Newton and Me* (Lynne Mayer)
- *The Book of Canons* (John Feierabend)
- *The Busy Body Book* (Lizzy Rockwell)

Online Resources

- [Force and Motion](#)
- [Friction Skate Park](#)
- [Gravity: The Dr. Binocs Show](#)
- [Science of Sport: BMX](#)
- [USA BMX Foundation](#)
- [Who Invented Basketball?](#)

Bibliography

- [360 ALLSTARS](#)
- [The Bicycle's Bumpy History](#)
- [Circus 101: Features and Facts of Circus Bodies](#)
- [Designing a Bicycle Helmet](#)
- [Discovering the Science of BMX](#)
- [The History of Basketball](#)
- [How Does Hula Hooping Master Gravity?](#)
- [K-12 Standards of Learning](#)
- [Rotation: Paper Helicopter](#)
- [Social Emotional Standards of Learning](#)



WHAT TO KNOW

Changing Your Reservation

If your group size changes or you cannot attend, please notify Bethany Costello, engagement manager, at bethanycostello@vt.edu so that your seats may be released to those on the waitlist. Failure to notify a change in headcount may result in limited registration in future seasons.

Accessibility

The Center for the Arts is committed to being accessible to all of our patrons. Those with disabilities and their companions are accommodated through wheelchair seating, parking, and other special requests throughout the center at all levels. Assistive listening devices are available. Service animals are permitted. Sign interpretation and large-print programs are available with advance notification. If you or your students have questions regarding accessibility or would like assistance, please contact Jamie Wiggert at wiggertj@vt.edu.

Bus Parking: Guide and Notes

Buses will drop off at the Alumni Mall loop in front of the Center for the Arts (190 Alumni Mall). Please keep students on the bus until a volunteer arrives to collect your headcount and bus number from a chaperone. Arrive 15-30 minutes before the show; larger groups should allow extra time. After drop off, buses will be staged at the Chicken Hill Parking Lot (Football Lot 5) at Virginia Tech, easily accessible from Southgate Drive. No parking passes are required. Buses may not park or pull into the Turner Street Entrance. Please provide your bus driver with the Center for the Arts Bus Parking Guide; hard copies will be available in the Grand Lobby on the day of the performance.

Cars, Vans, and Personal Vehicle Parking: Guide and Notes

Those driving cars and vans may park in the North End Center Garage (300 Turner Street NW), which is one block from the center's Turner Street entrance. A valid university parking permit, a validation from one of the retail tenants, or payment of the daily fee is required to park in the North End Center Garage. Please allow adequate time for parking and walking to the Center for the Arts from your vehicle; the estimated walk time is seven minutes. Please reference [this additional parking guide](#) for personal vehicles.

WHAT TO KNOW, cont.

Checking In

Public School Groups/School Bus Groups: Upon arrival, check in at the Public School Group table with your headcount (students and adults), as well as your bus number. Staff and volunteers will assist you with directions, restrooms, and questions.

Private School Group/Homeschool Groups: Before arriving, decide on a group meeting spot (e.g., the upper gallery, the Grand Lobby elevators, etc.) If you are the first in your group to arrive, you can pick up a sign with your group's name to display for other party members. Wait at your meeting spot until your full party arrives, then head to the Private School Group/Home School Group check in table together. Be ready to provide your headcount (students and adults); staff and volunteers will assist with directions, restrooms, and questions.

Individual Homeschool Families: Upon arrival, check in at the Individual Homeschool Family table with your headcount (students and adults). Staff and volunteers will assist with directions, restrooms, and questions.

If you have any questions about check in, please email bethanycostello@vt.edu.

Performance Etiquette and Expectations

The performance will take place in the Street and Davis Performance Hall's Anne and Ellen Fife Theatre. A performance etiquette guide will be provided for you to review with your students at your convenience.

Dismissal

Buses should return to the Center for the Arts 15 minutes before the end of the show. After the performance, please remain seated; staff will dismiss school groups and families to ensure a smooth departure for all.

Feedback

Please take the time to fill out the post-matinee survey that will be emailed after the performance. Doing so could significantly improve our many educational programs for you and future visitors!

For More Information About Our Programs

For more information about the Center for the Arts' PK-12 educational programs, please subscribe to the center's [mailing list](#) and select PK-12 and school-day events.