Consent Agenda Item (Action Item): To approve Allen Elementary 8th Grade Trip to Dollywood, Pigeon Forge, Tennessee, on Friday April 24th, ~~2024~~ 2026 (Out-of-State Travel)

Applicable State or Regulations: KRS 160.160 Powers and Duties of the Local Board of Education.

Fiscal/Budgetary Impact: $0.00- Students are fundraising for the trip and paying the difference, if any.

History/Background: AES provides 8th grade students with the opportunity to travel for a day trip each year. Many educational activities are planned, as indicated by the lesson plan for the day. In addition to the educational value, the trip also allows students to have a day of bonding before graduating 8th grade and moving on to high school. Students will be supervised in groups with chaperones throughout the day. The trip will utilize school district transportation. The bus will be leaving approximately 6:00 AM and returning by 12:00 AM. There will be approximately 32 students going on the trip.

Recommended Action: Approve the request to allow Allen Elementary 8th Grade students to attend a trip to Dollywood in Pigeon Forge Tennessee on April 24th, 2026

Contact Person(s): Kyle Shepherd, Principal AES

Kyle Shepherd — Kathy Shepherd — Tonya H. Williams

Principal **Director** **Superintendent**

Date: March 10, 2026

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8th Grade Dollywood Trip

Exploring Force, Motion, Mathematical Engineering, and Appalachian Culture at Dollywood

LEARNING OBJECTIVE

Students will be able to describe and apply core concepts of force and motion, analyze a simple engineering problem using mathematical reasoning, and explain connections between local Appalachian culture and engineering practices observed during a field visit to Dollywood.

ASSESSMENTS

- Performance task (summative): Students design a simple ride concept inspired by observations at Dollywood that demonstrates an understanding of at least one force/motion principle and includes a short mathematical justification for safety parameters (e.g., max speed or angle). Rubric criteria: accurate physics explanation (0–4), clear mathematical calculation (0–4), cultural connection to Appalachian practices or themes (0–4), clarity and creativity of design (0–4).
- Formative checks: exit ticket describing one force observed and its effect; teacher observation checklist during group work; short in-class quiz with 3 application problems on force and motion.

KEY POINTS

- Force and motion: net force changes motion; common forces include gravity, normal force, friction, and applied force.
- Simple mathematical engineering: use measurements and basic calculations to estimate safe operating values (distance, speed, angle); express relationships with simple formulas such as $a = \frac{\Delta v}{\Delta t}$ and $v = \sqrt{2 g h}$
- Engineering design process: identify problem, brainstorm, model with math, test assumptions, and communicate results.
- Appalachian culture connection: local craftsmanship, materials, storytelling, and historical uses of local resources influence design aesthetics and constraints.
- Observational science: careful notes and measurements taken during field visits support evidence-based design decisions.

OPENING

- Brief hook: Show a short photo slideshow (3–4 images) of rides and craftsmanship at Dollywood and ask: "What forces do you think make this ride feel fast, safe, or exciting?"
- Explain plan: field visit observations, in-class modeling, group design task, and final presentations.
- Engagement question: "How might local Appalachian building traditions affect how a designer approaches building a safe, beautiful ride or exhibit?"

INTRODUCTION TO NEW MATERIAL

- Teach core physics concepts with concise definitions and demonstrations:
  - Define net force, inertia, acceleration, and centripetal force with classroom examples and a short tabletop demo (e.g., toy car on ramp).
  - Show how to estimate speed from a drop height using the relation $v = \sqrt{2 g h}$
- Active engagement: students predict outcomes of small experiments, then compare predictions to measurements.
- One common misconception to anticipate: "Heavier objects always fall faster" — address by explaining acceleration due to gravity is independent of mass (neglecting air resistance) and show a demonstration or video.

GUIDED PRACTICE

- Behavioral expectations: respectful listening during presentations, safe conduct during field observations, collaborative roles (recorder, measurer, presenter, safety monitor).
- Scaffolded practice opportunities:
  - Example 1 (easy): Calculate average speed if a cart travels $10\ \text{m}$ in $2\ \text{s}$ using $v_{\text{avg}} = \frac{d}{t}$
  - Example 2 (medium): Given a drop height of $5\ \text{m}$, estimate maximum speed at bottom using $v = \sqrt{2 g h}$ with $g \approx 9.8\ \text{m/s}^2$
  - Example 3 (challenging): For a simple banked turn model, ask students to identify forces acting on a rider and explain qualitatively how banking angle reduces reliance on friction.
- Monitoring: circulate during problem-solving, use a checklist to note misconceptions, ask probing questions such as "Which forces act in the direction of motion? Which act perpendicular?"

INDEPENDENT PRACTICE

- Behavioral expectations: work individually or in assigned pairs quietly, show all work, cite observations from Dollywood visit.
- Assignment: Create a one-page ride concept sketch that:
  - Names the primary force/motion principle used.

    - Includes one calculation estimating a safety parameter (e.g., max speed from a drop height using $v = \sqrt{2 g h}$
    - Writes a short paragraph connecting a design detail to Appalachian cultural influence observed during the visit.
- Deliverable: sketch, calculation with units, and a 4–6 sentence cultural connection paragraph.

CLOSING

- Quick synthesis activity: each group shares one sentence about a force they observed and one sentence about a cultural connection; teacher highlights correct physics language and accurate math expressions.
- Exit ticket (to collect): name one force observed, one numeric estimate made during the lesson, and one way Appalachian culture influenced design choices.

EXTENSION ACTIVITY

- Advanced: Students research an Appalachian craft or local engineering example (e.g., timber framing, mining equipment history) and produce a short multimedia mini-presentation that links traditional techniques to modern engineering constraints or aesthetics.
- Optional engineering challenge: simulate a small-scale prototype using classroom materials to test an aspect of their ride concept (e.g., ramp angle vs. speed) and record measurements.

HOMEWORK

- Observation log: Write a one-page reflection summarizing at least two force/motion observations from the Dollywood visit, include one calculation estimating a related value (show steps and units), and note one cultural feature that could influence design choices.

STANDARDS ALIGNED

- **Science:**
- **MS-PS2-2:** Analyze data to determine the effect of forces on the motion of rollercoasters (e.g., *Lightning Rod* or *Thunderhead*).
- **MS-PS3-5:** Model how potential energy changes to kinetic energy at different points on a ride.
- **MS-ETS1-3:** Evaluate design solutions to improve rider safety and speed.
- **Math**

- **8.EE.B.5:** Calculate speed, distance, and time for rides, or compare price-per-ounce for food items (e.g., cinnamon bread).
- **8.SP.A.1:** Construct scatter plots to analyze wait times versus time of day.
- **Social Studies**
- **8.H.CH.1:** Investigate the cultural, economic, and industrial history of Appalachia through the Craftsman's Valley area.
- **8.E.MA.1:** Explain how Dolly Parton's business decisions impact the local economy and tourism.
- **ELA**
- **RI.8.3:** Analyze how specific individuals or ideas are portrayed in park exhibits (e.g., Dolly's career, logging history).
- **W.8.2:** Write a report comparing the engineering of traditional wooden coasters vs. modern steel coasters.