



The State Fair of
TEXAS
Curriculum

THE MIDWAY & GAMES

GRADE 6 STEM

STEP BY STEP

POTENTIAL & KINETIC ENERGY MOVE THE CROWDS



TEACHER

The Midway & Games

GRADE: *Six*
STEM

Step by Step Potential & Kinetic Energy Move the Crowds



The Midway is one of the most fun and exciting places at The State Fair of Texas, but what makes it so fun and exciting? All of the ENERGY! Explore how the games and rides of the Midway are loaded with potential and kinetic energy. While you're moving around, you might be surprised at the number of steps it takes to get around. With so much to see and do at the Midway, are you spending more time and energy stepping out...or just standing around?

In this lesson students will

- ★ Identify multiple examples of potential and kinetic energy at the Midway.
- ★ Design their own game for the Midway.
- ★ Identify potential and kinetic energy within their own designs, and discuss the creative choices they made.

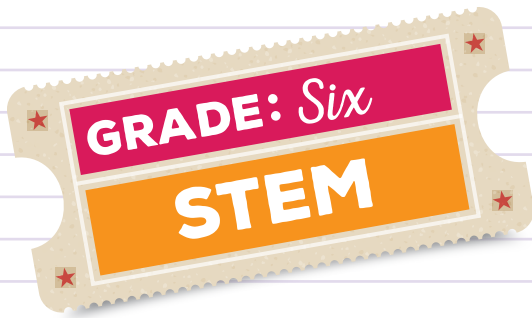
Standards

- ★ Math TEKS: 6.1(B), 6.2 (E), 6.3 (E), 6.4 (B, D), 6.5 (A)
- ★ Science TEKS: 6.8(A), 6.8(B)
- ★ Art TEKS: 6.1(A), 6.2(B), 6.4(A)

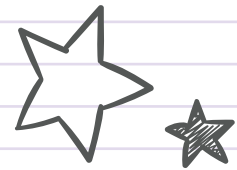


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Before You Go

Energy Discussion

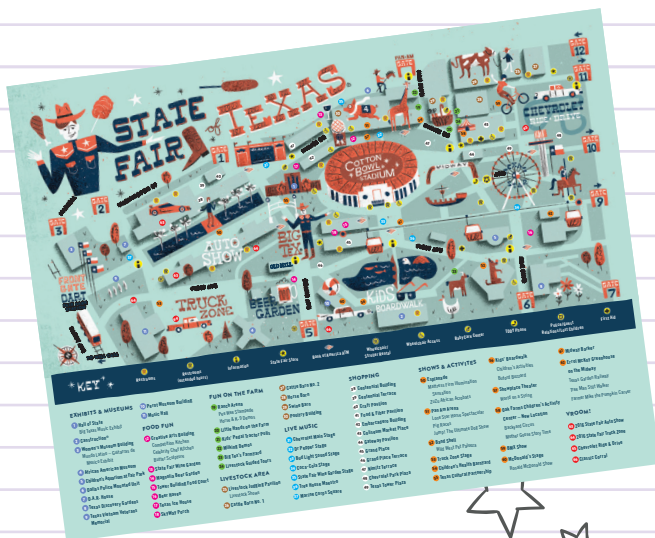
- ★ Watch this [video](#) on potential and kinetic energy.
- ★ Identify and analyze examples of energy in the classroom, such as a bouncing ball and a book that has been placed on a desk, and then falls to the floor.
- * Discuss whether the object is showing potential or kinetic energy at different points in time.
- * Ask each student or pair of students to show an example of both potential and kinetic energy.

Representing Mathematical Concepts Visually

- ★ We often use diagrams to represent important concepts.
- ★ In math, we use diagrams and other representations to model the relationships between ideas.
- * What types of representations do we use in mathematics?
- * Why is each of these representations necessary?
- * Describe a situation in which only one representation is useful.
- * Describe a situation in which more than one representation is useful.

Plan Your Route.

- ★ Start at the Texas Star and walk to some of your favorite places on the Midway.
- ★ If you don't have any favorite places yet, now is a great time to discover one.



Optional Materials to Bring

- ★ Smart Phone or Tablet
- ★ Pencil & Sketchbook
- ★ Stopwatch

While you're there

The objective of your visit is to identify kinetic and potential energy in the rides and games of the Midway, and to keep track of your own energy output, as well!

While you are there, pay special attention to how the energy affects all aspects of the Fair.

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★ **GRADE: Six**

★ **STEM** ★

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YOU

- Observe and record your steps for 10 minutes as you walk through the Midway.
- Keep track of how many steps you have taken and where you (or another person) are walking, over time, in your notebook.

Time (minutes)	Number of steps taken
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

GAMES

Observe some of the games going on at the Midway.

- Take notes, snap pictures, or record video of the types of energy you observe.
- What kind of energy is exhibited in the balls and rings that are being thrown?
- If you use your notebook, make sure to take notes about the energy.
- If you take videos, narrate where you observe potential and kinetic energy.
- In addition to the types of energy being used, pay attention to the design of the games.
- ★ What colors are being used?
- ★ Are there lights?
- ★ What about sounds?
- ★ How have the game designers worked to ensure that their games will draw the interest of fairgoers?
- ★ What would you change about the visual aspects of any of the games?

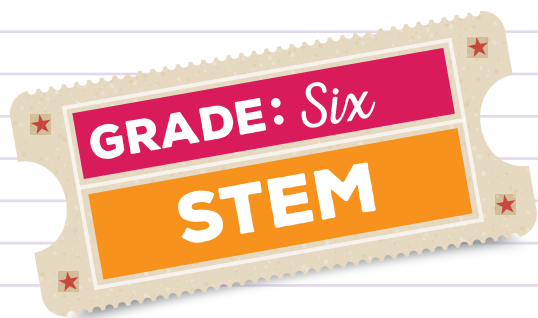
RIDES

Observe some of the rides going on at the Midway.

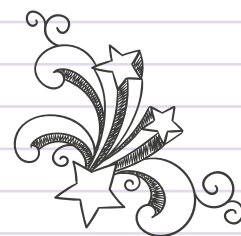
- Take notes, snap pictures, or record video of the types of energy you observe.
- What kind of energy do you spot when the roller coaster is going up and down hills?
- What about when the Ferris wheel is loading passengers, or when it's spinning?
- If you use your notebook, make sure to take notes about the energy.
- If you take videos, narrate where you observe potential and kinetic energy.
- Once again, take note of their design.
- ★ What makes this ride attractive to fairgoers?
- ★ What might make it unattractive?
- ★ How would you design it differently to draw in more people?

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After the Fair

When you return to class following your State Fair visit, you will:

- ★ Design either a ride or a game that uses potential and kinetic energy, to show the class.
 - * The game or ride can be shown either in model form, as a picture, or as an actual game.
 - * Be sure to think about color, light and sound, just as you noted in the games and rides at the Fair.
 - * Think in terms of what people are drawn to first, visually.
 - * What would set your design apart from the others, and draw more people in?
 - * Show the class where to find potential and kinetic energy in your ride or game, and explain the creative choices that you made in your design.
- ★ Analyze the data from the Steps Table you made while you were walking.
 - * Create a scatterplot graph from the data first.
 - * Write a paragraph to describe your actions, including the kinetic and potential energy you used.
 - * Do you think your rate of speed would be different in a different area of the State Fair? Explain why.
 - * Do you think you would have the same walking rate after 15 minutes? Why or why not?
 - * Do you think you took more steps because you had to keep track of your steps?

