STUDENT EDITION

Plan Your Route
★ Go to the Midway
★ Find a basketball shootout game

Optional Materials to Bring
★ Pen or Pencil
★ Tape measure (small and easy to carry)
★ Notebook or Paper
★ Smartphone or Tablet, with "Stopwatch" function on

RECAP
You will have a basketball shootout at the State Fair of Texas!

Recall from class the following terms related to quadratic functions:

1. Vertex, minimum/maximum, axis of symmetry, direction of opening, domain/range, and increasing/decreasing sections

2. Converting from vertex form $f(x) = a(x - c)^2 + d$ & standard form $f(x) = ax^2 + bx + c$

3. Writing a quadratic function in vertex form given a point, direction of opening, and the vertex

While You're There
You will use information you gather at the State Fair to help you with THREE project goals back at school:

1. Graph your shootout data as part of a quadratic function
2. Craft an art piece that gives the Illusion of Motion, based on the motion you observed during the basketball shootout
3. Compare your Fair shootout to those you see during professional sporting events.

The objective of your visit is to get the attributes of your quadratic function from your shootout competition.

★ **SHOOTOUT:** Compete against your friend to see who can make more baskets.
  o Record start height of the basketball in your hand. (all data for each player)
  o Measure the height the basketball hits before headed back down (rough estimate)
  o Measure the distance from you to the hoop
  o Time the "flight" of the basketball's air time
  o You can use the tables on the next page to record your results:

STATE FAIR MAP
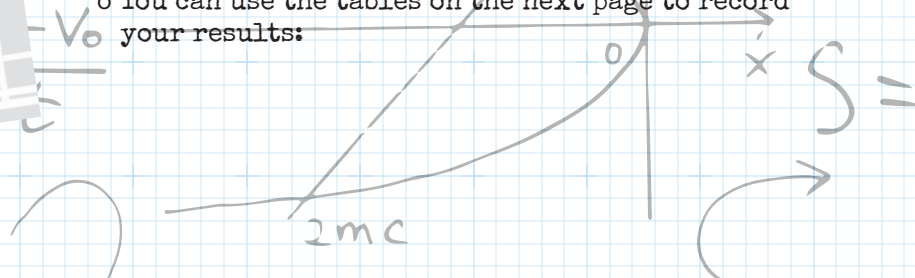
Basketball Shootout Person 1	DATA	UNIT
Start Height		feet
Total Time of Flight		seconds
Time of Maximum Height		seconds
Finish Height		feet
Total Distance (from you to the hoop)		feet

Basketball Shootout Person 2	DATA	UNIT
Start Height		feet
Total Time of Flight		seconds
Time of Maximum Height		seconds
Finish Height		feet
Total Distance (from you to the hoop)		feet

Basketball Shootout Person _	DATA	UNIT
Start Height		feet
Total Time of Flight		seconds
Time of Maximum Height		seconds
Finish Height		feet
Total Distance (from you to the hoop)		feet

Basketball Shootout Person _	DATA	UNIT
Start Height		feet
Total Time of Flight		seconds
Time of Maximum Height		seconds
Finish Height		feet
Total Distance (from you to the hoop)		feet

Basketball Shootout Person _	DATA	UNIT
Start Height		feet
Total Time of Flight		seconds
Time of Maximum Height		seconds
Finish Height		feet
Total Distance (from you to the hoop)		feet

Basketball Shootout Person _	DATA	UNIT
Start Height		feet
Total Time of Flight		seconds
Time of Maximum Height		seconds
Finish Height		feet
Total Distance (from you to the hoop)		feet

★ **ILLUSION OF MOTION** (Art Portion): While you are working on your Algebra II lesson, take a moment to make some sketches of your friends shooting the basketball.
   o Think about some of the techniques that you practiced before, and apply them to these sketches.
   o Make as many as possible so that you can use them later for a reference.

Back at School
When you return to class following your State Fair visit, you will work on your three projects. See your teachers for more information.