



| OBJECTIVES                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | STANDARDS                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Interactive Presentation:</p> <ul style="list-style-type: none"> <li>List potential careers for each letter of the STEM acronym.</li> <li>Give examples of how scientists and engineers use wind tunnels.</li> <li>Describe the engineering design process and how it applies to the evolution of indoor skydiving simulators.</li> <li>Explain how Newton's Law of Inertia is used to enhance the safety and performance of iFLY wind tunnels.</li> <li>Define speed, velocity and acceleration and how each applies to skydiving.</li> <li>Identify the forces acting on a skydiver and use free body diagrams to sum the forces acting on their body.</li> <li>Use velocity vs time and acceleration vs time graphs to describe the motion of a skydiver.</li> <li>Determine that terminal velocity is when the force of weight is equal to the force of drag.</li> <li>Identify the variables which affect a skydiver's terminal velocity.</li> <li>Discuss the difference in frames of reference between the wind tunnel and skydiving (i.e. in the wind tunnel the flyer is still and the air is moving, while in skydiving the air is still and the skydiver is moving).</li> </ul> | <p><u>Science:</u><br/>           HS-PS2-1<br/>           HS-PS2-2<br/>           HS-ETS1-3</p>                                                                     |
| <p>Physics Demonstration:</p> <ul style="list-style-type: none"> <li>Examine the physical attributes of the objects used for the demonstration.</li> <li>Compare objects with same mass but different frontal area and same frontal area but different mass.</li> <li>Estimate the terminal velocity for each object.</li> <li>Observe and describe the behavior of a variety of objects in the wind tunnel.</li> <li>Recognize that water will separate into droplets as the wind breaks the cohesive force of surface tension.</li> <li>Record the terminal velocity for each object, compare predictions to actual outcomes and discuss any differences.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><u>Science:</u><br/>           HS-PS2-1<br/>           HS-PS1-3</p> <p><u>Math:</u><br/>           MP.1-8<br/>           HSN.Q.A.2<br/>           HSG.MG.A.1</p> |