

## sk8art

Grade Level:  
high school

Subject Matter:  
physics

Curricular Uses:  
This lesson plan encourages students to investigate the forces involved in skateboarding moves.

### Materials/Resources

#### Required:

- clips or diagrams of three different skateboarding types
- transparencies and pens

Evaluation:

## Lesson Plan 14 – Skateboarding Moves

### Overview:

In skateboarding there are three types of moves. Flatland moves are stunts that are done entirely on the ground. Aerial moves begin on the ground and involve some type of flight in the air. Half-pipe moves involve using a half-pipe to do the tricks. As the rider is performing each of these moves, forces are acting upon their bodies and the skateboard. Recall that a force is either a push or a pull. Forces involved include the weight of the rider, weight of the board, friction, gravity, thrust, drag, lift, and the reaction forces from each of these forces.

### Learning Objectives:

- students will consider the forces involved in the three different types of skateboarding moves

### Procedures:

This lab involves making stick figures for the different skateboarding moves. Stick figures are simply a diagram of the rider and skateboard system. If you are using a clip, you do not have to do a figure for each movement, you are allowed to skip some movements. Students could try about five figures for each trick. As you do your figures, make certain to label the ground and the skateboard so you will be able to correctly identify the forces acting on the rider in the air. Once you have made your stick figures, you will merely add force arrows in the proper direction and indicating the proper magnitude for each force.

#### Analysis/Questions:

1. Are all forces present during all the skateboarding moves? Why or why not?
2. Why should a physicist care about the forces acting on the rider and the forces acting on the board during a ride?
3. How do stick figures help you in determining what the rider is doing as they ride the board?

### Credit:

- <http://set.lanl.gov/sports/skb8int.htm> (Question 3)

### Extended Activity:

- <http://set.lanl.gov/sports/skb8int.htm> (Questions 1-6)