

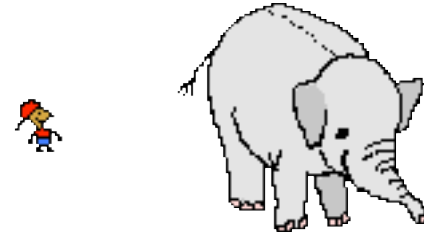
Air Resistance and Terminal Velocity

Read from **Lesson 3** of the **Newton's Laws** chapter at **The Physics Classroom**:

<http://www.physicsclassroom.com/Class/newtlaws/u2l3e.html>

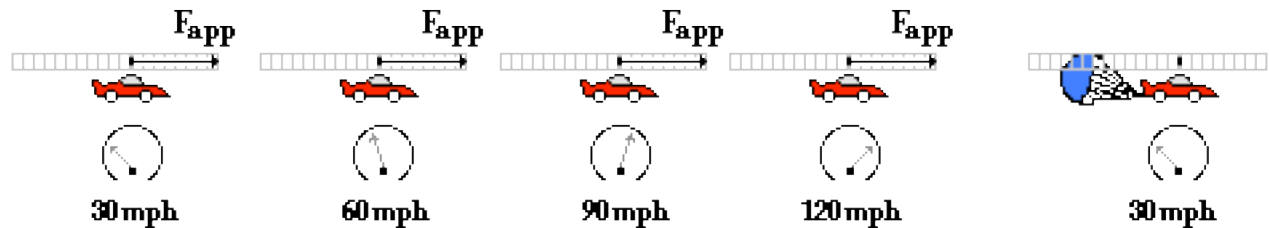
MOP Connection: Newton's Laws: sublevel 11

- When falling under the influence of air resistance and dropped from the same height, which will fall to the ground at a faster rate?
 - a mouse
 - an elephant
 - the same

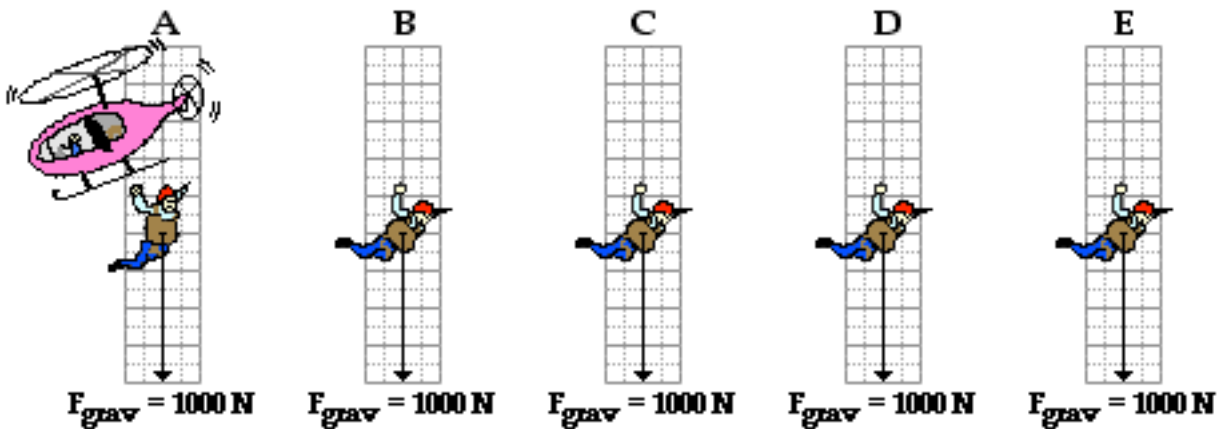


- Which of the following variables will have a direct effect upon the amount of air resistance experienced by an object? (That is, for which of these quantities will an increase lead to a resulting increase in the air resistance force?)
 - speed
 - air density
 - cross-sectional area

- Consider the dragster's motion below. Speedometer readings and the forward propulsion force (F_{app}) are shown. The top (or terminal) speed is 120 mph. Draw F_{air} force arrows on each diagram to illustrate how the amount of air resistance changes during the course of its motion.



- Draw F_{air} force arrows to show how the force of air resistance changes on the falling skydiver. At **A**, the diver has just jumped; and at **E**, the diver has just reached terminal velocity.



- Fill in the blanks in the following paragraph.

As an object moves faster and faster, the amount of air resistance _____ (increases, decreases) until a state of terminal velocity is reached. Once terminal velocity is reached, the force of air resistance is _____ (greater than, less than, equal to) the force of gravity. Hence, the object will _____ (continue to accelerate, stop its motion, stop its acceleration, move back up to its starting position).