

Mastering Physics Prerequisites

Unit Conversion

Problems 1-5

1. A truck is traveling at 55 mph on the highway. What is this speed expressed in units of
 - a) km/hr?
 - b) meters/sec?
 - c) feet/sec?
2. The acceleration due to the Earth's gravitational field at its surface is about 9.81 m/sec^2 . Express this acceleration in units of
 - a) ft/sec^2
 - b) mph/sec
 - c) $\text{km/hr}\cdot\text{sec}$
3. The tachometer of a car with an ICE (internal combustion engine) reads in units of rpm (revolutions per minute) and it gives the rotation rate of the cam shaft. When the tachometer reads 3000 rpm, what is this rotation rate of the cam shaft in units of
 - a) revolutions/second
 - b) degrees/second
 - c) radians per second
4. A gas is contained in a volume of 10 liters. To use the equation $PV = nRT$ when the gas constant is expressed in standard units, the volume must be expressed in units of cubic meters. There are 100 centimeters in a meter and 1000 cubic centimeters in a liter. What is the volume of 10 liters expressed in units of cubic meters?
5. Hydrodynamic engineers use the volume unit acre·inch. An acre·inch is the volume of water needed to cover an acre to a depth of one inch. How many gallons are in an acre·inch?