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Kinetic Energy

A. $KE = \frac{1}{2} mv^2$

The mass of the particle is m
The speed of the particle is v

Direct and Inverse proportions
Double the speed, the KE increases by a factor of 4

Determine the kinetic energy of a 0.145 kg
baseball traveling at 40 m/s.
 $KE = \frac{1}{2} mv^2 = \frac{1}{2} (0.145 \text{ kg})(40 \text{ m/s})^2$
 $KE = 116 \text{ J}$

B. Temperature is proportional to the average kinetic energy of the particles.

Increase in temperature; increase in KE
Decrease in temperature; decrease in KE

What if the speed of the particles goes to zero?
All motion stops; Absolute Zero!

C. 4.184 Joules = 1 calorie
1 Cal = 1 kcal = 1000 calories