Explain the difference between elastic and inelastic collisions. Explain how would a bouncing ball behave in each case ? Give plausible reasons for the fact that kinetic energy is not conserved in most cases.

Elastic collision is defined as:

"The interaction in which both momentum and kinetic energy conserve".

So:

$$p = const;$$

$$E_{kin} = const;$$

Inelastic collision is:

"The interaction in which kinetic energy does not conserve".

$$p = const;$$

$$E_{kin} \neq const;$$

Difference:

In elastic collision law of conservation of momentum and kinetic energy holds but in inelastic collisions these two laws does not hold.

Bouncing ball:

In elastic collision, the bouncing ball should rebound to the original height.

In inelastic collision, the bouncing ball will not rebound or will rebound to a

smaller height from where it is dropped.

Plausible reasons:

In most collisions, some KE change into heat, sound and in their

deformation due to frictions.