Experiences:

1. GravityCube
2. ThreePlanets
3. InteractivePlanet
4. Ramp
5. Elastic
6. Anelastic
7. CannonBall
8. Pendulum

1)

The sum of kinetic and potential energy is always constant; kinetic energy depends on the velocity of the body, while the potential energy depends on his height with respect to the ground. Take through the trigger button the cube in front of you and look how the two bars will change!

2)

Each planet in the universe is attracted by other planets by the force of universal gravitation, which is inverse proportional to the distance between to the two bodies. Push the button in front of you and see how different distances between the planets result in a different velocity of the bodies!

3)

Each planet in the universe is attracted by other planets by the force of universal gravitation, which is directly proportional to the masses of the two bodies. Try to increase or decrease the mass of the little planet in front of you using the controller touchpad and see how different the planet movement results!

4)

The movement of a body on an inclined ramp is influenced by three factors: dynamic friction coefficient of the ramp, inclination of the ramp and mass of the cube. Try to understand how these three factors influences the movement of a cube, by clicking on the right button to change the friction or using the touchpad to increase or decrease ramp inclination and cube mass! And remember, the cube can stay still!

5)

In a fully elastic collision, all the initial energy of the moving body is transferred to the stationary one without any dispersion, in such a way that the movement can continue infinitely. The velocity of the second body depends on the momentum received, which is given by the product of mass and velocity of the first body. Try to change the masses of the spheres by pointing at them and pressing the touchpad and see how this results in a different velocity of the system.

6)

In a fully anelastic collision, all the initial energy of the moving body is divided between the two spheres depending on their masses, with continuous kinetic energy dispersion. The velocity of the system depends on the remaining momentum, which is given by the product of mass and velocity of the system and decreases because of the energy dispersion. Try to change the masses of the spheres by pointing at them and pressing the touchpad and see how this results in a different velocity of the system.

7)

A bullet shot with a cannon will move in a parabolic trajectory and can reach different distances depending on the starting inclination of the cannon. Try to change the inclination of the cannon by pointing at it and moving on the touchpad, and shot pressing on the trigger button to see how the reached distance of the bullet will change.

8)

Differently from what one could expect, the period of a pendulum oscillation does not depend on the mass of the attached bob, but only on the length of the rope and the gravity acceleration. To see that clearly, try to increase or decrease the mass and the rope length by pointing at them and pressing the touchpad.