Physics

Tumble Bunny

Grade Level: 2-4

Classroom Time: 40 minutes

Materials:
- Tape
- Ramp
- Scissors
- Marbles
- Cardstock paper
- Colors or markers
- Tumble Bunny pattern
- Eastern Cottontail Rabbit

Objectives:
1. Given instruction and materials, students will become familiar with Newton’s Third Law.
2. Given instruction and materials, students will make a model that demonstrates Newton’s Third Law.

Instruction:
1. Explain to students that Newton’s Third Law states that for every action there is an equal and opposite reaction. Tell them that the marble in the bunny rolls down hill because of gravity, and the reaction is the movement of the bunny as it tumbles. (Demonstrate with a Tumble Bunny.)
2. Cut the tumble bunny pattern out of cardstock.
3. Color the bunny and background.
4. Tape the sides of the tumble bunny together.
5. Place 2 marbles inside the bunny.
6. Tape the end of the tumble bunny.
7. Place the bunny at the top of a ramp and watch him tumble.
8. Read the Eastern Cottontail Rabbit.

Variations: Place rocks, or other small items inside the bunny to see how it effects the bunny’s motion.

Tumble bunnies. NASA. Houston, Texas: Johnson Space Center.
Eastern Cottontail Rabbit

The eastern cottontail is chunky red-brown or gray-brown in appearance with large hind feet, long ears and a short fluffy white tail. Its underside fur is white. There is a rusty patch on the tail. In winter the fur is more gray than brown. The male is called a buck and the female is a doe; a young rabbit is a kitten or kit. The essential components of eastern cottontail habitat are grassland mixed with shrubs for escape cover. The female cottontail digs a shallow nest hole in the ground; lines the nest with soft grass and conceals the nest with grass. The kits are born with a very fine coat of hair and are blind for 1 week after birth. Females do not stay in the nest with the young but return to the opening of the nest to nurse, usually twice a day. Kits begin to move out of the nest for short trips by 12 to 16 days and are completely weaned and independent by 4 to 5 weeks. Cottontail rabbits eat grass, bark, twigs, leaves, fruit, buds, flowers, and seeds.

Cottontail rabbits are crepuscular, most active at dawn and dusk. Their expected rabbit lifespan is 9–12 years. Their diet of green plants, twigs, & tree bark contains large amounts of cellulose, which is hard to digest. Rabbits solve this problem by passing two distinct types of feces: hard droppings and soft black viscous pellets (caecotrophs). Rabbits re-ingest their own caecotrophs rather than “chewing the cud” like cows to digest their food further.