

Different Kinds of Forces

Objective: To observe and identify different kinds of forces at work.

Research

- ◆ Force: a push or pull that can cause motion.
- ◆ Contact forces: when the agent has contact with the receiver.
- ◆ Non-contact forces: when the agent does not contact the receiver.



Think

- ◆ How would you get a toy boat to move in a bathtub? Name three ways.



Think

- ◆ 1) push with hand - contact
- ◆ 2) splash waves - noncontact
- ◆ 3) blow on it - noncontact

Procedure

- ◆ In each of the following activities, identify the agent (A), the receiver (R), and the effect (E) of each force. State whether the force is a contact or non-contact force.

Procedure

- ◆ Use this list of words to identify the forces at work in each of the activities.
- ◆ Magnetism; Muscular; Gravity; Friction; Buoyancy; Elastic; Electrical.

Activity One

- ◆ Push the empty beaker bottom first into the water in the sink.

A= R= E=

Contact or non-contact?

- ◆ Submerge the beaker, let it fill up with water, then lift it out of the sink.

A= R= E=

Contact or non-contact?

Activity Two

- ◆ Invert the beaker over the paper clips. Use the magnet to try and lift the paper clips to the top of the beaker.

A= R= E=

Contact or non-contact?

Activity Three

- ◆ With one hand, hold up two plastic strips and let them hang. Observe what happens.
- ◆ Rub both strips with the wool. Lift them again and observe the forces.

A= R= E=

Contact or non-contact?

Activity Four

- ◆ Drop a flat piece of paper and a crumpled piece of paper at the same time and from the same height.

A= R= E=

Contact or non-contact?

Activity Five

- ◆ Hang the mass on the thinner rubber band.
- ◆ Hang the mass on the thicker rubber band.

A=

R=

E=

Contact or non-contact?

Activity Six

- ◆ Pull on the rubber band attached to the book. How long must the band stretch before the book starts moving? _____ cm.
- ◆ Add another book: _____ cm.
- ◆ Place the straws under the book and repeat: _____ cm. What has changed?
A= R= E=
Contact or non-contact?

Activity Seven

- ◆ Make a ramp with a board and a book. Roll the can down the ramp and measure how far it rolls from the end of the ramp. _____ cm.
- ◆ Place a towel at the end of the ramp and repeat. _____ cm.

A=

R=

E=

Contact or non-contact?

Key Concepts

- ◆ A **force** is a push or pull which can cause **motion**.
- ◆ When an **agent** makes **contact** with a **receiver** to cause motion, the force is known as a **contact** force.
- ◆ Examples of a **contact forces** are **applied force, friction, buoyancy, and elastic**.
- ◆ When an **agent** does not need to contact a **receiver**, the force is known as a **non-contact** force.
- ◆ Examples of **non-contact forces** are **gravity, electrical forces, and magnetic forces**.

Conclusions

- ◆ Use this list of words to identify the forces at work in each of the activities.
- ◆ magnetism; muscular; gravity; friction; buoyancy; elastic; electrical.