



Name \_\_\_\_\_

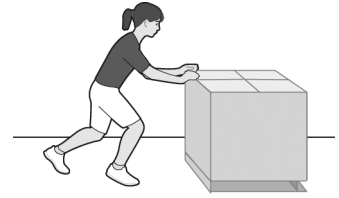
Date \_\_\_\_\_

Class \_\_\_\_\_

(Unit 2 Chapter 2)

**Defining Characteristics of the Mechanical Interaction**

1. In a mechanical interaction, objects touch each other while pushing or pulling each other over a distance. (Activity 2)
2. Mechanical interactions may change an interacting object's motion energy. The motion energy may increase or may decrease. (Activity 2)



*What evidence supports this idea?*

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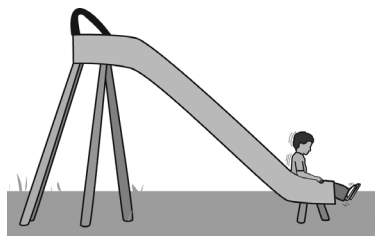


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3. In a mechanical interaction mechanical energy is transferred from a source to a receiver. There is an energy decrease in the source, and an energy increase in the receiver. (Activity 3)

**Types of Mechanical Interactions and the Variables That Influence Them**

4. An **applied mechanical interaction** occurs when two non-elastic objects push or pull each other. In an applied mechanical interaction, there is often a change in speed of at least one of the objects. (Activity 2)
5. Many variables may affect the strength of an applied mechanical interaction. For example, in the case of a person throwing a hard ball, the strength of the person can affect the interaction. In the case of wind blowing a piece of paper, the strength of the wind affects the applied interaction. (Activity 2)



6. A **friction mechanical interaction** occurs when the surfaces of two objects rub against each other. In a friction mechanical interaction, the moving objects slow down, and both surfaces warm up. (Activity 3)

7. Variables that affect the friction mechanical interaction are:
  - a) The rougher the surfaces, the greater the friction interaction.

*What evidence supports this idea?*

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**b)** The harder the surfaces are pressed together, the greater the friction interaction.

*What evidence supports this idea?*

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**8.** A **drag mechanical interaction** occurs when an object moves through a gas or liquid, and the gas or liquid resists the object's motion. In a drag interaction, the moving objects slow down, and the gas or liquid speeds up. (Activity 3)

**9.** Variables that affect the drag mechanical interaction are:

**a)** The thicker the gas or liquid, the greater the drag interaction.

*What evidence supports this idea?*

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**b)** The larger the surface moving through the gas or liquid, the greater the drag interaction.

*What evidence supports this idea?*

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c) The faster the object is moving through the gas or liquid, the greater the drag interaction.

*What evidence supports this idea?*

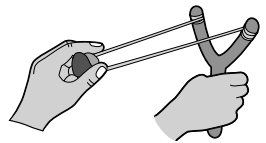
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**10.** An **elastic mechanical interaction** occurs when two objects push or pull on each other and at least one of them is stretchy. In an elastic interaction the elastic object is either compressed or stretched during the interaction, then it returns to its normal shape after the interaction is finished. (Activity 4)



**11.** Elastic objects can store energy. When a stretchy object is stretched or compressed, it increases in stored elastic energy.

*What evidence supports this idea?*

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**12.** Variables that affect the elastic mechanical interaction are:

a) The more the stretchy object is stretched or compressed the greater the elastic mechanical interaction.

*What evidence supports this idea?*

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b) The greater the stretchiness of the object the greater the elastic mechanical interaction.

*What evidence supports this idea?*

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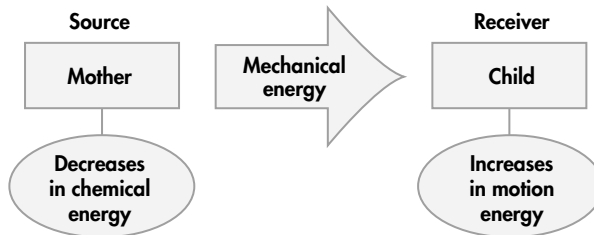
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### Energy Description of Mechanical Interactions

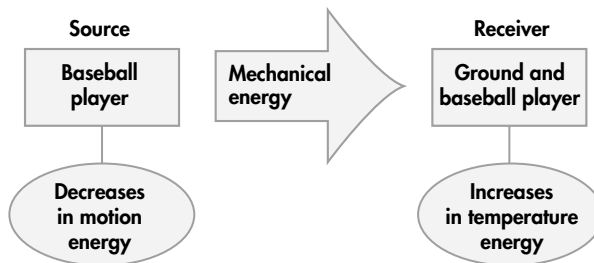
An energy diagram shows the energy changes during an *applied interaction* of a mother pushing a child on a swing.

(Activity 3)

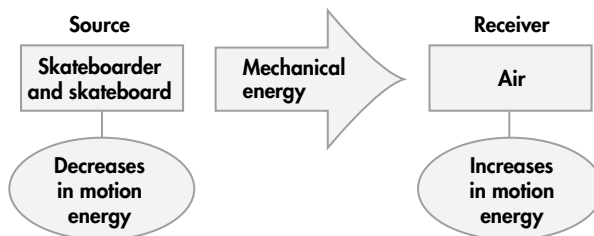


An energy diagram shows the energy changes during a *friction interaction* when a baseball player slides into second base.

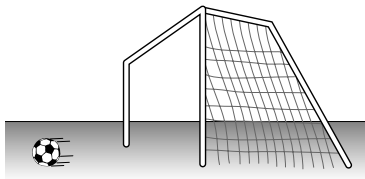
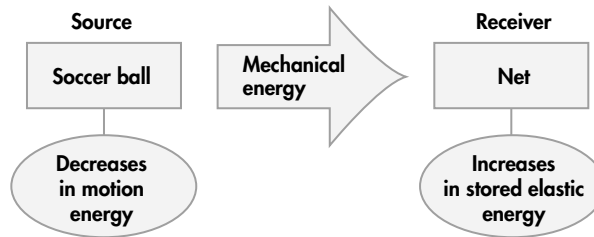
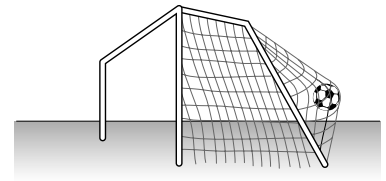
(Activity 3)



An energy diagram shows the energy changes during a *drag interaction* between the skateboarder and the air. (Although there is a friction interaction between the rubbing parts in the wheels, this is the energy diagram for only the drag interaction.) (Activity 3)



An energy diagram shows the energy changes during an *elastic interaction* when a stretchy net catches a soccer ball. (Activity 4)



An energy diagram shows the energy changes during an *elastic interaction* when a stretchy net releases the soccer ball. (Activity 4)

