

1. A student holds each of four objects of an unknown mass (W, X, Y, and Z) at the same height, releases each, and records the amount of kinetic energy each object contains as it reaches the ground.

Object	Height (m)	Kinetic Energy (J)
W	1.5	10.4
X	1.5	25.2
Y	1.5	30.7
Z	1.5	50.6

Which conclusion *accurately* compares each object?

- A The mass of Object W is greater than the mass of Object Z.
  - B The mass of Object Y is less than the mass of Object X.
  - C The mass of Object Z is greater than the mass of Object Y.
  - D The mass of Object X is less than the mass of Object W.
2. A student tests which material keeps water warm for the longest period of time by designing two different boxes using thick plastic and Styrofoam. The student fills two identical cups with equal volumes of water at 175°F and places one inside each box. After 10 minutes, the student records the temperature of the water in each cup in a table.

Material	Initial Temperature (°F)	Final Temperature (°F)
plastic	175	130
Styrofoam	175	158

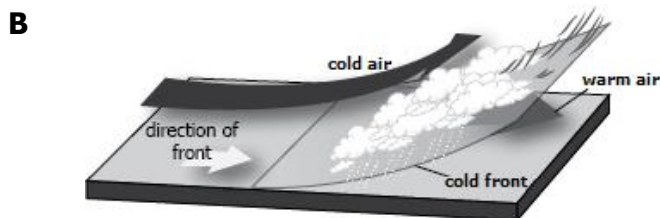
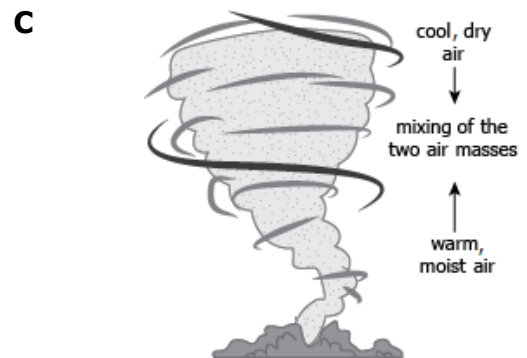
What can the student conclude about the ability of each material to insulate heat?

- A Styrofoam and plastic are poor insulators of heat because the water is equally cold in each cup after 10 minutes.
- B Styrofoam and plastic are good insulators of heat because the water is equally hot in each cup after 10 minutes.
- C Styrofoam is a better insulator than plastic because the temperature of the water is higher in the Styrofoam cup after 10 minutes.
- D Plastic is a better insulator than Styrofoam because the temperature of the water is lower in the plastic cup after 10 minutes.

3. A student reads information about the interaction of two air masses before drawing a model to represent the interaction, as shown.

Aided by strong winds, a warm, moist air mass in the lower atmosphere interacts with cool, dry air from the upper atmosphere. The cold air mass sinks underneath the warm air mass and begins to revolve rapidly in a counterclockwise direction. This motion forms a very low pressure system over land that causes large amounts of damage due to the very strong winds.

Which model would the student *most likely* draw to represent the interaction?



4. Japanese honeysuckle is an ornamental plant that was introduced in the United States in 1906. These plants grow as vines and have attractive, fragrant flowers. However, after a few years of their introduction, these plants started growing rapidly and displaced the native species. Researchers suggested that an alternative native plant similar to the invasive species should be planted to minimize the impact of Japanese honeysuckle.

What should be kept in mind while selecting an alternative plant?

- A** It should have seeds that can be wind-pollinated.
- B** It should be a source of food for native herbivores.
- C** It should have a similar growth rate and pattern to the Japanese honeysuckle.
- D** It should produce toxins to prevent other plants from growing.