

ACTIVITY 44: FALLING BODIES – DO SIZE, SHAPE, OR WEIGHT MAKE A DIFFERENCE?

Goal: To understand that high density objects fall at about the same rate of speed regardless of size, shape, or weight

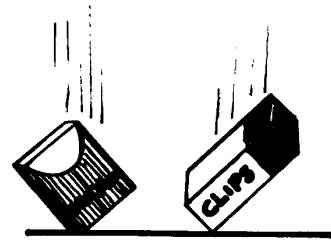
Skills: Observing, describing, comparing, predicting, summarizing

Materials: Objects found around the classroom, for example:
 Books of differing sizes
 Tennis shoe
 Box of paper clips, taped shut
 Box of ends and pieces of old crayons, taped shut
 Containers with sand used in the previous activity

Preparation: Place the objects where all students can see them.

Preparation Time: 1 minute

Lesson Time: 20–25 minutes



— Procedure and Questioning Strategy —

- Let's review what we learned in the last activity when we tested the rate of speed at which containers fall. What was similar about the containers?

They were the same size and shape.

- What was different?

They were different weights.

- What did we find out from our experiments?

The containers hit the floor at the same time when we dropped them from the same height at the same time.

The containers fell at the same rate of speed.

- When we dropped them, did the weights of the containers make a difference in their rates of speed?

No.

- Since we know that weight didn't make a difference, let's test some objects that have different weights *and* different sizes. Look at the objects. Which two have the same shape but are different in size and weight?

The box of crayons and the box of paper clips. Two of the books.

Test the objects mentioned, dropping them from the same height at the same time. The bottoms of the objects need to be the same distance from the floor. Have the students watch to see if the distance appears to be the same.

6. What did you observe?

The two objects hit the floor at the same time.
There was one sound as they hit the floor.

7. What does that tell us about their rates of speed?

They both fell at the same rate.

8. So does size make a difference with the objects we tested?

No.

9. Let's try objects of differing sizes, weights, and shapes. Which two objects could we try?

The tennis shoe and the box of crayons (or any two items that fit the description).

Try many combinations of objects.

10. Did the shape of the object make a difference?

No.

11. What have we found out about falling objects from the previous activity and the activity we just did?

The objects we tested fell at the same rate of speed even though they were different sizes, shapes and weights.

12. What do you think causes the objects to fall to the ground at the same rate of speed?

Gravity.

— Practical Application —

Have students suggest other objects in the classroom to test and to compare their rates of speed. If some objects do not fall at the same rate, ask the students to think of reasons for this that they can share during the next activity.