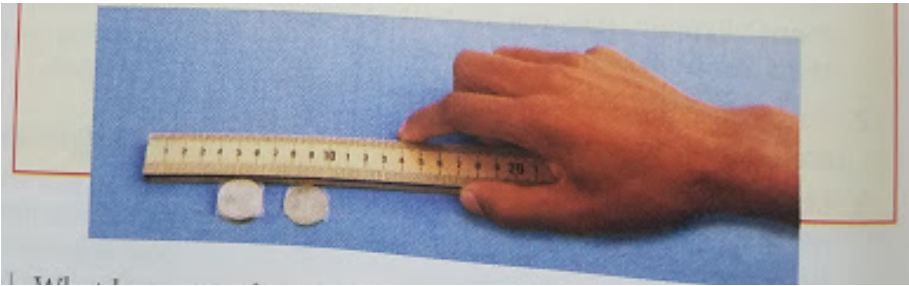


Please read the Discover Activity below and complete the activity. You can use any coin or metal washers if you don't have quarters. You can also use something else in place of the ruler if you don't have one (a book would work).

Discover Activity:

1. Stack three quarters. Wrap tape around the quarters to hold them tightly together. Place the stack of quarters next to a single quarter near the edge of a table.
2. Put a ruler (or book) flat on the table behind the coins. Line it up parallel to the edge of the desk and just touching the coins.
3. Keeping the ruler (or book) parallel to the edge of the desk, push the coins over the edge at the same time. Observe how long the coins take to land. Repeat if needed.



Think it Over: Please answer using complete sentences.

1. Did you see a difference in the time the coins took to fall?
No, they fell at the same rate.
2. Use what you observed to **predict** whether a golf ball will fall more quickly or at the same rate as a ping pong ball if you dropped them at the same time from the same height. I predict that they would fall at the same rate.

***Try this: Drop a pencil (or pen) and a book at the same time from the same height.**



3. **Did one** fall more quickly than the other? *Why do you think those were the results?
No, they fell at exactly the same rate. Gravity exerts a pull on falling objects that is the same regardless of the mass of the object.



Look at the image above (bowling ball and racquetball).

- Using what you know, **predict** whether the bowling ball will fall more quickly or at the same rate as the racquetball if you drop them at the same time from the same height. I predict that the objects will fall at the same rate.

Now watch the video linked below ↓

Video: [Bowling ball vs. racquetball](#) (Disclaimer: I did my best to drop them at the same time).

- Explain what you saw happen in the video. (Which landed first or did they land at the same time)? That was great, they landed at the same time!



bowling ball and golf ball ↑

Watch the video: [Bowling ball vs. golf ball](#) (Disclaimer: I did my best to drop them at the same time)

- What did you see happen in the video? (Which landed first or did they land at the same time)? Awesome...they landed at the same time.
- Why do you think this was the case? I think this happened because scientists have determined that in free fall, a state where you have unbalanced forces-no other forces are acting on the object(s), all objects, regardless of their masses, will fall at an acceleration of 9.8 m/s^2

